20230707072165

Årsredovisning

för

Norcarb Engineered Carbons Holdco AB

556849-5484

Räkenskapsåret

2022-01-01 - 2022-12-31

Fastställelseintyg

Undertecknad styrelseledamot i Norcarb Engineered Carbons Holdco AB intygar att resultaträkningen och balansräkningen i årsredovisningen har fastställts på årsstämma 2023-06-29. Årsstämman beslutade att godkänna styrelsens förslag till resultatdisposition.

Jag intygar också att innehållet i årsredovisningen och revisionsberättelsen stämmer överens med originalen.

Malmö: 2023-07-04

Patrik Johnsson

20230707221965

Årsredovisning

för

Norcarb Engineered Carbons Holdco AB

556849-5484

Räkenskapsåret

2022-01-01 - 2022-12-31

Innehållsförteckning

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Förvaltningsberättelse

Styrelsen för Norcarb Engineered Carbons Holdco AB avger följande årsredovisning för räkenskapsåret 2022-01-01 - 2022-12-31.

Årsredovisningen är upprättad i svenska kronor, SEK. Om inte annat särskilt anges, redovisas alla belopp i tusentals kronor (Tkr). Uppgifter inom parentes avser föregående år.

Allmänt om verksamheten

Bolaget verksamhet är innehav, finansiering och förvaltning av andelar i andra företag samt produktion och försäljning av kimrök och tillhandahållande av relaterade tjänster.

Ägarförhållanden

Bolaget är ett helägt dotterbolag till Orion Engineered Carbons International Gmbh, Tyskland.

Företaget har sitt säte i Malmö.

Flerårsöversikt (Tkr)	**2022**	**2021**	**2020**	**2019**	**2018**
Nettoomsättning	0	0	0	0	0
Resultat efter finansiella poster	-2 230	-558	1 046	-496	-1 055
Soliditet (%)	96	97	97	97	97

För definitioner av nyckeltal, se Redovisnings- och värderingsprinciper.

Förväntad framtida utveckling samt väsentliga risker och osäkerhetsfaktorer

Norcarb Engineered Carbons Holdco AB är ett holdingbolag där den operativa verksamheten bedrivs i dess dotterbolag. Mot bakgrund av det pågående kriget i Europa följer bolaget händelseutvecklingen noga och vidtar åtgärder för att minimera eller eliminera påverkan på dotterbolagets verksamhet. Företaget har en finansiell ställning som kan motstå en betydande nedgång i affärsverksamheten, men med tanke på den osäkra situationen är det för närvarande inte möjligt att uppskatta den fulla potentiella effekten och alla bedömningar är föremål för stor osäkerhet.

Förändringar i eget kapital

	Aktie-kapital	**Balanserat resultat**	**Årets resultat**	**Totalt**
Belopp vid årets ingång	50 000	736 933 364	0	**736 983 364**
Disposition enligt beslut av årsstämman:				
Balanseras i ny räkning		0	0	**0**
Årets resultat			0	**0**
Belopp vid årets utgång	**50 000**	**736 933 364**	**0**	**736 983 364**

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Förslag till vinstdisposition
Styrelsen föreslår att till förfogande stående vinstmedel (kronor):

balanserad vinst	736 933 364
disponeras så att	
i ny räkning överföres	736 933 364
	736 933 364

Företagets resultat och ställning i övrigt framgår av efterföljande resultat- och balansräkning med noter.

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Resultaträkning
Tkr

	Not	2022-01-01 -2022-12-31	2021-01-01 -2021-12-31
	1		
Rörelsens kostnader			
Övriga externa kostnader		-7	-7
Rörelseresultat		**-7**	**-7**
Resultat från finansiella poster			
Räntekostnader och liknande resultatposter		-2 223	-551
		-2 223	**-551**
Resultat efter finansiella poster		**-2 230**	**-558**
Bokslutsdispositioner		2 230	558
Resultat före skatt		**0**	**0**
Årets resultat		**0**	**0**

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Balansräkning
Tkr

	Not	2022-12-31	2021-12-31
	1		
TILLGÅNGAR			
Anläggningstillgångar			
Finansiella anläggningstillgångar			
Andelar i koncernföretag	2, 3	628 135	628 135
		628 135	**628 135**
Summa anläggningstillgångar		**628 135**	**628 135**
Omsättningstillgångar			
Kortfristiga fordringar			
Fordringar hos koncernföretag		136 271	134 041
		136 271	**134 041**
Kassa och bank		100	106
Summa omsättningstillgångar		**136 371**	**134 148**
SUMMA TILLGÅNGAR		**764 506**	**762 283**

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Balansräkning
Tkr

	Not	2022-12-31	2021-12-31
	1		
EGET KAPITAL OCH SKULDER			
Eget kapital			
Bundet eget kapital			
Aktiekapital		50	50
		50	**50**
Fritt eget kapital			
Balanserad vinst eller förlust		736 933	736 933
		736 933	**736 933**
Summa eget kapital		**736 983**	**736 983**
Kortfristiga skulder			
Skulder till koncernföretag		27 523	25 300
Summa kortfristiga skulder		**27 523**	**25 300**
SUMMA EGET KAPITAL OCH SKULDER		**764 506**	**762 283**

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Noter

Not 1 Redovisnings- och värderingsprinciper

Belopp i tkr om inget annat anges.

Allmänna upplysningar

Årsredovisningen är upprättad i enlighet med årsredovisningslagen och BFNAR 2012:1 Årsredovisning och koncernredovisning (K3).

Redovisningsprinciperna är oförändrade jämfört med föregående år.

Nyckeltalsdefinitioner

Nettoomsättning
Rörelsens huvudintäkter, fakturerade kostnader, sidointäkter samt intäktskorrigeringar.

Resultat efter finansiella poster
Resultat efter finansiella intäkter och kostnader men före bokslutsdispositioner och skatter.

Soliditet (%)
Justerat eget kapital (eget kapital och obeskattade reserver med avdrag för uppskjuten skatt) i procent av balansomslutning.

Värderingsprinciper m.m.

Tillgångar, avsättningar och skulder har värderats utifrån anskaffningsvärden om inget annat anges nedan.

Utländsk valuta

Monetära poster i utländsk valuta räknas om till balansdagens kurs. Icke-monetära poster räknas inte om utan redovisas till kursen vid anskaffningstillfället.

Finansiella tillgångar och skulder

Finansiella tillgångar och skulder redovisas i enlighet med kapitel 11 (Finansiella instrument värderade utifrån anskaffningsvärdet) i BFNAR 2012:1.

Andelar i dotterföretag, intresseföretag, gemensamt styrda företag och företag med ägarintresse i

Andelar i dotterföretag, intresseföretag, gemensamt styrda företag och företag det finns ägarintresse i redovisas till anskaffningsvärde minskat med ackumulerade nedskrivningar. I anskaffningsvärdet ingår förutom inköpspriset även utgifter som är direkt hänförliga till förvärvet.

Skatt

Skatt på årets resultat i resultaträkningen består av aktuell skatt och uppskjuten skatt. Aktuell skatt är inkomstskatt för innevarande räkenskapsår som avser årets skattepliktiga resultat och den del av tidigare räkenskapsårs inkomstskatt som ännu inte har redovisats. Uppskjuten skatt är inkomstskatt för skattepliktigt resultat avseende framtida räkenskapsår till följd av tidigare transaktioner eller händelser.

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Uppskjuten skatteskuld redovisas för alla skattepliktiga temporära skillnader, dock inte för temporära skillnader som härrör från första redovisningen av goodwill. Uppskjuten skattefordran redovisas för avdragsgilla temporära skillnader och för möjligheten att i framtiden använda skattemässiga underskottsavdrag. Värderingen baseras på hur det redovisade värdet för motsvarande tillgång eller skuld förväntas återvinnas respektive regleras. Beloppen baseras på de skattesatser och skatteregler som är beslutade före balansdagen och har inte nuvärdesberäknats.

Intäkter
Det inflöde av ekonomiska fördelar som företaget erhållit eller kommer att erhålla för egen räkning redovisas som intäkt. Intäkter värderas till verkliga värdet av det som erhållits eller kommer att erhållas, med avdrag för rabatter.

Koncernbidrag
Huvudregel för redovisning av koncernbidrag enligt 35 kap. inkomstskattelagen (1999:1229).

Koncernbidrag som erhållits/lämnats redovisas som en bokslutsdisposition i resultaträkningen. Det erhållna/lämnade koncernbidraget har påverkat företagets aktuella skatt.

Not 2 Andelar i koncernföretag

	2022-12-31	2021-12-31
Ingående anskaffningsvärden	628 135	628 135
Utgående ackumulerade anskaffningsvärden	**628 135**	**628 135**
Utgående redovisat värde	**628 135**	**628 135**

Not 3 Specifikation andelar i koncernföretag

Namn	Kapital-andel	Rösträtts-andel	Antal andelar	Bokfört värde
Norcarb Engineered Carbons AB	100	100	150 000	628 135
				628 135

	Org.nr	Säte	Eget kapital	Resultat
Norcarb Engineered Carbons AB	556095-3886	Malmö	248 780	31 667

Not 3 Väsentliga händelser efter räkenskapsårets slut
Mot bakgrund av det pågående kriget i Europa följer bolaget händelseutvecklingen noga och vidtar åtgärder för att minimera eller eliminera påverkan på bolagets verksamhet. Företaget har en finansiell ställning som kan motstå en betydande nedgång i affärsverksamheten, men med tanke på den osäkra situationen är det för närvarande inte möjligt att uppskatta den fulla potentiella effekten och alla bedömningar är föremål för stor osäkerhet.

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Not 4 Koncernuppgifter

Företaget är moderföretag men med hänvisning till undantagsreglerna i årsredovisningslagen 7 kap 2§ upprättas ingen koncernredovisning. Närmast överordnade moderföretag som upprättar koncernredovisning i vilken företaget ingår är Orion Engineered Carbons Holdings GmbH med säte i Frankfurt am Main, Tyskland (Hahnstrasse 49, 60528 Frankfurt a.M., Tyskland). Moderföretag för hela koncernen är Orion Engineered Carbons S. A. med säte i Luxemburg.

Norcarb Engineered Carbons Holdco AB
Org.nr 556849-5484

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Malmö 2023- 06 - 29

Patrik Johnsson
Verkställande direktör

Vår revisionsberättelse har lämnats 2023- 06 -29

Ernst & Young AB

Peter Gunnarsson
Auktoriserad revisor

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Building a better working world

Revisionsberättelse

Till bolagsstämman i Norcarb Engineered Carbons Holdco AB, org.nr 556849-5484

Rapport om årsredovisningen

Uttalanden

Vi har utfört en revision av årsredovisningen för Norcarb Engineered Carbons Holdco AB för år 2022.

Enligt vår uppfattning har årsredovisningen upprättats i enlighet med årsredovisningslagen och ger en i alla väsentliga avseenden rättvisande bild av Norcarb Engineered Carbons Holdco ABs finansiella ställning per den 31 december 2022 och av dess finansiella resultat för året enligt årsredovisningslagen. Förvaltningsberättelsen är förenlig med årsredovisningens övriga delar.

Vi tillstyrker därför att bolagsstämman fastställer resultaträkningen och balansräkningen.

Grund för uttalanden

Vi har utfört revisionen enligt International Standards on Auditing (ISA) och god revisionssed i Sverige. Vårt ansvar enligt dessa standarder beskrivs närmare i avsnittet *Revisorns ansvar*. Vi är oberoende i förhållande till Norcarb Engineered Carbos Holdco AB enligt god revisorssed i Sverige och har i övrigt fullgjort vårt yrkesetiska ansvar enligt dessa krav.

Vi anser att de revisionsbevis vi har inhämtat är tillräckliga och ändamålsenliga som grund för våra uttalanden.

Styrelsens och verkställande direktörens ansvar

Det är styrelsen och verkställande direktören som har ansvaret för att årsredovisningen upprättas och att den ger en rättvisande bild enligt årsredovisningslagen. Styrelsen och verkställande direktören ansvarar även för den interna kontroll som de bedömer är nödvändig för att upprätta en årsredovisning som inte innehåller några väsentliga felaktigheter, vare sig dessa beror på oegentligheter eller misstag.

Vid upprättandet av årsredovisningen ansvarar styrelsen och verkställande direktören för bedömningen av bolagets förmåga att fortsätta verksamheten. De upplyser, när så är tillämpligt, om förhållanden som kan påverka förmågan att fortsätta verksamheten och att använda antagandet om fortsatt drift. Antagandet om fortsatt drift tillämpas dock inte om styrelsen och verkställande direktören avser att likvidera bolaget, upphöra med verksamheten eller inte har något realistiskt alternativ till att göra något av detta.

Revisorns ansvar

Våra mål är att uppnå en rimlig grad av säkerhet om att årsredovisningen som helhet inte innehåller några väsentliga felaktigheter, vare sig dessa beror på oegentligheter eller misstag, och att lämna en revisionsberättelse som innehåller våra uttalanden. Rimlig säkerhet är en hög grad av säkerhet, men är ingen garanti för att en revision som utförs enligt ISA *och god revisionssed i Sverige alltid kommer att upptäcka en* väsentlig felaktighet om en sådan finns. Felaktigheter kan uppstå på grund av oegentligheter eller misstag och anses vara väsentliga om de enskilt eller tillsammans rimligen kan förväntas *påverka de ekonomiska beslut som användare fattar* med grund i årsredovisningen.

Som del av en revision enligt ISA använder vi professionellt omdöme och har en professionellt skeptisk inställning under hela revisionen. Dessutom:

- identifierar och bedömer vi riskerna för väsentliga felaktigheter i årsredovisningen, vare sig dessa beror på oegentligheter eller misstag, utformar och utför granskningsåtgärder bland annat utifrån dessa risker och inhämtar revisionsbevis som är tillräckliga och ändamålsenliga för att utgöra en grund för våra uttalanden. Risken för att inte upptäcka en väsentlig felaktighet till följd av oegentligheter *är högre än för en väsentlig felaktighet som beror på* misstag, eftersom oegentligheter kan innefatta agerande i maskopi, förfalskning, avsiktliga utelämnanden, felaktig information eller åsidosättande av intern kontroll.
- skaffar vi oss en förståelse av den del av bolagets interna kontroll som har betydelse för vår revision för att utforma granskningsåtgärder som är lämpliga med hänsyn till omständigheterna, men inte för att uttala oss om effektiviteten i den interna kontrollen.
- utvärderar vi lämpligheten i de redovisningsprinciper som används och rimligheten i styrelsens och verkställande direktörens uppskattningar i redovisningen och tillhörande upplysningar.
- drar vi en slutsats om lämpligheten i att styrelsen och verkställande direktören använder antagandet om fortsatt drift vid upprättandet av årsredovisningen. Vi drar också en slutsats, med grund i de inhämtade revisionsbevisen, om det finns någon väsentlig osäkerhetsfaktor som avser sådana händelser eller förhållanden som kan leda till betydande tvivel om bolagets förmåga att fortsätta verksamheten. Om vi drar slutsatsen att det finns en väsentlig osäkerhetsfaktor, måste vi i revisionsberättelsen fästa uppmärksamheten på upplysningarna i årsredovisningen om den väsentliga osäkerhetsfaktorn eller, om sådana upplysningar är otillräckliga, modifiera uttalandet om årsredovisningen. Våra slutsatser baseras på de revisionsbevis som inhämtas fram till datumet för revisionsberättelsen. Dock kan framtida händelser eller förhållanden göra att ett bolag inte längre kan fortsätta verksamheten.
- utvärderar vi den övergripande presentationen, strukturen och innehållet i årsredovisningen, däribland upplysningarna, och om årsredovisningen återger de underliggande transaktionerna och händelserna på ett sätt som ger en rättvisande bild.

Vi måste informera styrelsen om bland annat revisionens planerade omfattning och inriktning samt tidpunkten för den. Vi måste också informera om betydelsefulla iakttagelser under revisionen, däribland de eventuella betydande brister i den interna kontrollen som vi identifierat.

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Building a better working world

Rapport om andra krav enligt lagar och andra författningar

Uttalanden

Utöver vår revision av årsredovisningen har vi även utfört en revision av styrelsens och verkställande direktörens förvaltning av Norcarb Engineered Carbons Holdco AB för år 2022 samt av förslaget till dispositioner beträffande bolagets vinst eller förlust.

Vi tillstyrker att bolagsstämman disponerar vinsten enligt förslaget i förvaltningsberättelsen och beviljar styrelsens ledamot och verkställande direktören ansvarsfrihet för räkenskapsåret.

Grund för uttalanden

Vi har utfört revisionen enligt god revisionssed i Sverige. Vårt ansvar enligt denna beskrivs närmare i avsnittet *Revisorns ansvar*. Vi är oberoende i förhållande till Norcarb Engineered Carbons Holdco AB enligt god revisorssed i Sverige och har i övrigt fullgjort vårt yrkesetiska ansvar enligt dessa krav.

Vi anser att de revisionsbevis vi har inhämtat är tillräckliga och ändamålsenliga som grund för våra uttalanden.

Styrelsens och verkställande direktörens ansvar

Det är styrelsen som har ansvaret för förslaget till dispositioner beträffande bolagets vinst eller förlust. Vid förslag till utdelning innefattar detta bland annat en bedömning av om utdelningen är försvarlig med hänsyn till de krav som bolagets verksamhetsart, omfattning och risker ställer på storleken av bolagets egna kapital, konsolideringsbehov, likviditet och ställning i övrigt.

Styrelsen ansvarar för bolagets organisation och förvaltningen av bolagets angelägenheter. Detta innefattar bland annat att fortlöpande bedöma bolagets ekonomiska situation och att tillse att bolagets organisation är utformad så att bokföringen, medelsförvaltningen och bolagets ekonomiska angelägenheter i övrigt kontrolleras på ett betryggande sätt. Verkställande direktören ska sköta den löpande förvaltningen enligt styrelsens riktlinjer och anvisningar och bland annat vidta de åtgärder som är nödvändiga för att bolagets bokföring ska fullgöras i överensstämmelse med lag och för att medelsförvaltningen ska skötas på ett betryggande sätt.

Revisorns ansvar

Vårt mål beträffande revisionen av förvaltningen, och därmed vårt uttalande om ansvarsfrihet, är att inhämta revisionsbevis för att med en rimlig grad av säkerhet kunna bedöma om någon styrelseledamot eller verkställande direktören i något väsentligt avseende:

- företagit någon åtgärd eller gjort sig skyldig till någon försummelse som kan föranleda ersättningsskyldighet mot bolaget, eller
- på något annat sätt handlat i strid med aktiebolagslagen, årsredovisningslagen eller bolagsordningen.

Vårt mål beträffande revisionen av förslaget till dispositioner av bolagets vinst eller förlust, och därmed vårt uttalande om detta, är att med rimlig grad av säkerhet bedöma om förslaget är förenligt med aktiebolagslagen.

Rimlig säkerhet är en hög grad av säkerhet, men ingen garanti för att en revision som utförs enligt god revisionssed i Sverige alltid kommer att upptäcka åtgärder eller försummelser som kan föranleda ersättningsskyldighet mot bolaget, eller att ett förslag till dispositioner av bolagets vinst eller förlust inte är förenligt med aktiebolagslagen.

Som en del av en revision enligt god revisionssed i Sverige använder vi professionellt omdöme och har en professionellt skeptisk inställning under hela revisionen. Granskningen av förvaltningen och förslaget till dispositioner av bolagets vinst eller förlust grundar sig främst på revisionen av räkenskaperna. Vilka tillkommande granskningsåtgärder som utförs baseras på vår professionella bedömning med utgångspunkt i risk och väsentlighet. Det innebär att vi fokuserar granskningen på sådana åtgärder, områden och förhållanden som är väsentliga för verksamheten och där avsteg och överträdelser skulle ha särskild betydelse för bolagets situation. Vi går igenom och prövar fattade beslut, beslutsunderlag, vidtagna åtgärder och andra förhållanden som är relevanta för vårt uttalande om ansvarsfrihet. Som underlag för vårt uttalande om styrelsens förslag till dispositioner beträffande bolagets vinst eller förlust har vi granskat om förslaget är förenligt med aktiebolagslagen.

Malmö den 29 juni 2023

Ernst & Young AB

Peter Gunnarsson
Auktoriserad revisor

A member firm of Ernst & Young Global Limited

Positioned to thrive

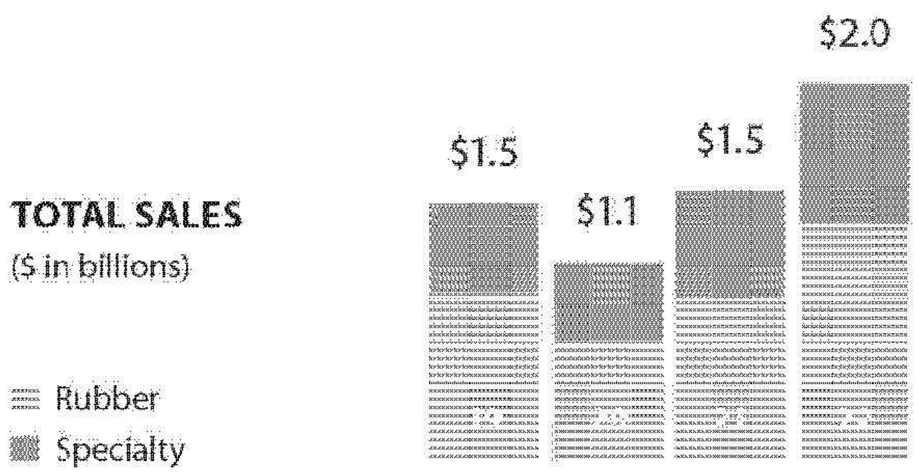
2022 Annual Report

orion ENGINEERED CARBONS

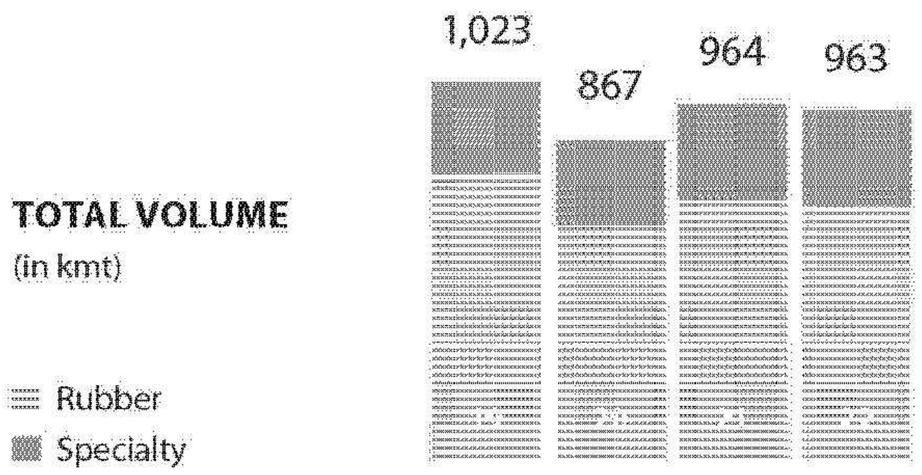
Orion Engineered Carbons (NYSE: OEC) is a leading global supplier of carbon black, a solid form of carbon produced as powder or pellets. The material is made to customers' exacting specifications for tires, coatings, ink, batteries, plastics and numerous other specialty, high-performance applications. Carbon black is used to tint, colorize, provide reinforcement, conduct electricity, increase durability, and add UV protection. Orion has innovation centers on three continents and 15 plants worldwide, offering the most diverse variety of production processes in the industry. The company's corporate lineage goes back more than 160 years to Germany, where it operates the world's longest-running carbon black plant. Orion is a leading innovator, applying a deep understanding of customers' needs to deliver sustainable solutions.

The company is dedicated to generating long-term benefits for all stakeholders, while remaining committed to responsible business practices with an emphasis on team culture, reliability, innovation and sustainability.

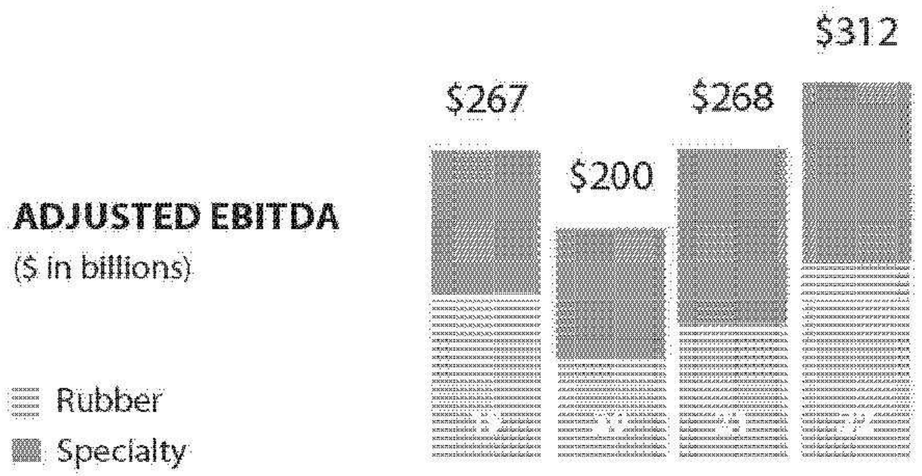
TOTAL SALES
($ in billions)



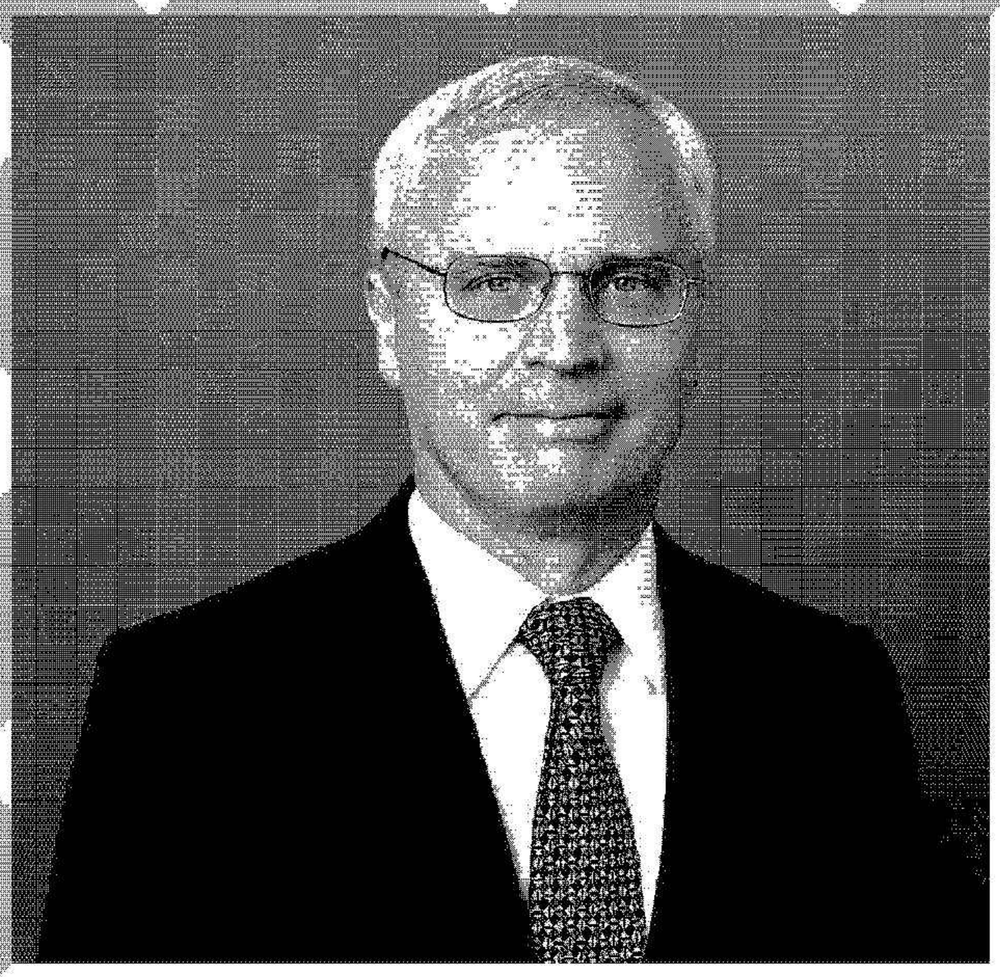
TOTAL VOLUME
(in kmt)



ADJUSTED EBITDA
($ in billions)



orion ENGINEERED CARBONS



Dear Fellow Shareholders

Corning Painter – Chief Executive Officer

Orion reached an inflection point in 2022. We eclipsed $2 billion in revenue and $300 million in adjusted EBITDA for the first time, and we see new summits on the road ahead. We accomplished these record levels due to the dedicated efforts of our 1,600+ global employees.

Our team has focused on opportunities to grow Orion, become more agile and conquer challenges head on. I also want to thank our shareholders, who are now seeing the benefit of our focus on generating strong profitable growth and free cash flow, as well as executing on high-return investments and achieving consistent high returns on invested capital.

In 2022, we grew revenue to over $2 billion, up 31 percent compared with 2021. Our adjusted EBITDA was $312 million, up $44 million versus 2021. Gross profit per ton was a record for both of our businesses.

Other key achievements in 2022 included the expansion of our Ravena, Italy, plant, which quickly sold out. Our greenfield facility in Huaibai, China, was nearly completed and already shipping sample materials in early 2023. Faced with the potential of natural gas shortages in Europe, due to the tragic war in Ukraine, our team immediately focused on and successfully engineered the ability to replace up to 40 percent of our natural gas requirements in Europe. We announced our intent to build a state-of-the-art Kappa conductive additive plant in LaPorte, Texas, which will provide 12,000 tons of high-purity conductive carbon black to be used in lithium-ion batteries, electrical grid upgrades and other key end markets in 2025. The production site will replicate the success of our plant in Berre-l'Etang, France. Finally, with our Borger, Texas, plant upgrade now online, we were the first carbon black producer to complete three air emission control plant projects in the United States. We have one more plant to complete in Belpre, Ohio, which we expect to complete in the second half of 2023.

LOOKING FORWARD

Our success in 2022 is the cumulation of many years of foundation building. As successful as 2022 has been for us, I am excited about what is next. At our first-ever Investor Day in June, we introduced a $500 million adjusted EBITDA mid-cycle earnings capacity target for 2025. I remain committed to and confident of achieving this goal. Those who attended in person or virtually met some of the executive management team at that event and saw the leadership depth we have built. We discussed key areas of our innovation team's work and provided an in-depth view of our Specialty and Rubber businesses. Along with the $500 million target, we also provided guideposts for strong discretionary and free cash flow generation over the next three years. We expect to generate $700 million to $800 million of discretionary, and $400 million to $500 million of free cash flow over the next three years. We plan to use this cash to reinvest in the company, improve our balance sheet and return cash to shareholders. Our ongoing capital spending is focused on growth markets, improving returns on our existing plants and innovation for new products and key end markets. Our balance sheet is strong and will continue to be. Finally, in late 2022, we announced a $50 million share buyback, which we expect to complete in 2023.

Our Americas and EMEA Rubber contract negotiations were completed with substantial pricing and commercial term improvements, which were necessary to achieve a return on the significant capital upgrades required for our plants. We and our shareholders deserve to achieve an acceptable return on these investments. The Rubber gross profit increased to a record $336 per metric ton in 2022 and we expect to achieve a larger increase in 2023. I believe the Rubber business has permanently moved to a new level of profitability, one that supports our ability to invest in our business and support our customers with differentiated solutions.

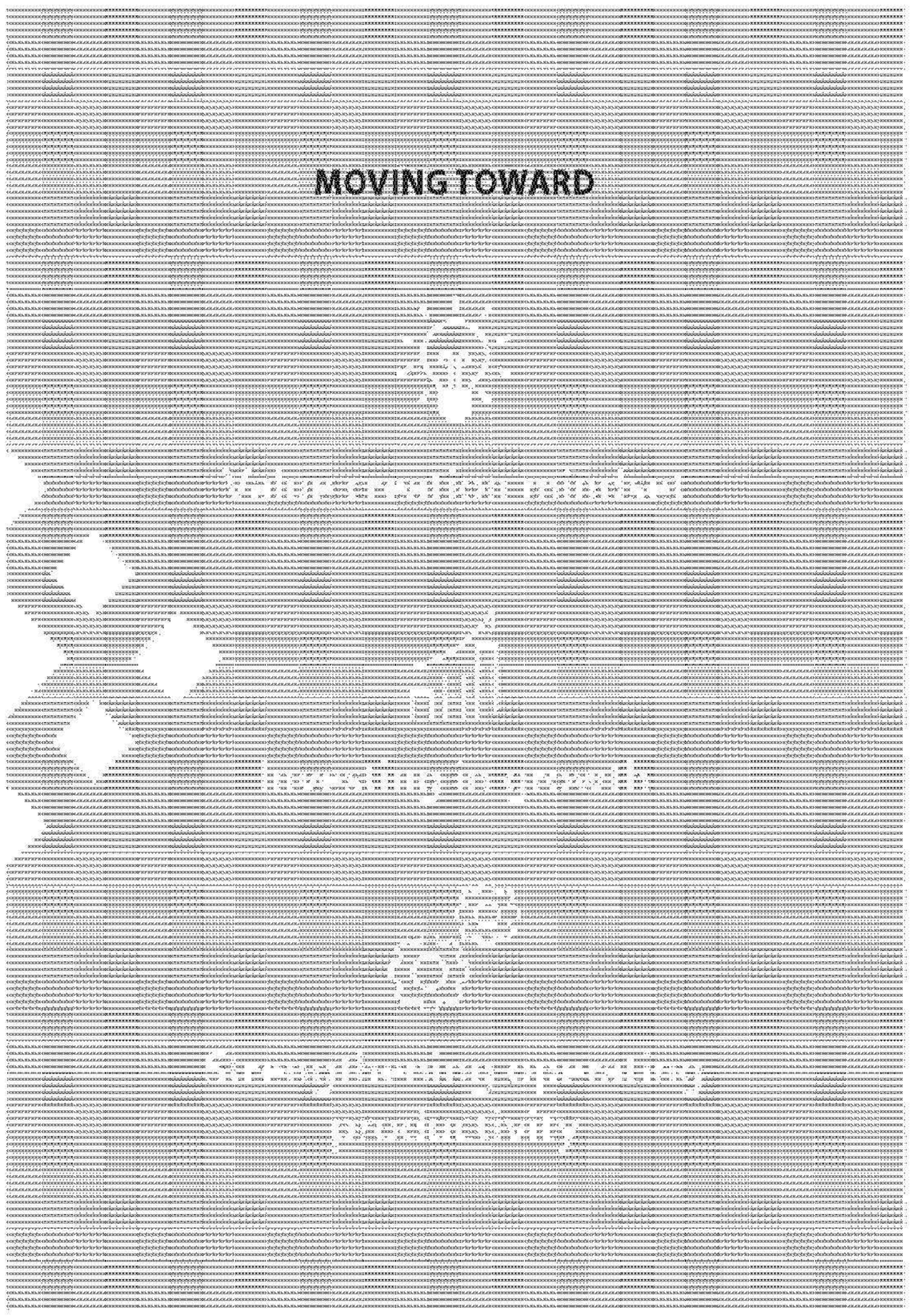
MOVING AWAY FROM

Constrained capital allocation due to EPA-mandated capital expenditures

Maintenance capital expenditures focused on short-term fixed cost vs. long-term cost of ownership

Focus on managing for liquidity

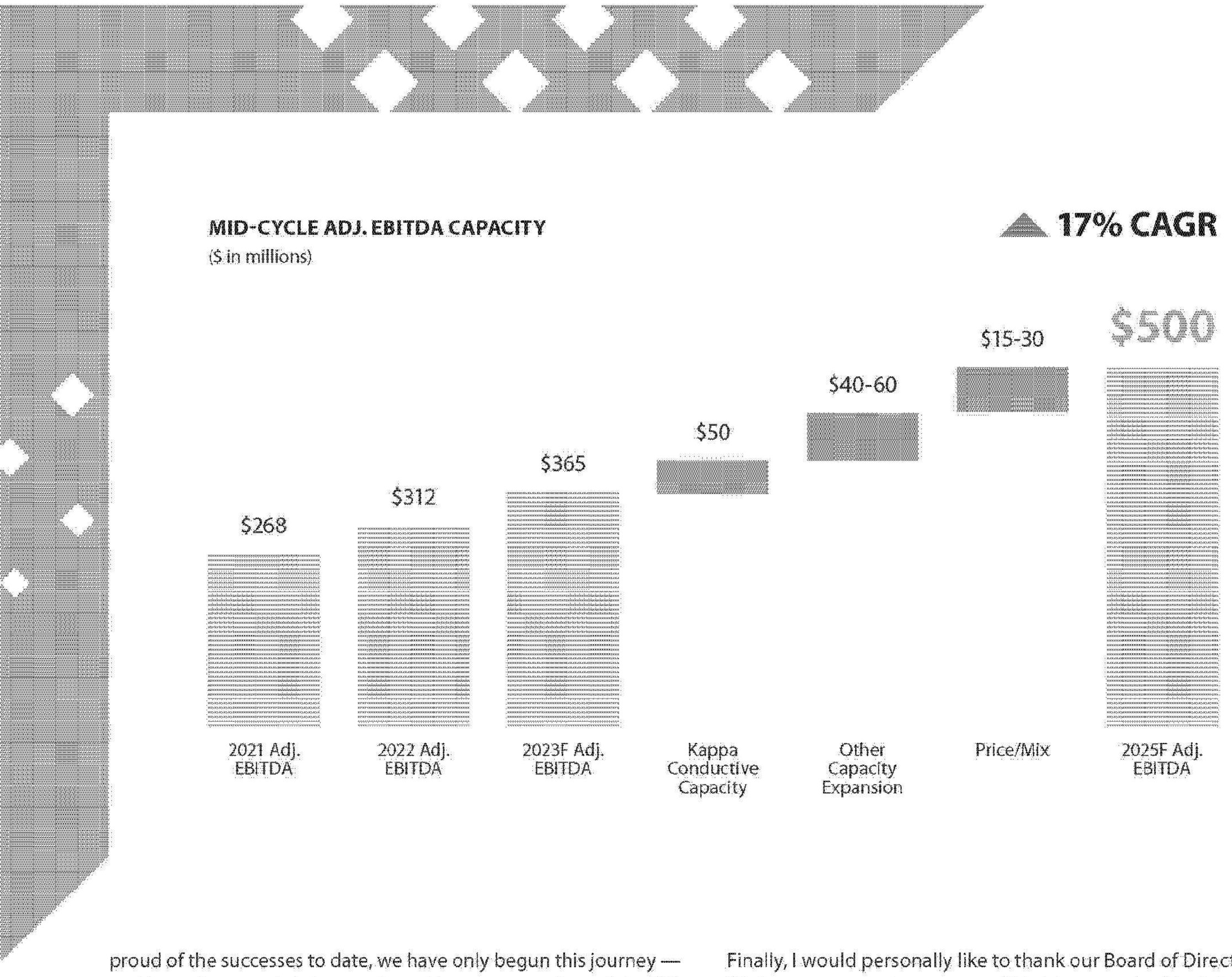
MOVING TOWARD



Our Specialty business made strong gains in 2022, a record at $897 gross profit per metric ton, at the same time global economies and key end markets for our products weakened, leading to reduced volumes. However, our high-end and highly differentiated products achieved our target of over $200 million in revenue at 40 percent EBITDA margins, generating more than $80 million of adjusted EBITDA.

We have also recently stepped up our investment in people and their capabilities. We expect all our employees to grow and expand their skills. In May 2022, we had our first global leadership development event, with over 100 leaders participating. In 2023, we will expand our learning program deeper into the organization. As a global business with leadership positioned around the world, we are focused on diversity within our workforce. I am proud of our workforce inclusion, especially our gender, national, ethnic, cultural and thought diversity. We want the best ideas from all our employees. It is those ideas that will make us even stronger in the future. We continue to add to this strength, creating new roles and attracting talent — including Jeff Glajch, our chief financial officer who joined us in 2022.

I am committed to ensuring that we are an industry leader in "sustainable sustainability." By that, I mean things that will not go out of fashion with shifting public perceptions: environmentally sound products that people want to buy, good governance, transparency, effective community support and a positive workplace. In 2022, we successfully achieved International Sustainability and Carbon Certification (ISCC Plus) for multiple grades of carbon black across two continents. We improved our EcoVadis score, a very comprehensive measure, significantly over the past four years and achieved Gold status. We are in the top 1 percent of all companies graded. Additionally, we were upgraded to a score of B by CDP, a non-profit group that measures environmental impact. While I am



proud of the successes to date, we have only begun this journey — and I remain committed to continued improvement in sustainability and profitability during the process.

Our current and future investments will continue to drive our growth well beyond our 2025 $500 million EBITDA goal. We see further opportunities to expand in the electronic vehicle battery-driven Kappa conductive additive market. In addition, the market possibilities in evolving areas, such as circular carbon black, are critical to our long-term success. In these and other key areas, our innovation team is staffed with top industry experts, and I am confident they will continue to generate scientific breakthroughs to meet our customers' requirements.

I see an exciting future for the company. I have spent the past four years positioning us to where we are today. We have laid the foundation for sustained profitable growth, strong free cash flow and exceptional returns for our shareholders. I especially want to thank our long-term shareholders for staying with us through this journey and I believe you will now see the rewards of your loyalty. The next phase of the journey is upon us. I expect to achieve strong growth in profitability and cash flow over each of the next three years as discussed at our Investor Day. This is only the start. We aspire to achieve long-term sustainable growth resulting in consistent shareholder returns.

Finally, I would personally like to thank our Board of Directors. We have a tremendous group of highly competent individuals on the Board. We were fortunate to add Tony Davis in 2022, a well-respected investor with a focus on ESG who brings a great perspective to the team. The counsel that our nine independent directors provide to me and our leadership team is invaluable.

Thank you and I hope you are all with us throughout 2023 and beyond.

Sincerely,

Corning Painter
Chief Executive Officer

UNITED STATES SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(D) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2022

OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from _____ to _____

Commission file number 001-36563

ORION ENGINEERED CARBONS S.A.

(Exact name of registrant as specified in its charter)

Grand Duchy of Luxembourg			**00-0000000**
(State or other jurisdiction of incorporation or organization)			(I.R.S. Employer Identification No.)
1700 City Plaza Drive, Suite 300	**Spring**	**Texas**	**77389**
(Address of Principal Executive Offices)			(Zip Code)

(281) 318-2959

Registrant's telephone number, including area code

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Shares, no par value	OEC	New York Stock Exchange

Securities registered pursuant to section 12(g) of the Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☒ No ☐

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☒

Indicate by check mark whether the registrant: (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports); and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has electronically submitted every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer", "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer ☒ Accelerated filer ☐ Non-accelerated filer ☐ Smaller reporting company ☐ Emerging growth company ☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Indicate by check mark whether the Registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☒

If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements of the registrant included in the filing reflect the correction of an error to previously issued financial statements. ☐

Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to §240.10D-1(b). ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes ☐ No ☒

The aggregate market value of voting and non-voting common equity held by non-affiliates, based upon the closing price for the common shares, as reported on the New York Stock Exchange on the last business day of the registrant's most recently completed second fiscal quarter, of $15.53, was approximately $0.94 billion.

The registrant had outstanding 59,980,996 shares of common stock as of February 17, 2023.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Company's 2023 Proxy Statement, in connection with the Company's 2023 Annual Meeting of Shareholders (in Part III), as indicated herein.

Orion Engineered Carbons S.A.

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Orion Engineered Carbons S.A.

Cautionary Statement for the Purposes of the "Safe Harbor" Provisions of the Private Securities Litigation Reform Act of 1995

This report contains and refers to certain forward-looking statements with respect to our financial condition, results of operations and business. These statements constitute forward-looking statements within the meaning of Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"). Forward-looking statements are statements of future expectations that are based on management's current expectations and assumptions and involve known and unknown risks and uncertainties that could cause actual results, performance or events to differ materially from those expressed or implied in these statements. Forward-looking statements include, among others, statements concerning the potential exposure to market risks, statements expressing management's expectations, beliefs, estimates, forecasts, projections and assumptions and statements that are not limited to statements of historical or present facts or conditions.

Forward-looking statements are typically identified by words such as "anticipate," "assume," "assure," "believe," "confident," "could," "estimate," "expect," "intend," "may," "plan," "objectives," "outlook," "probably," "project," "will," "seek," "target," "to be," and other words of similar meaning. These forward-looking statements include, without limitation, statements about the following matters:

- our strategies for (i) strengthening our position in Specialty Carbon Black or and Rubber Carbon Black, (ii) increasing our Specialty or Rubber Carbon Black margins and (iii) strengthening the competitiveness of our operations;
- our cash flow projections;
- the installation and operation of pollution control technology in our United States ("U.S.") manufacturing facilities pursuant to the U.S. Environmental Protection Agency ("EPA") consent decree described herein;
- the outcome of any in-progress, pending or possible litigation or regulatory proceedings;
- the expectations regarding environmental-related costs and liabilities;
- the expectations regarding the performance of our industry and the global economy, including with respect to foreign currency rates;
- the sufficiency of our cash on hand and cash provided by operating activities and borrowings to pay our operating expenses, satisfy our debt obligations and fund capital expenditures;
- the ability to pay dividends;
- the ability to have access to new debt providers;
- our anticipated spending on, and the timely completion and anticipated impacts of, capital projects including growth projects, emission reduction projects and the construction of new plants;
- our projections and expectations for pricing, financial results and performance in 2023 and beyond;
- the status of contract negotiations with counterparties and the impact of new contracts on our growth;
- the implementation of our natural gas and other raw material consumption reduction contingency plan;
- the demand for our specialty products;
- our expectation that the markets we serve will continue to remain stable or grow; and
- our ability to mitigate the impacts of the outbreak of COVID-19 and variances thereof.

All these forward-looking statements are based on estimates and assumptions that, although believed to be reasonable, are inherently uncertain. Therefore, undue reliance should not be placed upon any forward-looking statements. There are important factors that could cause actual results to differ materially from those contemplated by such forward-looking statements. These factors include, among others:

- the negative or uncertain worldwide economic conditions and developments;
- the volatility and cyclicality of the industries in which we operate;
- the operational risks inherent in chemicals manufacturing, including disruptions due to technical facilities, severe weather conditions or natural disasters;
- our dependence on major customers and suppliers;
- the unanticipated fluctuations in demand for our specialty products, including due to factors beyond our control;
- our ability to compete in the industries and markets in which we operate;
- our ability to address changes in the nature of future transportation and mobility concepts which may impact our customers and our business;
- our ability to develop new products and technologies successfully and the availability of substitutes for our products;
- our ability to implement our business strategies;
- our ability to respond to changes in feedstock prices and quality;
- our ability to realize benefits from investments, joint ventures, acquisitions or alliances;
- our ability to negotiate with counterparties on terms satisfactory to us, the satisfactory performance by such counterparties of their obligations to us, as well as our ability to meet our performance obligations towards such counterparties;

- our ability to realize benefits from planned plant capacity expansions and site development projects and impacts of potential delays to such expansions and projects;
- our information technology systems failures, network disruptions and breaches of data security;
- our relationships with our workforce, including negotiations with labor unions, strikes and work stoppages;
- our ability to recruit or retain key management and personnel;
- our exposure to political or country risks inherent in doing business in some countries;
- any and all impacts from the Russian war against Ukraine and/or any escalation thereof as well as related energy shortages or other economic or physical impairments or disruptions;
- the geopolitical events in the European Union ("EU"), relations amongst the EU member states as well as future relations between the EU and other countries and organizations;
- the environmental, health and safety regulations, including nanomaterial and greenhouse gas emissions regulations, and the related costs of maintaining compliance and addressing liabilities;
- the possible future investigations and enforcement actions by governmental, supranational agencies or other organizations;
- our operations as a company in the chemical sector, including the related risks of leaks, fires and toxic releases;
- the market and regulatory changes that may affect our ability to sell or otherwise benefit from co-generated energy;
- any litigation or legal proceedings, including product liability, environmental or asbestos related claims;
- our ability to protect our intellectual property rights and know-how;
- our ability to generate the funds required to service our debt and finance our operations;
- any fluctuations in foreign currency exchange and interest rates;
- the availability and efficiency of hedging;
- any changes in international and local economic conditions, including with regard to the dollar and the euro, dislocations in credit and capital markets and inflation or deflation;
- the effects of the COVID-19 pandemic on our business and results of operations;
- the potential impairments or write-offs of certain assets;
- any required increases in our pension fund contributions;
- the adequacy of our insurance coverage;
- any changes in our jurisdictional earnings mix or in the tax laws or accepted interpretations of tax laws in those jurisdictions;
- any challenges to our decisions and assumptions in assessing and complying with our tax obligations; and
- the potential difficulty in obtaining or enforcing judgments or bringing legal actions against Orion Engineered Carbons S.A. (a Luxembourg incorporated entity) in the U.S. or elsewhere outside Luxembourg;
- any current or future changes to disclosure requirements and obligations, related audit requirements and our ability to comply with such obligations and requirements.

It is not possible for our management to predict all risk factors and uncertainties, nor can we assess the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements. For further information regarding factors that could affect our business and financial results and the related forward-looking statements, see "*Item 1A. Risk Factors.*"

Orion Engineered Carbons S.A

PART I

Item 1. Business

Overview

Orion Engineered Carbons S.A. ("Orion", "Company", "we", "our", or "OEC") is a Luxembourg joint stock corporation (*société anonyme* or S.A.), incorporated on July 28, 2014 as a Luxembourg limited liability company (*société à responsabilité limitée*). Our registered office is located at 6, Route de Trèves, L-2633 Senningerberg (Municipality of Niederanven), Grand Duchy of Luxembourg. Our principal executive office is located in Spring, Texas, U.S.

We are a leading global manufacturer of carbon black products. Carbon black is a powdered form of carbon that is used to create the desired physical, electrical and optical qualities of various materials. Carbon black products are primarily used as additives for the production of polymers, batteries, printing inks and coatings ("Specialty Carbon Black" or "Specialty") and in the reinforcement of rubber polymers ("Rubber Carbon Black" or "Rubber"). Our core competencies include the ability to engineer the physical properties of carbon black to meet the functional needs of our customers. The Company is one of the largest global producers of Specialty and Rubber Carbon Black.

We currently operate 14 wholly owned production facilities in Europe, North and South America, South Africa, and Asia, including Huaibei, China (to begin commercial production in 2023), and one jointly-owned production facility at Dortmund, Germany. In addition to our headquarters in Luxembourg, we have our principal executive office in Spring, Texas (U.S.), as well as offices in Frankfurt (Germany), Cologne (Germany), Shanghai (China), Seoul (South Korea), Tokyo (Japan) and other locations. Our principal research and development ("R&D") center is located in Cologne (Germany). We also have laboratories to support our customers in Carlstadt, New Jersey (U.S.), Shanghai (China) and Yeosu (South Korea).

We are a premium supplier of carbon black generating long-term benefits for stakeholders while remaining committed to responsible business practices with a focus on team culture, reliability, quality and sustainability.

Our business is organized into two reportable segments: Specialty Carbon Black and Rubber Carbon Black. Our business segments are discussed in more detail later in this section.

Our internet address is www.orioncarbons.com. We make available free of charge on or through our website, our Annual Reports in Form 10-K, Quarterly Reports in Form 10-Q, current reports in Form 8-K, and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act as soon as reasonably practicable after electronically filing such material with, or furnishing it to, the U.S. Securities and Exchange Commission ("SEC"). Information appearing on our website is not a part of, and is not incorporated in, this Annual Report in Form 10-K.

Products and Applications

Carbon black is manufactured in a highly controlled process to produce particles and aggregates of varied structure and surface chemistry, resulting in many different performance characteristics for a wide variety of applications.

Specialty Carbon Black

The Company manufactures Specialty Carbon Black for a broad range of specialized applications such as polymers, batteries, printing and coatings. The various production processes result in a wide range of different Specialty Carbon Black grades with respect to their primary particle size, structure, surface area and surface chemistry. These parameters affect jetness, tinting strength, undertone, dispersibility, electrical conductivity and other characteristics. Carbon black is an additive that enhances the physical, electrical and optical properties of our customer's end products.

We have several post-treated Specialty Carbon Black grades for coatings and printing applications, as well as several high purity carbon black grades for the fiber industry and conductive carbon black grades for polymers, coatings and new markets, such as for battery electrodes. Our specialty grades of carbon black are used to impart color, provide rheology control, enhance conductivity and static charge control, provide UV protection, enhance mechanical properties and provide formulation flexibility through surface treatment. These specialty carbon products are used in a wide variety of applications, such as coatings, inks, plastics, adhesives, toners and batteries.

a. <u>Products</u>

i. ***Carbon Black for Coatings***—We offer a broad range of Specialty Carbon Black products for coatings, which includes products used for pigmentation in black coatings and protection of various other coatings (e.g., automotive base coats and architectural coatings), for conductivity and for tinting, as well as for paints and for light tinting in transparent coatings (e.g., metallic effects and wood glazing). The diversity of our manufacturing processes allows for the creation of a wide range of Specialty Carbon Black grades with different structures and chemical properties, thereby allowing our products to impart unique characteristics to our customers' products.

ii. ***Carbon Black for Polymers***—We offer Specialty Carbon Black for polymers in a diverse range of end markets including pipe (e.g., gas, oil, municipal water, sewage), construction, energy distribution (e.g., power cables), automotive, agriculture and consumer packaging. Certain products within this portfolio provide UV protection against polymer degradation for material such as pipe used for potable water, injection molding, agriculture films and cables. Other products include standard- to high-performance grades designed and modified to provide electrical conductivity, antistatic and reinforcing properties to many different polymer applications, including high-voltage cables, film and high-pressure pipes.

iii. ***Carbon Black for Printing***—We offer Specialty Carbon Black for printing inks used in different printing systems and applications. We apply different process technologies to offer highly specialized products meeting specific requirements, including compliance with food-contact regulations and specially formulated products that require unique attributes such as color undertone, optical density and gloss.

iv. ***Carbon Black for Batteries***—We also offer Specialty Carbon Black for wide range of energy storage applications such as lead-acid batteries, dry cells, supercapacitors and lithium-ion batteries. The products, which are manufactured in different production processes, function as high purity additives to provide electrical conductivity to increase the performance of batteries.

b. Competition

We are one of the largest global producers of Specialty Carbon Black. There are two other large global producers of Specialty Carbon Black. As a top three producer of Specialty Carbon Black, we leverage R&D and applications technology platforms to tailor products to customer needs and to introduce our products into new application niches.

Rubber Carbon Black

Our Rubber Carbon Black products are used in tires and mechanical rubber goods ("MRG"). Rubber Carbon Black are used to enhance the physical properties of the systems and applications in which they are incorporated. Rubber Carbon Black have traditionally been used in the tire industry as a rubber reinforcing agent to increase tread durability and are also used as a performance additive to reduce rolling resistance and improve traction. In MRG, such as hoses, belts, extruded profiles and molded goods, Rubber Carbon Black are used to improve the physical performance of the product, including the product's physical strength, fluid resistance, conductivity and resistivity.

a. Products

i. ***Carbon Black for Tires***—We offer a broad range of carbon black products for tires, which includes high reinforcing grades and semi-reinforcing grades. Fine particle reinforcing grade carbon black is used mostly in the tread of tires. Other reinforcing grade carbon black is also used in different components of the tire carcass. In addition to standardized grades, we produce advanced grades tailored to meet specific customer performance requirements, such as ECORAX® grades designed to lower rolling resistance and high-performance grades for truck tires and high- and ultra-high-performance passenger car tires.

ii. ***Carbon Black for Mechanical Rubber Goods***—We produce a wide range of carbon black products for a variety of MRG end-uses, including automotive production, construction, as well as certain food, consumer and medical applications. These grades have an exceptionally high purity and high consistency and satisfy special requirements needed for smooth surfaces and electrical resistance. These grades also disperse well in rubber compounds used in parts like window seals, automotive hoses, transmission belts, damping elements and electrically conductive and antistatic rubber goods.

b. Competition

We are one of the leading global producers of Rubber Carbon Black. We compete with two other global companies and multiple regional companies. The smaller regional suppliers mainly participate in standard and MRG applications and are less likely to provide specialized products used in higher end tire and MRG applications. Competition for our Rubber Carbon Black products is generally based on product quality and performance, technical innovation and customer service.

Drivers of Demand

Besides general global economic conditions, certain specific drivers of demand for carbon black differ among our operating segments. Specialty Carbon Black has a wide variety of end-uses and demand is largely driven by the growth and development of the coatings, polymers, printing and battery industries. Demand for Specialty Carbon Black in the coatings and polymers industries is mainly influenced by the levels of industrialization, automobile original equipment manufacturer ("OEM") demand, infrastructure development, consumer spending and construction activity. Demand for Specialty Carbon Black in the printing industry is mainly influenced by developments in print media and packaging materials. Demand for Specialty Carbon Black in the batteries industry is driven by electric vehicle penetration, growth of consumer and industrial batteries, and energy storage systems. Demand for Rubber Carbon Black is largely driven by the growth and development of the automotive tire, commercial tire and MRG industries. Demand for Rubber Carbon Black in tires is mainly influenced by the number of replacement and original equipment tires produced, which in turn is driven by (i) the number of miles driven, (ii) vehicle trends, including the number of vehicles produced and registered, (iii) demand for larger vehicles, such as trucks and buses, (iv) demand for high-performance tires, (v) consumer and industrial spending on new vehicles, and (vi) changes in regulatory requirements.

Demand for Rubber Carbon Black in MRG is mainly influenced by vehicle production and design trends, construction activity and general industrial production.

Demand in the developed Western European and North American regions is mainly driven by demographic changes, customers' high-quality requirements, truck freight activity, stringent tire regulation standards and relatively stable tire replacement demand. Demand in developing markets, such as China, Southeastern Asia, South America and Eastern Europe, is mainly driven by the growing middle class, rapid industrialization, infrastructure spending and increasing car ownership trends. The growth in vehicle production in turn drives demand for both original equipment tire manufacturing and replacement tires in developing regions.

Customer Contracts

Most of our long-term contracts, 12 months or longer, contain formula-driven price adjustment mechanisms for changes in raw material and/or energy costs. We sell carbon black under the following two main categories of contracts based on price adjustment mechanisms:

- *Contracts with feedstock adjustments (indexed contracts)*—This category includes contracts with monthly or, in some cases, quarterly automatic feedstock and/or energy cost adjustments, which cover approximately 70% of our global volumes;
- *Non-indexed contracts*—This category includes short-term contracts (usually shorter than three months) where sales prices of our carbon black products are not linked to carbon black oil market prices.

Many of our indexed contracts allow for periodic price adjustments, while a small portion (by volume sold) allow for quarterly price adjustments. These contracts have enabled us to reduce the impact of fluctuations in oil prices on our margins; however, rapid and significant oil price fluctuations have had and are likely to continue to have significant effects on our earnings and results of operations given (i) not all contracts contain price adjustment mechanisms and (ii) the value of our productivity improvements rises and falls with oil price movements.

See *"Item 1A. Risk Factors—Risks Related to Our Business"—We are subject to volatility in the costs, quality and availability of raw materials and energy, which could decrease our production volumes and margins and adversely affect our business, financial condition, results of operations and cash flows.* Sales prices under non-indexed contracts are reviewed on a regular basis to reflect raw material and energy price fluctuations as well as overall market conditions.

Raw Materials

The principal raw material used in the manufacture of carbon black is carbon black oil comprised of residual heavy oils derived from petroleum refining operations, the distillation of coal tars and the production of ethylene throughout the world. The majority of our carbon black oil supply is covered by short and long-term contracts with a wide variety of suppliers. Natural gas is also used in the production of carbon black. These raw material costs generally are influenced by the availability of various types of carbon black feedstock and natural gas, supply and demand of such raw materials and related transportation costs. Changes in our raw material supplier's operating conditions and demand for their products could reduce the availability of certain very specialized feedstocks.

Seasonality

Our business is generally not seasonal in nature, although our results of operations are generally weaker in the last three months of a calendar year.

Innovation

We enjoy a long-standing reputation within the industry for carbon black product and process technology, applications knowledge and innovation. Carbon black products are highly versatile and meet specific performance requirements across many industries. This creates significant opportunities for product and process innovation. Further product innovations are a key competitive factor in the industry, even after decades of R&D in this field.

We maintain product applications and process development centers in Europe, Asia and the Americas. Our Innovation Group is divided into applications technology and process development teams, which cover both Specialty Carbon Black and Rubber Carbon Black. The applications technology team works closely with our major clients to develop innovative products and expand the applications range for carbon black products. The process development team works closely with our manufacturing and procurement teams to improve production processes, product quality and cost structure.

Our Innovation function's leading center of excellence is located in Cologne (Germany) to support and enhance our global innovation function or R&D activities. This center includes applications technology laboratories and process development staff, co-located with our pilot process development facilities. Staffing in our Cologne technical center includes physicists, chemists and engineers who can effectively and efficiently collaborate to create and analyze various carbon black properties with a goal to develop new products to meet customer requirements. Common processes and information technology tools further enhance coordination and communication with our regional technical centers located in China, South Korea and the U.S.

- ***Applications Technology***—Our goal is to remain at the forefront of the industry in terms of product development by having dedicated applications technology facilities. Success relies on close collaboration with customers, often through long-term R&D alliances, which create superior technical interfaces. These interactions enable us to develop tailored solutions and meet unique customer requirements.

  Our applications technology team brings together a deep knowledge of carbon black technology with an understanding of the key applications practiced by our customers. This team has access to extensive laboratory and testing facilities using similar formulations, processing and test methods employed by our customers. Customer collaborations often include cooperative testing with customers' staff in our facilities. Applications technology provides a key customer and market interface and translates specific customer needs into carbon black product attributes.

  Applications technology plays a supporting role in the process of new product launches by providing technical data and presentations, training and support, and establishing and monitoring quality targets. This team works closely with customers to provide support during the qualification cycle, which can be long and may last over one year. This close cooperation decreases the likelihood of customers switching suppliers once a product has been approved.

  Product quality test methods and applications testing are defined within the applications technology team. Methods are developed centrally and deployed worldwide to relevant production and applications laboratories to assure consistency in measurements and reporting.

- ***Intellectual Property***—We consider intellectual property development and management as a source of strategic competitive advantage. We initiate and maintain patents and trademarks, with varying expiration dates, on a number of our products and processes. We sell our products under a variety of patents and trademarks we own and we take reasonable measures to protect them.

  In connection with the separation of our business from *Evonik Industries AG, Germany* ("Evonik"), Evonik assigned to us its intellectual property that was exclusively used in its carbon black business and granted certain intellectual property rights that are still also in use in Evonik's retained business in turn for us granting certain intellectual property rights to Evonik for fields outside of carbon black. Consequently, we may be restricted in leveraging intellectual property that we use on the basis of a license from Evonik or the intellectual property that is subject to grant-back licenses when expanding our business into fields outside of carbon black. For additional information, see "*Item 1A. Risk Factors—Legal and Regulatory Risks—We may not be able to protect our intellectual property rights successfully.*"

Human Capital

We are a group of individuals who share one common passion: carbon black. Our success depends on attracting, recruiting, training and developing a diverse, talented global workforce. We are committed to providing our employees with opportunities for learning and career growth in an environment where their knowledge and inputs are valued and creativity and innovation are encouraged. To this end, our aspiration is to be the employer of choice in our industry and the communities where we are located.

Aligning employee engagement and enablement remains a key component for the continued success of Orion. We have built a value system around a foundation of appreciating our employees through trust, respect and development. To ensure our employees are both motivated to do their work and equipped with the right tools and training to be successful, we start with listening. We use employee surveys and feedback sessions to help ensure all the voices of our employees are heard. We continue to use the feedback from our employee surveys and other feedback sessions to prioritize our human capital strategy and continue to upgrade our talent management programs, focusing on specific actions to improve learning and to promote employee development and career growth. Our talent programs are made up of several components:

- formal learning programs to equip individual employees with the technical and functional skills required for their current and future roles;
- on-the-job training through assignments that provide new roles and projects;
- formal and informal mentoring programs;
- succession planning;
- formal and informal performance reviews with line managers and others; and
- individual development plans.

Orion is made up of approximately 1,600 employees with manufacturing plants, laboratories and offices in 24 locations across 13 countries in three regions (Americas, Asia/Pacific ("APAC") and Europe/Middle East/Africa ("EMEA")). Inspiring the entire Orion workforce to function as one team is critical to our success. We believe this is possible when we accept and value each individual. Indeed, valuing people is one of Orion's core values, which define who we are and the expectation we have of all Orion colleagues in our interactions with other employees, customers, suppliers and within the communities where we operate. Building on this foundation, we value our people

irrespective of their nationality, race, gender, citizenship status, ethnic origin, sexual orientation, gender identification, religion or philosophy, disability and age, among others; and we strive to put this into practice when hiring, developing and retaining talent.

A focus on promoting from within has led to continued increases in internal fill rates for open positions and the involvement of business leaders across the organization in talent reviews to assess employees on performance and future potential. These talent reviews continue to identify high potential employees, build bench strength, increase retention and help us identify our future leaders and innovators. These reviews also allow us to identify gaps in our organization and the actions needed to fill those gaps.

We uphold the freedom of association and fully recognize the right of collective bargaining. Certain of our employees worldwide are represented through unions and works councils. We value exchanging information and views with the local unions and works councils with the view to finding solutions to our common issues and ensuring success for both our employees and the Company.

Labor Relations

Our employees are represented by labor unions, industry groups and works councils in accordance with local law and practices. Membership in employee labor unions varies in accordance with the business area, local practice and country. We have entered into collective bargaining agreements with employee labor unions either directly or as members of industry-wide unions or employer organizations. Approximately 70% of our employees are covered by such agreements. These agreements typically govern, among other things, terms and conditions of employment and reflect the prevailing practices in each country. We believe we have stable relations with our employees and voluntary turnover is low.

In 2017, 35 of the former employees in our closed facility in Ambès, France filed claims with the labor court of Bordeaux contesting the termination of their employment and seeking damages. Of these claims 30 are pending in the courts and our results of operations reflect accruals made by us to satisfy our best estimate of these claims should the former employees prevail.

Environmental, Health and Safety Matters

Protection of people and the environment, fair treatment of our partners and a clear alignment to our customers' needs are essential components of our activities. We strive not only to comply with all applicable laws and voluntary obligations, but to continuously improve our performance and management systems. Our integrated global management system with established standards and processes is based on the principles of the Responsible Care, International Organization for Standardization's ("ISO") 9001 Quality Management System, ISO 14001 Environmental Management Systems and ISO 45001 Safety Management Systems. All of our operating sites are third-party certified to ISO 14001 and ISO 9001 standards. Our global management system outlines our processes and procedures practiced in relation to environmental protection, occupational safety, industrial hygiene and quality management as well as sustainable compliance and product stewardship.

Our annual sustainability report is accessible on our webpage: www.orioncarbons.com. Our sustainability report is not incorporated by reference into this Annual Report in Form 10-K.

Our operations involve the use, processing, handling, storage and transportation of materials that are subject to international, national and local environmental and safety laws and regulations. All of our production facilities require operating permits. We believe that our operations are currently in substantial compliance with all applicable environmental, health and safety laws and regulations. Our management systems and practices are designed to ensure compliance with laws and regulations, and increasingly stringent regulation may require us to make additional unforeseen environmental, health and safety expenditures.

Environmental

Air Quality—One of the main environmental challenges of a carbon black plant is the management of exhaust gas from production processes. This exhaust gas contains a number of regulated pollutants, including carbon monoxide, nitrogen oxides and sulfur compounds. The most common method for controlling these gases is through combustion, which produces useable energy as a by-product. Currently, eight manufacturing sites, including one jointly owned production facility, have the capability to beneficially utilize these gases through some form of energy co-generation, such as the sale or reuse of steam, gas or electricity.

The primary air pollutants of concern include sulfur dioxide ("SO_2"), nitrogen oxides ("NOx") and particulates. In order to maintain compliance with emission requirements in certain jurisdictions, we utilize various desulfurization and de-NOx processes. We control the particulate matter by using bag filter technology.

In the European Union, we are subject to the EU Directive No. 2010/75/EU on industrial emissions ("IED Directive"), which regulates pollution from industrial activities and includes rules aiming to reduce emissions into air, water and land and to prevent the generation of waste. In addition to the IED Directive and its implementation, European jurisdictions in which we operate may provide for further regulations regarding emission reduction and safety technology standards that apply to our facilities (for example, the German Emissions Control Act). The EU Commission is currently revising EU measures addressing pollution from large industrial installations, as announced in the European Green Deal. The aims of the revision are to progress towards the EU's zero pollution ambition for a toxic-free environment and to support climate, energy and circular economy policies. This includes the revision of the IED Directive.

In the U.S., we are subject to emissions limitations on prevention of significant deterioration ("PSD") permits issued under the federal Clean Air Act ("CAA") and a consent decree ("CD") entered into with the U.S. Environmental Protection Agency ("EPA"), as well as analogous state and local laws, which regulate the emission of air pollutants from our facilities and impose significant monitoring, record keeping and reporting requirements. See "Note Q. *Commitments and Contingencies*" to the Company's audited financial statements included in this Annual Report in Form 10-K for a description of the EPA CD. In addition, these laws and regulations require us to obtain pre-approval for the construction or modification of facilities expected to produce or significantly increase air emissions and to obtain and comply with air permits that include stringent conditions on air emissions and operations. In certain cases, we may need to incur capital and operating expenditures for specific equipment or technologies to control emissions. We have incurred, and expect to continue to incur, substantial administrative and capital expenditures to maintain compliance with CAA requirements.

Pursuant to the CAA, the EPA has developed industry-specific National Emission Standards for Hazardous Air Pollutants ("NESHAPs") for stationary sources classified as "major" on the basis of their hazardous air pollutant emissions. Under these, we are required to comply with Maximum Achievable Control Technology ("MACT") standards. Our U.S. facilities are subject to MACT standards applicable to carbon black facilities, as well as MACT standards applicable to industrial boilers. The EPA amended existing carbon black MACT standards, which increased stack testing frequency and imposed more stringent startup and operating requirements for our U.S. plants. The U.S. plants are generally already compliant. We are in the process of confirming that we met the EPA requirements in 2022.

In China and South Korea, our operations have been subject to increasingly strict air quality regulations in recent years. We believe we are in substantial compliance with these regulatory changes in China and South Korea. We expect that future regulations may require additional capital and operating expenditures for specific equipment or technologies to control emissions that are being developed as needed to meet these new requirements.

Greenhouse Gas Regulation and Emissions Trading—Our facilities also emit significant volumes of CO_2. In the European Union ("EU"), all of our production facilities (except for our manufacturing site in France) are subject to the European Emission Trading System ("EU ETS") for CO_2 emissions. Industrial sites to which the EU ETS applies receive a certain volume of allowances in metric tons to emit greenhouse gasses ("GHG") and must surrender allowances in equivalent volume for each metric ton of greenhouse gas ("GHG") emitted. Carbon black production is currently listed on the carbon leakage list, which allows receiving the significant share of needed emission allowances free of charge. From January 1, 2021, the EU ETS has stepped into its Phase 4 period running until 2030. However, as part of the EU Green Deal the EU has adopted a climate law enshrining its new climate targets of at least a 55% reduction in greenhouse gas emissions by 2030 compared to 1990 levels and net zero by 2050. The European Commission published its first part of the "Fit for 55" package in July 2021 to enable the EU to meet those targets. The actual EU ETS is expected to be subject to regular reviews and possible changes in order to ensure the way to achieve those climate reduction targets.

The design concept of the South Korean ETS is similar to the EU ETS. We may need to purchase emission rights to cover the shortfall where emissions exceed the quantity of free allowances, incurring additional costs.

In the United States, the EPA regulates GHG emissions under the CAA and has adopted rules that require reporting of GHG emissions by owners and operators of facilities in certain source categories, which include our facilities. At the state level, some states have already taken legal measures to reduce emissions of GHG, primarily through the planned development of GHG emission inventories and/or regional GHG cap-and-trade programs. Currently none of our plants are located in states that have implemented GHG cap-and-trade programs, but there is no assurance that future changes will not materially affect our operations or require material capital expenditures. The adoption of legislation or regulations that require reporting of GHG, establish permitting thresholds based on GHG emissions or otherwise limit or impose compliance obligations for emissions of GHG from our equipment and operations could require us to incur costs to obtain and comply with permits, reduce emissions of GHG associated with our operations or purchase carbon offsets or allowances.

There are also ongoing discussions and regulatory initiatives in other countries in which we have facilities, regarding GHG emission reduction programs. For instance, South Africa has adopted a CO_2 tax regime.

Water Quality—Our plants are net consumers of water and are generally subject to laws and regulations related to water management. Most of our plants recycle a substantial amount of the water used in the manufacturing process, which is used as "quench water" in the cooling process.

Contamination—As we handle chemicals that could cause water or soil contamination, we may be subject to remediation obligations under national laws. Additionally, third parties have in the past and may in the future be able to file claims for personal injury and property damage allegedly caused by the release of hazardous substances or other pollutants into the environment.

In particular, the German Federal Act on Soil Protection requires the prevention of soil contamination by taking adequate precautions. In the United States, our facilities are subject to the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), the Resource Conservation and Recovery Act ("RCRA") and similar state laws. CERCLA establishes liability for parties, including current and former site owners and operators, generators, and transporters, in connection with releases of hazardous substances. Under CERCLA, we may be subject to liability without regard to fault or the lawfulness of the disposal or other activity. RCRA is the principal federal statute regulating the generation, treatment, storage and disposal of hazardous and other wastes. RCRA and state hazardous waste regulations impose detailed operating, inspection, training and response standards and requirements for permitting, closure, remediation, financial responsibility, record keeping and reporting. Our sites have areas currently and formerly used as landfills that are subject to regulation under RCRA, and certain of our facilities have been investigated and remediated under RCRA. These laws and regulations may

also expose us to liability for acts that were in compliance with applicable laws at the time we performed those acts. We could incur significant costs in connection with investigation and remediation activities or claims asserted at current or former facilities or third-party sites.

Non-hazardous and Hazardous Waste—In some jurisdictions in which we operate, we are subject to provisions regarding waste management and the handling and storage of hazardous substances. We generate both hazardous and non-hazardous wastes at our facilities that we manage in accordance with applicable regulations. Waste streams generated at our facilities include but are not limited to office trash, carbon black, solvents, refractory materials, catalyst materials, and non-saleable sulfuric acid. Certain facilities have on-site landfills permitted for the disposal of non-hazardous solid waste, but we are not currently using these landfills to dispose of waste. Any waste that is not recycled or reused is managed off site in compliance with local regulations.

Chemical Regulations—Some jurisdictions we operate in have established regimes to regulate or control chemical products to ensure the safe manufacture, use and disposal of chemicals.

In the European Union, the Regulation on Registration, Evaluation, Authorization of Chemicals ("REACH") requires chemical manufacturers and importers in the European Union to register all chemicals manufactured in, or imported into the European Union in quantities of more than one metric ton annually. Registration has to be made with the European Chemicals Agency ("ECHA"), and the use of certain "highly hazardous chemicals" must be authorized by ECHA. Furthermore, REACH contains rules on bringing substances to the market that have been identified as substances of very high concern. In the United States, we are subject to federal and state chemical regulations. Under the Toxic Substances Control Act ("TSCA"), the EPA is required to maintain a list of each chemical substance that is manufactured or processed, including imports. This inventory plays a central role in the regulation of most industrial chemicals in the United States. Carbon black is listed and maintained as an active substance in the TSCA Chemical Substance Inventory, and all our facilities are subject to chemical data reporting rules ("CDR"). Under CDR we are required to submit basic exposure information to EPA every five years. In California, we are subject to the California Safe Drinking Water and Toxic Enforcement Act, which imposes labeling and record keeping requirements. In South Korea, under its Chemical Control Act, coal-based feedstock oils such as crude coal tar ("CCT"), coal tar distillate ("CTD") and soft pitch oil ("SPO") containing more than 0.1% quinoline are treated as hazardous chemicals requiring production sites to be duly licensed.

We are a member of the International Carbon Black Association (the "ICBA"). The ICBA seeks to address common environmental, health and safety issues, undertakes research on health implications of carbon black, and serves as the leading advocate for the industry in the regulatory and public-interest arenas. The ICBA funds research on international environmental, health, product safety and workplace safety matters.

We are also a member of the European consortium for carbon black ("*cb4REACH Consortium*") which has pre-registered and registered carbon black with ECHA as required by the REACH Regulation. Besides the Company, the following companies are members of the cb4REACH Consortium: Cabot Corporation, Cancarb Limited, Birla Carbon, Continental Carbon Company, Tokai Carbon CB Ltd. and Imerys Graphite & Carbon.

Health and Safety—The health and safety of our employees and customers is one of our highest priorities. We strive to continually improve and attain the top performance on occupational injury and illness rates as compared to the chemical industry. New employees and contractors working and visitors on site are given environmental, health and safety ("EHS") training, and we keep track of EHS concerns and issues from our employees. Employees are required to report incidents including "near misses" into the electronic EHS management system. Our sites are required to implement and report EHS leading and lagging indicators for EHS performance. Plant managers are required to track and monitor these leading and lagging indicators and take action as appropriate. Leading and lagging indicator data and incidents are reviewed by senior management on a monthly basis.

Product Stewardship—Carbon black is produced under controlled conditions and has high purity levels. It therefore differs from other combustion products that may contain high concentrations of hazardous compounds. Due to its high purity, certain carbon black grades are permitted for use in cosmetics or in products in contact with food.

The International Agency for Research on Cancer ("IARC") classifies carbon black as a Group 2B substance (possible human carcinogen). We have communicated IARC's classification of carbon black to our customers and employees in accordance with applicable regulatory requirements. Based on IARC's classification some regulatory jurisdictions now classify carbon black as a possible carcinogen. The Permanent Senate Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area (the "MAK Commission") of the German Research Foundation (*Deutsche Forschungsgemeinschaft*), which uses a different rating system, classifies carbon black as a suspect carcinogen (Category 3). Any risk reclassification of our raw materials, intermediates or finished product could result in increased operating costs or affect product lines or sales.

The Community Rolling Action Plan ("CoRAP") indicates substances for evaluation by the member states of the European Union. The evaluation aims to clarify the initial concern that manufacturing and/or use of shortlisted substances could pose a risk to human health or the environment. With ECHA's update of the CoRAP list in March 2016, Carbon black was included in CoRAP for substance evaluation in 2018 though such evaluation has been postponed several times. With ECHA's most recent update from December 2022, the carbon black substance evaluation is proposed to be further delayed to 2025. The substance evaluation for carbon black was proposed by France. The initial reasons of concern raised by the French Agency for Food, Environmental and Occupational Health & Safety ("ANSES") relate to carbon black being an alleged carcinogenic substance and a suspected reproduction toxicant. Orion is working as a member of the

cb4REACH Consortium and ICBA to address the reasons for nomination. The conclusion of the evaluation may have significant business impact should ANSES conclude that carbon black poses a risk to human health. A potential outcome could be a harmonized classification and labeling of carbon black for carcinogenicity and toxicity to reproduction. These developments may significantly affect our business, including increasing costs of doing business.

According to the recommendation of October 18, 2011 (EU COM 2011/696/EU), the majority of carbon black grades are defined as a nanomaterial in Europe. This status for carbon black has not changed with the most recent update of the recommendation of June 10, 2022 (2022/C 229/01). The ISO developed the ISO TC 229 "Nanotechnologies," which considers carbon black as a "nano-structured material." Other countries (such as, the U.S., Canada, France, Belgium, Sweden, Switzerland, etc.) have implemented notification schemes related to nanomaterials. In Europe, Commission Regulation (EU) 2018/1881 as of December 3, 2018 amending REACH introduced new information requirements for substances with forms meeting the definition criteria of EU COM 2011/696/EU. The notification of carbon black under the different notification schemes as well as meeting the new nano-related information requirements under REACH requires capital and resource commitments to compile and file dossiers. Furthermore, more and more specific requirements for substances regarded as nanomaterials are emerging within Europe. For example, Germany is planning to introduce a more stringent "Occupational Exposure Limit" for nanomaterials. These developments may significantly affect our business, including increasing costs of doing business.

Further Regulatory Matters

We are subject to further governmental regulation from state, national, European Union and other international regulatory authorities concerning, among other things: product safety, export and import control regulations and other customs regulations, data protection and our competitive and marketplace conduct. We believe that we are in compliance in all material respects with these regulations. We cannot guarantee, however, that any future changes in the requirements or mode of enforcement of these laws and regulations will not have a material adverse effect on our business, financial condition, results of operations or cash flows.

Item 1A. Risk Factors

The following risks may have material adverse effects on our business, financial condition and results of operations. Additional risks and uncertainties of which we are not presently aware or that we currently deem immaterial could also materially affect our business operations and financial condition.

Risks Related to Our Business

Negative or uncertain worldwide economic conditions may result in business volatility and may adversely impact our business, financial condition, results of operations and cash flows.

Our operations and performance are materially affected by worldwide economic conditions. Because carbon black is used in a diverse group of end products, demand for carbon black has historically been related to real gross domestic product ("GDP") and general global economic conditions. In particular, a large part of our sales has direct exposure to the cyclical automotive industry and, to a lesser extent, the construction industry. As a result, certain parts of our business experience a level of cyclicality. The nature of our business and our large fixed asset base make it difficult to rapidly adjust our fixed costs downward when demand for our products declines, which could materially affect our profitability. A global or regional economic downturn has in the past, and may in the future, reduce demand for our products, which would decrease our revenue and could have a material adverse effect on our business, financial condition, results of operations and cash flows. In periods with significant market turmoil and tightened credit availability, we could experience difficulties in collecting accounts receivable, pricing pressure and reduced global or local business activity.

Our customers may terminate or attempt to amend their agreements for the purchase of our products due to decline in their demand and production, bankruptcy, lack of liquidity, lack of funding, operational failures, force majeure, hardship or other reasons. The current energy, financial, economic, and capital markets environment, and future developments in these and other areas present material uncertainty and risk with respect to our performance, financial condition, volume of business, results of operations, and cash flows.

Our business is subject to operational risks, which could adversely affect our business, financial condition, results of operations and cash flows.

Our operations are subject to hazards inherent in chemicals manufacturing and the related use, storage, transportation and disposal of feedstocks, products and wastes, including, but not limited to, fires and explosions, accidents, accidental oil or products releases, severe weather and natural disasters (including hurricanes, tornadoes, ice storms, droughts, floods and earthquakes, some of which are significantly increasing in likelihood because of climate change), pandemics or epidemics, mechanical failures, unscheduled downtime at our production facilities or at facilities that supply raw materials to us, transportation interruptions, disruption to harbor-, road-, pipeline- or storage tank-access, pipeline, tank and silos leaks and ruptures, quality problems, technical difficulties, energy grid shutdowns, discharges or releases of toxic or hazardous substances or gases, other environmental risks, sabotage, acts of terrorism or other acts of violence as well as potential boycotts, strikes, sanctions or blockades.

Such events could disrupt our supply of raw materials or otherwise affect sales, production, transportation and delivery of our products or affect demand for our products. We could incur significant expenditures in connection with such operational risks. These may be caused both by external and internal factors noted above as well as war, strikes, official orders, technical interruptions, material defects, accidents

or mistakes. In all of these cases, our property, third-party property or the environment may sustain damage, or there may be human exposure to hazardous substances, personal injuries or fatalities. Such events could result in material financial liabilities, civil or criminal law consequences, the temporary or permanent closure of the relevant production or administrative sites or power plants and a negative impact on our financial condition, results of operations and cash flows.

We are dependent on major customers for a significant portion of our sales, and a significant adverse change in a customer relationship could adversely affect our business, financial condition, results of operations and cash flows.

Customer concentration is driven by the consolidated nature of the industries we serve. In 2022, our top ten customers accounted for approximately 51% of our volume measured in thousand metric tons ("kmt"). Our success in continuing to strengthen relationships and grow our business with our largest customers and retaining their business over extended time periods could affect our future results. The loss of any of our major customers (including due to industry consolidation) or a reduction in volumes sold to them, could adversely affect our results of operations. Any deterioration in the financial condition of any of our customers or the industries they operate in or serve that impairs our customers' ability to place orders or make payments to us could decrease our sales or increase our uncollectible receivables and could adversely affect our business, financial condition, results of operations and cash flows.

We may not be able to compete successfully in the industries and markets in which we operate.

The industries in which we operate are highly competitive based on price, product innovation, product quality, distribution capability, and industry and customer knowledge. We face competition from global and regional suppliers, both in developed and in emerging regions. While we aim to operate at low cost and are focused on reducing our fixed and variable cost base across our production chain, there may be improvements in the cost competitiveness of other manufacturers relative to us or in the performance properties of substitutable products and raw materials, which could result in advantages for our competitors and adversely affect our business. Furthermore, some of our competitors may have greater financial and other resources, enhanced access to governmental funding and a larger capitalization than we have. If we are unable to respond successfully to changing competitive conditions, the demand for our products could be adversely affected which could have a material adverse effect on our business, financial condition, results of operations and cash flows.

We may not successfully develop new products and technologies that address our customers' changing requirements or competitive challenges, and our customers may substitute our products by using other products we do not offer.

The industries into which we sell our products are subject to periodic technological changes, ongoing product improvements, product substitution and changes in customer requirements. Increased competition from existing or newly developed products offered by our competitors or companies whose products offer a similar or better functionality to our products may negatively affect demand for our products. We work to identify, develop and market innovative products on a timely basis to meet our customers' changing requirements and competitive challenges. Should we not be able to substantially maintain or further develop our product portfolio, customers may elect to source comparable or other products from competitors, which could adversely affect our business, financial condition, results of operations and cash flows.

Although carbon black continues to offer opportunities for product and process innovation, we cannot be certain that the investments we make in our innovations will result in proportional increases in revenue or profits. In addition, the timely commercialization of products that we are developing may be disrupted or delayed by manufacturing or other technical difficulties, industry acceptance or insufficient industry size to support a new product, competitors' new products, and difficulties in moving from the experimental stage to the production stage. These disruptions or delays could adversely affect our business, financial condition, results of operations and cash flows.

As a reinforcing agent in certain rubber applications, carbon black competes primarily with precipitated silica in combination with silane, neither of which are part of our product portfolio. Historically, silica has offered some performance benefits over carbon black in the area of rolling resistance. To date, silica-based tire applications have gained position in passenger car tire treads. Although substitution has not been significant due to carbon black's cost advantage, technological advances and changing customer requirements may lead to increased demand for silica-based tires, especially in developed regions. Increased substitution and competition from precipitated silica producers could adversely affect our business, financial condition, results of operations and cash flows. If we should decide to include precipitated silica in combination with silane in our product portfolio in the future, we may be restricted in our ability to do so under our intellectual property sharing arrangements with Evonik Industries AG ("Evonik") and its affiliates, one of our previous owners.

Alternative materials, procedures or technologies may be developed, or existing ones may be improved, and may replace those currently offered in the carbon black industry. If such newly developed or improved products are being offered at lower prices, have preferable features or other advantages, in particular from a regulatory perspective, and we are not able to offer similar new or improved products, we may lose substantial sales volumes or customers, which could have an adverse effect on our business, financial condition, results of operations and cash flows.

We may be unable to implement our business strategies in an effective manner.

Our future financial performance and success largely depend on our ability to maintain and improve our current competitive position and to implement our business strategies for growth successfully. We cannot guarantee that we will successfully implement our business strategies or that implementing these strategies will sustain or improve and not harm our results of operations. We may not be able to increase or sustain our manufacturing efficiency or asset utilization, enhance our current portfolio of products or achieve other fixed or variable cost

savings. In addition, the costs involved in implementing our strategies may be significantly higher than we currently anticipate. Our ability to complete capacity expansions may be delayed or interrupted by the need to obtain environmental and other regulatory approvals, the availability of labor and materials, unforeseen hazards, such as weather conditions, adverse political or market developments, and other risks associated with construction or expansion projects. Moreover, the cost of expanding capacity could have a negative impact on our financial results until capacity utilization is sufficient to absorb the incremental costs associated with the expansion. Further, labor or governmental restrictions could impede or delay our ability to reduce headcount in the event headcount reduction is deemed to be sensible in our opinion.

Our business strategies are based on our assumptions about future demand for our existing products and the new products and applications we are developing, and on our continuing ability to produce our products profitably. Each of these factors depends on, among other things, our ability to realign our product portfolio, divest businesses on favorable terms and with minimal disruptions, discontinue product lines with minimal disruption, finance our operations and product development activities, negotiate favorable terms, maintain high-quality and efficient manufacturing operations, relocate and close certain manufacturing facilities with minimal disruption to our operations, respond to competitive and regulatory changes, access quality raw materials in a cost-effective and timely manner, and retain and attract highly skilled technical, managerial, marketing and finance personnel. Any failure to develop, revise or implement appropriate business strategies in a timely and effective manner may adversely affect our business, financial condition, results of operations and cash flows.

We are subject to volatility in the costs, quality and availability of raw materials and energy, which could decrease our production volumes and margins and adversely affect our business, financial condition, results of operations and cash flows.

Our manufacturing processes consume significant amounts of raw materials and energy, the costs of which are subject to fluctuations in worldwide supply and demand as well as other factors beyond our control. The preponderance of the cost of raw material used in the production of carbon black is related to petroleum-based or coal-based feedstock known as carbon black oil, with some additional use of other raw materials, such as acetylene, hydrogen and natural gas. We obtain a considerable portion of our raw materials and energy from selected key suppliers. Although we maintain certain raw material reserves, if any of these suppliers is unable to meet its obligations under supply agreements with us on a timely basis or at all, or if we cannot source sufficient supply, we may be forced to incur higher costs to obtain the necessary raw materials and energy elsewhere, or we may not be able to obtain carbon black oil or raw materials, such as natural gas, at all. Additionally, raw material sourcing and related infrastructure (e.g., harbor access, cargo or ship availability, pipeline-, tank- or road-access), may be subject to local developments or regulations in certain jurisdictions where we operate that may reduce, delay or halt the physical supply of raw materials. Our inability to source quality raw materials or energy in a timely fashion and at costs that we anticipate or that are acceptable to us, or an inability to pass-through any cost increases to our customers, could have an adverse impact on our business, financial condition, results of operations and cash flows.

Most of our Rubber Carbon Black supply contracts contain provisions that adjust prices to account for changes in a relevant feedstock price index. However, we are exposed to oil price and gas price fluctuations, and there can be no assurance that we will be able to shift the price risks to our customers. Success in offsetting increased raw material, energy and tax or tariff costs with related price increases is also influenced by competitive and economic conditions, as well as the speed and severity of such changes, and could vary significantly, depending on the segment served. Such increases may not be accepted by our customers, may not be fully reflected in the indices used in our pricing formulas, may not be sufficient to compensate for increased raw material and energy costs or may decrease demand for our products and our volume of sales. Oil and energy price fluctuations have had, and are likely to continue to have, significant and varying effects on our earnings and results of operations, partly because oil price changes affect our sales prices and our cost of raw materials and energy at different times and amounts, and partly due to other factors, such as differentials affecting the ultimate carbon black oil price paid by us (versus a particular reference price index), carbon black oil usage amounts and ongoing efficiency initiatives, the value of which fluctuates with oil prices. Failure to fully offset the effects of fluctuating raw material or energy costs could have a material adverse effect on our business, financial condition, results of operations and cash flows. Further, volatility in costs and pricing could result in commercial disputes with suppliers and customers regarding the interpretations of complex contractual pricing arrangements, which could adversely affect our business.

Significant movements in the market price for crude oil tend to create volatility in our carbon black feedstock costs, which have in the past affected and may in the future affect our Net Working Capital, cash requirements and operating results. Changes in raw material and energy prices have a direct impact on our Net Working Capital levels. Increases in the cost of raw materials lead to an increase in our Net Working Capital. Due to the quantity of carbon black oil and finished goods that we typically keep in stock together with the levels of receivables and payables maintained, increases occur gradually over a two to three-month period but can vary depending on inventory levels and working capital levels generally. Net Working Capital swings are particularly significant in an environment of high price volatility.

Any failure to realize benefits from investments, joint ventures, acquisitions or alliances could adversely affect our business, financial condition, results of operations and cash flows.

We have made, and may continue to make, investments and acquisitions and enter into joint ventures and collaborations. The success of acquisitions of existing facilities, new technologies, companies and products, or arrangements with third parties is not always predictable, and we may not achieve our anticipated objectives.

Plant capacity expansions and site development projects may be delayed, cost more than anticipated and/or may not achieve the expected benefits.

Our ability to complete capacity expansions and consolidations as planned, including capacity conversions from Rubber Carbon Black to Specialty Carbon Black and vice versa, and other site development projects, including those associated with yield efficiency improvements or emission controls, may be delayed, interrupted, or otherwise limited by the need to obtain environmental and other regulatory approvals, unexpected cost increases, availability of labor and materials, unforeseen hazards such as weather or health conditions, and other risks associated with construction projects. In addition, lower oil prices may impact our yield efficiency improvements. Moreover, the costs of these activities could have a negative impact on our results of operations and capacity utilization at any particular facility. We may not be able to absorb the incremental costs associated with capacity expansion projects. In addition, our ability to expand capacity depends in part on economic and political conditions in the regions we focus on and, in some cases, on our ability to establish operations, construct additional manufacturing capacity or form strategic business alliances.

The capital expenditures we might need to make under the EPA consent decree may increase; timing, target levels and other factors could also affect our ability to meet target emission levels and target dates under the EPA consent decree.

On June 7, 2018, a consent decree (the "EPA CD") between Orion Engineered Carbons LLC and the United States on behalf of the EPA, as well as the Louisiana Department of Environmental Quality, became effective. See "Note Q. *Commitments and Contingencies*" to the Company's audited financial statements included in this Annual Report in Form 10-K for a description of the EPA CD. We have four plant sites that fall under the EPA CD, of which the construction projects at our Ivanhoe (Louisiana) and Orange (Texas) facilities have been completed. In the fourth quarter of 2022, mechanical installation of emissions control technology at Borger (Texas) was complete.

We estimate the installations of monitoring and pollution control equipment at the remaining plant at Belpre (Ohio), will require capital expenditure totaling approximately $25 million. This estimate could be further revised subject to scope design and estimation efforts presently underway. The actual total capital expenditures we might need to incur in order to fulfill the requirements of the EPA CD therefore remain uncertain. The solutions Orion ultimately chooses to implement at its remaining facility may differ in scope and operation from those it currently anticipates for such facility, and factors such as timing, target levels, contractor workforce availability, changing cost estimates and local regulations, could cause actual capital expenditures and their timing to significantly exceed current expectations or affect Orion's ability to meet the agreed target emission levels or target dates for installing required equipment as anticipated or at all. Noncompliance with applicable emissions limits could lead to payments to the EPA or other penalties.

We may be subject to information technology systems failures, network disruptions, cybersecurity attacks and breaches of data security.

We rely on information technology systems to manage and operate our production facilities, to process transactions, and to summarize our operating results. Our information technology systems are an important element for effectively operating our business. Information technology systems failures, particularly in connection with running SAP, including risks associated with upgrading or timely updating our systems, network disruptions, misuse, cybercrime and breaches of data security, could disrupt our production as well as our operations by impeding our processing of transactions, our ability to protect customer or company information and our financial reporting, and lead to increased costs. It is possible that future technological developments could adversely affect the functionality of our computer systems and require further action and substantial funds to prevent or repair computer malfunctions. Our information technology systems, including our back-up systems, are subject to damage or interruption from power outages, computer and telecommunications failures, computer viruses, cybercrime, internal or external security breaches, catastrophic events such as fires, earthquakes, floods, tornadoes, hurricanes, acts of war or terrorism, and usage errors by our employees or third-party providers. Although we have taken extensive steps to address these concerns by implementing sophisticated network security, back-up systems and internal control measures, there can be no assurance that a system failure or data security breach will not have a material adverse effect on our business, financial condition, results of operations and cash flows. If our information technology systems are damaged or cease to function properly, we may have to make a significant investment to fix or replace them, and we may suffer loss of critical data and interruptions or delays in our production and operations. Any material disruption in our information technology systems, or delays or difficulties in implementing or integrating new systems or enhancing current systems, could have an adverse effect on our business, financial condition or results of operations. We have experience non-material cybersecurity attacks in the past and may experience additional cybersecurity attacks in the future, potentially with more frequency or sophistication.

While we continually work to safeguard our systems, train our employees and mitigate potential risks, there is no assurance that such actions will be sufficient to prevent cybersecurity attacks or security breaches that manipulate or improperly use our systems or networks, compromise or lose confidential or otherwise protected information, destroy or corrupt data, or otherwise disrupt our operations and safety tools. The occurrence of such events could negatively impact our reputation and our competitive position and could result in litigation with third parties, regulatory action, loss of business, potential liability and increased remediation costs, any of which could have a material adverse effect on our financial condition and results of operations. In addition, such attacks or breaches could require significant management attention and resources, and result in the diminution of the value of the Company's investment in research and development and other assets. A breakdown in existing controls and procedures around the Company's cybersecurity and security prevention environment may prevent us from detecting, reporting or responding to cybersecurity incidents in a timely manner and could have a material adverse effect on our financial condition or the market price of our securities.

In addition to supporting our operations, we use our systems to collect and store confidential and sensitive data, including information about our know-how, technology and business, as well as about our customers and our employees. As our technology continues to evolve, we anticipate that we will collect and store even more data in the future, and that our systems will increasingly use remote cloud based solutions and communication features that are sensitive to both willful and unintentional security breaches. Much of our value is derived from our confidential business information, including customer data, proprietary technology and trade secrets. To the extent the confidentiality of such information is compromised, we may lose our competitive advantage, and our business, financial condition, results of operations and cash flows may suffer. We also collect, retain and use personal information, including data we gather from customers for product development and marketing purposes, and data we obtain from employees. In the event of a breach in security that allows third parties access to this personal information, we are subject to a variety of laws on a global basis that require us to provide notification to the data owners, and that subject us to lawsuits, fines and other means of regulatory enforcement. Our reputation could suffer in the event of such a data breach, which could cause customers to purchase from our competitors. Ultimately, any compromise of our data security could have a material adverse effect on our business, financial condition, results of operations and cash flows.

If we are unable to successfully negotiate with the representatives of our employees, including labor unions and works councils, we may experience strikes and work stoppages.

We are party to collective bargaining agreements. We also are required to consult with our employee representatives, such as works councils, on certain matters such as restructuring, acquisitions and divestitures. Although we believe that our relations with our employees are good, there can be no assurance that current agreements may not be terminated, new agreements will be reached or consultations will be completed without union or works council actions or on terms satisfactory to us. Current and future negotiations and consultations with employee representatives could have a material adverse effect on our business. In addition, a material work stoppage or union dispute could adversely affect our business, financial condition, results of operations and cash flows.

We may not be able to recruit or retain key management and personnel.

Our success is dependent on the management and leadership skills of our key management and personnel. The loss of any member of our key leadership team and personnel or an inability to attract, retain, develop and maintain additional personnel could prevent us from implementing our business strategy. The loss of one or more members of our key management or operating personnel, or the failure to attract, retain and develop additional key personnel, could have a material adverse effect on our business, financial condition, results of operations and cash flows.

We are exposed to political or country risk inherent in doing business in some countries.

We operate a global network of production plants located in Europe, the U.S., South Korea, China, South Africa and Brazil. Accordingly, our business is subject to risks related to the different legal, political, social and regulatory requirements and economic conditions of many jurisdictions. Risks inherent in international operations include the following: changes in the rate of economic growth; unsettled political or economic conditions; expropriation or other governmental actions; social unrest, war, terrorist activities or other armed conflict; national and regional labor strikes; confiscatory taxation or other adverse tax policies, trade and or tariff disputes between countries; deprivation of contract rights; trade regulations affecting production, pricing and marketing of products; reduced protection of intellectual property rights; restrictions on the repatriation of income or capital; exchange controls; inflation, deflation, and currency fluctuations and devaluation; the effect of global environmental, health and safety issues; pandemics or epidemics, respective lock-downs, changes to economic conditions, market opportunities and operating restrictions; changes in foreign laws and tax rates; changes in trade sanctions or embargoes that result in losing access to customers and suppliers in those countries; costs associated with compliance with anti-bribery and anti-corruption laws; nationalization of private enterprises by foreign governments; and changes in financial policy and availability of credit or financing sources. These factors could adversely affect our business, financial condition, results of operations and cash flows.

Our business, financial condition and results of operations have been and could in the future be adversely affected by disruptions in the carbon black oil and natural gas supplies caused by the ongoing conflict between Russia and Ukraine.

War and other geopolitical events, including but not limited to Russia and Ukraine, may cause volatility in crude oil and natural gas prices, due to the region's importance to these markets, the potential impacts to global transportation and shipping, and other supply chain disruptions. These events are unpredictable and may lead to extended periods of price volatility.

In late February 2022, Russia invaded Ukraine, significantly amplifying already existing geopolitical tensions among Russia and other countries in the region and in the West. The responses of countries and political bodies to Russia's actions, the larger overarching tensions, and Ukraine's military defense and the potential for wider conflict may increase energy market volatility generally, have severe adverse effects on regional and global economic markets, and cause volatility in energy and other product prices. Global prices of crude oil and natural gas are primarily a function of global production and demand. Long term impacts from sanctions, shipping disruptions, collateral war damage, and a potential continuation or expansion of the conflict between Russia and Ukraine could further disrupt the availability of crude oil and natural gas supplies. Russia is one of the largest crude oil and natural gas exporters. Currently, the conflict has impacted exports of Russian crude oil and natural gas. As such, volatility, trading volumes, and prices in global crude oil and natural gas have risen dramatically and are expected to continue indefinitely at extreme elevated levels. Furthermore, global supply chains, which have already been disrupted by the far-reaching effects of the COVID-19 pandemic, have suffered and in the future may suffer further damage if the Ukrainian war continues or escalates further. The extent or length of any adverse effects of the war in Ukraine on the supply of oil and natural gas and the quality and availability of carbon black oil is difficult to quantify, however, current events as recent as July 2022 further

increase concerns about the stability of the natural gas supply in Europe. Furthermore, the European Union ("EU") has proposed a voluntary gas demand reduction target of 15% to be achieved between August 1, 2022 and March 31, 2023. To reach that target, the plan outlines various measures whereby EU member states can encourage the decrease of gas demand and consumption by the public sector and businesses, as well as households.

The continuation or escalation of events like the Ukrainian war could decrease our production volumes and margins and may adversely impact our business operations, financial condition and results of operations. It has also caused, and may continue to cause, disruptions in supply chains and curtailed or delayed spending by our customers' customers, in particular in the automotive industry, and increases in the risk of customer defaults or delays in payments. In addition, as a result of the conflict, governmental and non-governmental entities have issued alerts noting the potential for increased cyber-attacks.

The COVID-19 pandemic has had and could continue to have an adverse effect on our business and results of operations.

Our global operations expose us to risks associated with public health crises and outbreaks of epidemic, pandemic, or contagious diseases, such as the outbreak of a novel strain of coronavirus and its mutations ("COVID-19"). The COVID-19 pandemic has negatively impacted the global economy in 2020-2022 and created significant volatility and disruption to supply-chains and financial markets.

The COVID-19 pandemic infection rate remains high in certain parts of the world. The pandemic could adversely impact our operations in a number of ways, including the temporary suspension of production at our customers' and our own manufacturing facilities particularly in China, disruptions to our supply chain and to our capital projects, restrictions on the ability of many of our employees to work at optimal efficiency due to governmental mandated lock-down obligations and other restrictions. More recently, the elimination of the "Zero-COVID" policy in China has led to a dramatic increase of COVID-19 infections in China and has impacted the Chinese economy. If we experience operational or supply chain disruptions, or such disruptions are exacerbated or prolonged in the future, our business, results of operations and liquidity may be adversely impacted. In particular, the inability of our suppliers to meet our supply needs in a timely manner or our quality standards could cause delays in delivery to our customers, which could result in the cancellation of orders, customers' refusal to accept deliveries, a reduction in purchase prices, and termination of customer relationships, any of which could have a material adverse effect on our business, financial condition, results of operations and liquidity. Even if we are able to find alternate sources for our supply needs, they may cost more, which could adversely impact our profitability and financial condition.

The foregoing and other continued disruptions to our business as a result of COVID-19 had, and may continue to have, an adverse effect on our business, financial condition and results of operations. The extent of continued impact of COVID-19 on our operational and financial performance will depend on future developments, including the duration and spread of the COVID-19 outbreak, which is highly uncertain and cannot be predicted at this time. The COVID-19 pandemic may also exacerbate other risks described in this *Item 1A. Risk Factors* section.

Legal and Regulatory Risks

Our operations are subject to environmental, health and safety laws and regulations. We have been and may in the future be subject to investigations by regulatory authorities in respect of alleged violations and may incur significant costs to maintain compliance with, and to address liabilities under, these laws and regulations and respective litigation and proceedings.

We are subject to extensive supranational, domestic, foreign, federal, state and local laws and regulations governing environmental protection and occupational health and safety, all of which may be subject to change in the future. The raw material procurement, as well as the production and processing of carbon black and its byproducts involve the handling, transportation, manufacture, use and disposal of substances or components that may pose environmental risks or be considered toxic, hazardous or carcinogenic under applicable laws. We are also required to obtain permits or other approvals from various regulatory authorities for our operations, which may be required for matters including air emissions as well as wastewater and storm water discharge, storage, handling and disposal of hazardous substances, remediation of soil or buildings and the operation, maintenance and closure of landfills. If we contaminate the environment, violate or are found to have violated or otherwise fail to comply with laws, regulations or permits or other approvals, or fail to receive the timely renewal of and due application for required permits, we may have to limit production, incur fines and civil or criminal sanctions, be required to undertake significant capital expenditures to achieve compliance, or be subject to other obligations by one or more regulatory authorities. Certain environmental laws and regulations could also impose strict liability, meaning the Company could be forced to assume liability for environmental damage caused by a party other than the Company, even in circumstances where the Company's actions were lawful.

If environmental harm to soil, groundwater, surface water or natural resources is found to have occurred as a result of our current or historical (prior to the existence of the Company) operations, we may be required to incur significant remediation costs at our current or former production facilities, or at third-party sites and for storage facilities. Many of the facilities and third party storage facilities we utilize have a long history of operation, which might in the future incur environmental compliance and remediation costs due to past spills, contamination, chemical storage, wastewater treatment and waste disposal practices and other activities depending on present and developing laws. For instance, some of our facilities have onsite landfills that have been open for a number of years; we may incur significant costs when these landfills are closed in accordance with applicable laws and regulations. Under certain laws and regulations, the obligations to investigate and remediate contamination at a facility or site may be imposed on current and former owners or operators who disposed of waste on–site. Liability under such laws and regulations may be without regard to fault or to the legality of the activities giving rise to the contamination. As a result, we may incur liabilities for contamination or wastes, including hazardous wastes, generated by our

operations and disposed of onsite or at offsite locations, even if we were not responsible at the time the waste was disposed or the contamination occurred. Further, we may also incur additional closure and cleanup costs in connection with the closure of plants or separate feedstock storage sites, including costs relating to decommissioning of equipment, decontamination and clean-up, asbestos removal and relocation or closure of operating equipment such as storage tanks, wastewater treatment systems, ponds and landfills.

Our operations inherently create significant hazards when storing carbon black oil, converting carbon black oil to carbon black and packaging and storing of carbon black and shipping the products to our customers. These hazards and risks include fires, explosions, spills, discharges and other releases, any of which could impact the environment, neighboring community and our employees, which could result in, environmental pollution, personal injury or wrongful death claims, damage to our & neighboring properties and reputational harm. In these cases, authorities could impose fines, and the Company could be required to rectify any damage which occurs in or outside of our fence lines.

Environmental and safety regulations are subject to frequent change, as are the priorities of those who enforce them, and we could incur substantial costs to comply with current or future laws and regulations. The trend in environmental regulation is to impose increasingly stringent restrictions on activities that may affect the environment. Such future regulations may include legislation designed to reduce emissions of GHG, SO_2, NOx, particulate matter and other air pollutants. For instance, the European Union has enacted GHG legislation and continues to expand the scope of such legislation. The EPA has promulgated regulations applicable to operations involving GHG above certain thresholds, and the United States and certain states within the United States have enacted, or are considering, limitations on GHG emissions. Any new or amended environmental laws and regulations may result in costly measures for matters subject to regulation, including but not limited to more stringent limits or control requirements for our air emissions; new or increased compliance obligations relating to emission of GHG, SO_2, NOx, and particulate matter; any impact our operations could have on the environment or surrounding community; which, in each case, could have a material adverse effect on our operations and financial condition. We may be unable to offset these impacts or costs with price increases, productivity improvements, or cost-reduction efforts. Any success we do have in offsetting these impacts or costs will depend on competitive and economic conditions that are inherently variable.

Compliance with future more stringent environmental laws and regulations may result in significantly increased capital expenditures related to prevention and remediation. Our business and financial conditions may be impacted if we are unable to finance these increasing compliance costs. Regardless, we may be required to incur non-capital expenditure costs to satisfy climate change and other environmental obligations imposed on us by the various regulations.

Certain national and international health organizations have classified carbon black as a possible or suspect human carcinogen. To the extent that, in the future, (i) these organizations re-classify carbon black as a known or confirmed carcinogen, (ii) other organizations or government authorities in other jurisdictions classify carbon black or any of our other finished products, raw materials or intermediates as suspected or known carcinogens or (iii) there is discovery of adverse health effects attributable to the production or use of carbon black or any of our other finished products, raw materials or intermediates, we could be required to incur significantly higher costs to comply with environmental, health and safety laws, or to comply with restrictions on sales of our products, our reputation and business could be adversely affected, and we could become the subject of litigation or enforcement actions. In addition, chemicals that are currently classified as harmless may be classified as dangerous in the future, and our products may have characteristics that are not recognized today but may be found in the future to be carcinogenic or otherwise impair human health. See "*Item 1. Business, Environmental, Health and Safety Matters.*"

Regulations requiring a reduction of or that impose additional taxes or fees on greenhouse gas emissions could adversely affect our business, financial condition, results of operations and cash flows, and an increased awareness as well as adverse publicity about potential impacts on climate change by us or other companies in our industry could harm our reputation.

Significant volumes of CO_2, a GHG, are emitted in carbon black manufacturing processes. Over the past few decades, the relationship between GHGs and global climate change have resulted in increased levels of scrutiny from regulators, investors and the public alike, and have led to proposed and enacted regulations on both national and supranational levels, to monitor, regulate, control and tax emissions of CO_2 and other GHGs. Investors and other financial institutions are also focused on sustainability and climate change as it relates to their investment and financing decisions. Increased awareness in the investment community and any adverse publicity in the global marketplace about potential impacts on climate change by us or other companies in our industry could harm our reputation.

The international community continues to negotiate a binding treaty that would require reductions in GHG emissions by developed countries. In addition, a number of further measures addressing GHG emissions may be implemented, such as a successor international agreement, if any, to the Kyoto Protocol and the EU's proposal to consider raising its commitment to reduce carbon emissions to at least 55% below 1990 levels by 2030. The United Nations Conference on Climate Change in December 2015 led to the creation of the Paris Agreement and encourages countries to continuously review and improve their GHG emission reduction goals. While signing the Paris Agreement does not legally bind countries to reduce GHG emissions, countries that participate may respond by enacting legislation or regulations in order to progress in lowering GHG emissions. In the United States, Congress has from time to time considered legislation to reduce emissions of GHGs, but no comprehensive legislation has been enacted to date, and significant uncertainty currently exists as to how any such GHG legislation or regulations would impact large stationary sources, such as our facilities in Belpre (Ohio), Borger (Texas), Orange (Texas) or Ivanhoe (Louisiana), and what costs or operational changes these regulations may require in the future. Some U.S. states have taken legal measures to reduce emissions of GHGs, primarily through the development of GHG emission inventories and/or regional or state GHG cap-and-trade programs. South Africa, where we have an operating plant, has adopted a CO_2 tax regime. There are also

ongoing discussions and regulatory initiatives in other countries, including in Brazil where we have production facilities, regarding GHG emission reduction programs, but those programs have not yet been defined. There is no assurance that, in the future, the current level of regulation will continue in the jurisdictions where we operate. In addition, several countries, spanning across Europe, the Middle East, Africa, South America and the Asia-Pacific region, are currently evaluating further and more restrictive regulations to reduce GHG emissions and to implement stricter environmental regulations generally.

Compliance with current or future GHG regulations governing our operations may result in significantly increased capital and operating expenditures for measures such as the installation of more environmentally efficient technology or the purchase of allowances to emit GHGs. We may need to purchase emission rights to cover the shortfall where emissions exceed the quantity of allowances (EU and South Korean ETS), which may cause a material financial impact. Examples of such expenditures may include, but are not limited to, becoming subject to carbon and GHG emission trading requirements under which we may be required to purchase carbon credits and other offsets aimed at reducing our ecological footprint if our emission levels exceed our allocations. Costs of complying with regulations could increase, as concerns related to greenhouse gases and climate change continue to emerge. The enactment of new environmental laws and regulations and/or the more aggressive interpretation of existing requirements could require us to incur significant costs for compliance or capital improvements or limit our current or planned operations, any of which could have a material adverse effect on our earnings or cash flow. We attempt to offset the effects of these compliance costs through price increases, productivity improvements and cost reduction efforts. Such price increases may not be accepted by our customers, may not be sufficient to compensate for increased regulatory costs or may decrease demand for our products and our volume of sales. While their potential effect on our manufacturing operations or financial results cannot be estimated, they could be substantial. There is no way to predict the form that future regulations may take or to estimate any costs that we may be required to incur with respect to these or any other future requirements. In addition to the increased expenditures outlined above, such requirements could also adversely affect our energy supply, or the costs (and types) of raw materials we use, and ultimately may directly or indirectly restrict our operations or reduce demand for our products. The realization of any or all of these consequences could have a material adverse effect on our business, financial condition, results of operations and cash flows. See "*Item 1. Business, Environmental, Health and Safety Matters.*"

Developing regulation of carbon black as a nano-scale material could require us to comply with costly new requirements.

Carbon black consists of aggregates of primary nano-scale particles. The EPA and other governmental agencies are currently developing a regulatory approach under which they will collect further data on nano-scale materials, including carbon black, under the Toxic Substances Control Act ("TSCA"). In addition, the EPA and other nations' environmental regulatory authorities, including the European Commission, are also conducting extensive environmental health and safety testing of nano-scale materials. If carbon black is found to be harmful to humans and/or to the environment, it could be subject to more stringent regulatory control, which could require us to incur significantly higher costs to comply with new environmental, health and safety laws and could adversely affect our reputation and business. See "*Item 1. Business, Environmental, Health and Safety Matters.*"

In the European Union, in 2022 the European Commission finalized the process on the revision of the nanomaterial definition. With its updated recommendation on June 10, 2022 of the definition of nanomaterial (2022/C 220/01), the status for carbon black remains unchanged in comparison to the previous version (2011/696/EU). The majority of carbon black grades are defined as a nanomaterial. Furthermore, the International Organization for Standardization ("ISO") developed the ISO TC 229 "Nanotechnologies," which considers carbon black a "nano-structured material." The industry is not yet generally affected by these definitions. However, certain regulations regarding cosmetics applications or articles which are intended for food contact have already been implemented, and other regulations are being discussed which may affect the use of carbon black in the future. This development may significantly affect our business in a manner we cannot predict, including by increasing the costs of doing business or decreasing the marketability of our products.

Our operations have the potential to cause environmental and other damage as well as personal injury.

The operation of a chemical manufacturing business as well as the sale and distribution of chemical products involve safety, health and environmental risks. For example, the production and processing of carbon black and other chemicals involves the storage, handling, transportation, manufacture or use of certain substances or components that may be considered toxic or hazardous. Our manufacturing processes and the storage and transportation of chemical products entail risks such as leaks, fires, explosions, toxic releases or mechanical failures. If operational risks materialize, they could result in injury or loss of life, damage to the environment or damage to property. In addition, the occurrence of material operating problems at our facilities due to any of these hazards may result in loss of production, which in turn, may make it difficult for us to meet customer needs. Accordingly, these hazards and their consequences could have a material adverse effect on our business, financial condition, results of operations and cash flows, both during and after the period of operational difficulties, and could harm our reputation.

The European Union REACH legislation or similar legislation in other countries may affect our ability to manufacture and sell certain products.

In December 2006, the EU signed the REACH (Registration, Evaluation, Authorization and Restriction of Chemicals) legislation. This legislation requires chemical manufacturers and importers in the EU to demonstrate the safety of the chemical substances contained in their products through a substance registration process. We have registered under REACH, which is a functional prerequisite to the continued sale of our products in the EU markets. REACH presents a risk to the continued sale of our products in the EU should our existing classification registration no longer apply as a result of changes in the interpretation of REACH by the authorities, changes in our product

mix or purity, or if the EU seeks to ban or materially restrict the production or importation of the chemical substances used in our products. In March 2016, the European Chemical Agency (ECHA) announced a carbon black substance evaluation, and carbon black was included in the Community Rolling Action Plan (CoRAP). CoRAP listed substances have been prioritized for substance evaluation. The reasons for including carbon black in CoRAP are carbon black being suspected of posing a risk to human health (carcinogenic, suspected reproduction toxicant), exposure of workers, exposure of sensitive populations and a high (aggregated) tonnage and use potential. The evaluation, which will be conducted by ANSES (the French Agency for Food, Environmental and Occupational Health & Safety), has been postponed several times and is now scheduled to start in 2025 under the draft CoRAP, which is likely to be adopted in 2023 March. The outcome of the evaluation will be of significant importance for the carbon black industry.

Additionally, other organizations and countries, including South Korea and China, have adopted or may in the future adopt comparable or even more restrictive regulations than REACH, which could affect our ability to manufacture and sell certain products in the future.

In certain jurisdictions, carbon black has been added to lists of hazardous products that are subject to labeling and other requirements. Compliance with these requirements is required to sell our products in these jurisdictions, and noncompliance may result in material fines or penalties or other enforcement actions, including injunctions, recalls or seizures, which could have an adverse effect on our business, financial condition, results of operations and cash flows. Changes in the classification of carbon black on these lists or to the applicable regulations could result in more stringent or new requirements and adversely affect our compliance costs. See "*Item 1. Business, Environmental, Health and Safety Matters.*"

Market and regulatory changes may affect our ability to sell or otherwise benefit from co-generated energy, which may adversely affect our business, results of operations and cash flows.

Currently, eight of our manufacturing sites, including one jointly owned production facility, have some form of co-generation transforming waste heat from combusting exhaust gas, the main by-product of the carbon black production process, into electricity, steam or hot water. Some of this co-generated energy is self-consumed, and the excess may be sold to third parties. Our ability to benefit from co-generation, and in particular our ability to sell it to third parties, may be limited due to general market conditions or regulatory changes, which may adversely affect our business, results of operations and cash flows.

In December 2013, the European Commission opened an in-depth investigation into certain exemptions from an energy surcharge granted under the German Renewable Energies Act (Erneuerbare-Energien-Gesetz or "EEG"). Under the EEG, energy intensive industries are exempted to a large extent from the energy surcharge that aims to balance above-market payments for green energy. Another exemption exists for the consumption of self-generated electricity. The German legislature amended the national regulations of the EEG in August 2014. Under these regulations, the exemption regarding self-consumption (*Eigenverbrauch*) of self-produced electricity is grandfathered for power plants that were installed before August 1, 2014. Our German production facilities are exempted from the energy surcharge under the current law to the extent that we consume our self-produced energy. However, a potential loss of this benefit due to a future change in legislation or a change in the material setup of any of our plants may adversely affect our business, results of operations and cash flows.

Litigation or legal proceedings could expose us to significant liabilities and thus adversely affect our business, financial condition, results of operations and cash flows.

From time to time, we may be involved in various claims and lawsuits arising in the ordinary course of our business. In particular, certain asbestos related claims have been filed with respect to time periods when previous owners were in control of our business. Some matters involve claims for damage payments as well as other relief. Additional claims by (former) employees or contractors based on alleged past exposure to asbestos or other substances with negative health effects may be received in the future.

We may also be subject to litigation based on environmental matters such has pollution, remediation, contamination, or exposure to hazardous substances either in the workplace or resulting from the use of our products. This litigation could result in substantial liability for us, which could have a material adverse effect on our business, financial condition and/or profitability. Certain environmental groups could also initiate litigation against us, which could cause reputational as well as financial harm.

The outcome of legal proceedings is extremely difficult to predict, and we offer no assurances in this regard. Adverse rulings, judgments or settlements in pending or future litigation, including employment-related litigation, contract litigation, intellectual property disputes, product liability claims, personal injury claims, claims based on alleged exposure to asbestos, chemicals or to carbon black, environmental permitting disputes or in connection with environmental remediation activities or contamination, could have an adverse effect on our business, financial condition, results of operations and cash flows.

Because many of our products provide critical performance attributes to our customers' applications and products, the sale of these products involves a risk of product liability claims against us, including claims arising in connection with the use of, or exposure to, our products. Our products have widespread end-uses in a variety of consumer industries. A successful product liability claim, or series of claims, arising out of these various uses that results in liabilities in excess of our insurance coverage or for which we are not indemnified by a third party or have not otherwise provided for could have a material adverse effect on our business, financial condition, results of operations and cash flows. In particular, we could be required to increase our debt or divert resources from other investments in our business in order to discharge any such liabilities.

We may not be able to protect our intellectual property rights successfully.

Our intellectual property rights are important to our success and competitive position. We own various patents and other intellectual property rights, and have licenses to use intellectual property rights covering some of our products as well as certain processes and product uses. We often choose not to seek to patent a production method or product in order to avoid disclosure of business specific know-how. In addition to patents, a significant part of our intellectual property are our trade secrets, general know-how and experience regarding manufacturing technology, plant operation and quality management, which third parties, including our competitors, may develop independently without violating our trade secret rights. We make careful assessments with respect to production process improvements and decide whether to apply for patents or retain and protect them as trade secrets. In some of the countries in which we operate or sell products, such as China, the laws protecting patent holders are scoped or interpreted differently than in the U.S., the EU and certain other regions. When we file a patent application, it is usually filed for all countries with active competition, where we have existing customers. Nonetheless, because the laws and enforcement mechanisms in some countries may not be as effective as in others, and because our intellectual property rights may, if asserted, ultimately be found to be invalid or unenforceable, we may not be able to protect all of our intellectual property rights successfully. Insufficient protection of intellectual property may limit our ability to make use of technological advantages or result in a reduction of future profits. This may cause competitive restrictions and may have an adverse effect on our business, financial condition, results of operations and cash flows.

We may also be subject to claims that our products, processes or product uses infringe or misappropriate the intellectual property rights of others. These claims, even if without merit, can be expensive and time consuming to defend or litigate. If we were to suffer an adverse ruling, we could be subject to injunctions, obligated to pay damages or enter into licensing agreements requiring royalty payments and use restrictions, all of which could adversely affect our business, financial condition, results of operations and cash flows. In addition, licensing agreements may not be available to us, and, if available, may not be available to us on acceptable terms.

In connection with the separation of our business from Evonik, completed on July 29, 2011 (the "Acquisition"), Evonik assigned to us intellectual property that was exclusively used in its carbon black business as well as certain intellectual property rights that are still in use in Evonik's retained business. Also, Evonik retained ownership of certain intellectual property that is not material to us. Evonik has granted us a non-exclusive license to use such retained intellectual property in the field of carbon black. In addition, we have granted back to Evonik licenses relating to some of our intellectual property rights to use such intellectual property in all fields outside the field of carbon black, which licenses are exclusive, subject to certain exceptions in areas adjacent to carbon black. Accordingly, we may be restricted in leveraging the intellectual property that we use on the basis of a license from Evonik or the intellectual property that is subject to the grant-back licenses to expand our business into fields outside of carbon black.

Risks Related to Indebtedness, Currency Exposure and Other Financial Matters

Our financial leverage may make it difficult for us to service that debt and operate our businesses.

We are leveraged with recurring debt service obligations and expect to continue to have comparable leverage for the foreseeable future. We may also incur more debt in the future. This may have negative consequences for our business and investors, including requiring that a substantial portion of the cash flows from our operations be dedicated to debt service obligations; reducing the availability of cash flows to fund internal growth through working capital, capital expenditures, other general corporate purposes and payments of dividends; increasing our vulnerability to economic downturns generally or in our industry; exposing us to interest rate increases on our existing indebtedness and indebtedness that we may incur in the future; placing us at a competitive disadvantage compared to our competitors that have less debt in relation to cash flows; limiting our flexibility in planning for or reacting to changes in our business and our industry; restricting us from pursuing strategic acquisitions or exploiting certain business opportunities; and limiting, among other things, our ability to borrow additional funds or raise equity capital in the future and increasing the costs of such additional financings.

If our future cash flows from operations and other capital resources are insufficient to pay our obligations as they mature or to fund our liquidity needs, we may be forced to reduce or delay our business activities and capital expenditures, sell assets, obtain additional debt or equity financing, restructure or refinance all or a portion of our debt on or before maturity or reduce or cease paying our dividend. In the worst-case scenario, an actual or impending inability to pay debts as they become due and payable could result in our insolvency or an insolvency of one or more of our subsidiaries.

Restrictive covenants in our debt instruments may limit our ability to operate our business. Our failure to comply with these covenants, including as a result of events beyond our control, could result in an event of default that may adversely affect our business, financial condition, results of operations and cash flows.

Our current debt instruments impose some operating and financial restrictions on us. These restrictions include limitations on our ability to, among other things, merge or consolidate with other companies; sell, lease, transfer or dispose of assets; pay dividends, redeem share capital or redeem or reduce subordinated indebtedness; and make acquisitions or investments. Our debt instruments contain covenants that may adversely affect our ability to finance our future operations and capital needs and to pursue available business opportunities. Our ability to comply with these provisions may be affected by changes in economic or business conditions or other events beyond our control. In addition, our debt instruments contain cross-default provisions such that a default under one particular financing arrangement could automatically trigger defaults under other financing arrangements and cause such indebtedness to become due and payable, together with

accrued and unpaid interest. As a result, any default under an indebtedness to which we are party could result in a substantial loss to us and could adversely affect our business, financial condition, results of operations and cash flows.

A deterioration in our financial position or a downgrade of our ratings by a credit rating agency could increase our borrowing costs and our business relationships could be adversely affected.

A deterioration of our financial position or a downgrade of our credit ratings for any reason could increase our borrowing costs and have an adverse effect on our business relationships as well as on the payments and other terms agreeable with customers, suppliers and hedging counterparties. We currently do and may in the future enter into various forms of hedging arrangements against currency and exchange, interest rate, raw material and energy and oil price fluctuations. Financial strength and credit ratings are important to the availability and pricing of these hedging activities. As a result, any downgrade of our credit ratings may make it more costly for us to engage in these activities, and changes to our level of indebtedness may make it more difficult or costly for us to engage in these activities in the future.

In addition, a downgrade could adversely affect our existing financing, limit access to the capital or credit markets, or otherwise adversely affect the availability of other new financing on favorable terms, if at all, result in more restrictive covenants in agreements governing the terms of any future indebtedness that we incur, increase our borrowing costs, or otherwise adversely affect our business, financial condition, results of operations and cash flows.

Fluctuations in foreign currency exchange and interest rates could adversely affect our business, financial condition, results of operations and cash flows.

We are exposed to market risks relating to fluctuations in foreign currency exchange and interest rates. Our results of operations have in the past been affected and may in the future be affected by both the transaction effects and the translation effects of foreign currency exchange rate fluctuations. We are exposed to currency fluctuation when we convert currencies that we may receive for our products into currencies required to pay our debt, or into currencies in which we purchase raw materials, meet our fixed costs or pay for services, which could result in a gain or loss depending on fluctuations in exchange rates. Fluctuations in currency exchange rates could require us to reduce our prices to remain competitive in foreign markets. In each case, the relevant income or expense is reported in the relevant local currency and translated into U.S. Dollar at the applicable currency exchange rate for inclusion in our consolidated financial statements. Therefore, our financial results in any given period are materially affected by fluctuations in the value of the U.S. Dollar relative to other currencies, in particular the Euro, the Korean Won and Chinese Renminbi. In addition, certain of our outstanding debt obligations are denominated, pay interest in and must be repaid in Euro (and certain of our future debt obligations may be denominated in Euro), and therefore expose us to additional exchange rate risks. An appreciation of the Euro would make our financing under Euro-denominated instruments more expensive. We are also exposed to adverse changes in interest rates. We manage our foreign exchange risk through normal operating and financing activities and, when deemed appropriate, through the selective use of derivative transactions, the effectiveness of which is dependent, in part, upon the counterparties to these contracts honoring their financial obligations to us. We cannot be certain that we will be successful in reducing the risks inherent in exposures to foreign currency and interest rate fluctuations, and our financial results could be adversely affected.

From time to time, it may be necessary for us to enter into hedging arrangements to reduce the impact of price and exchange rate volatility. Unavailability or inefficiency of hedging could adversely affect our business, financial condition, results of operations and cash flows.

In the past, we have entered into certain hedging arrangements to reduce the impact of raw material and energy price volatility as well as interest rate and currency exchange rate fluctuations. It may be necessary for us to enter into hedging arrangements in the future to reduce the impact of raw material or energy price volatility or currency and exchange rate fluctuation, which may or may not be effective. The use of derivative hedging instruments is generally dependent on the availability of adequate credit lines with appropriate financial institutions. As a result, we could be unable to use derivative financial instruments in the future, to the extent necessary or on commercially reasonable terms, and any hedging strategy we employ could therefore be adversely affected. The effectiveness of our derivative hedging instruments will also depend on the relevant hedging counterparties honoring their financial obligations. Any failure by a hedging counterparty to perform its obligations could adversely affect our business, financial condition, results of operations and cash flows.

Disruptions in credit and capital markets may make it more difficult for us and our suppliers and customers to borrow money or raise capital.

Disruptions in the credit markets may result in less credit being made available by banks and other lending institutions. As a result, we may not be able to obtain financing for our business and acquisitions or to pursue other business plans or make necessary investments, which could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Furthermore, the inability of our customers to obtain credit facilities or capital market financing may adversely affect our business by reducing our sales and increasing our exposure to bad debt, while the inability of our suppliers to access adequate financing may adversely affect our business by increasing prices for raw materials, energy and transportation.

We may be required to impair or write off certain assets if our assumptions about future sales and profitability prove incorrect.

In analyzing the value of our inventory, property, plant and equipment, investments and intangible assets, we have made assumptions about future sales (prices and volume), costs and cash generation. These assumptions are based on management's best estimates, and if the actual results differ significantly from these assumptions, we may not be able to realize the value of the assets recorded, which could lead to an impairment or write-off of certain of these assets which could have a material adverse effect on our business, financial condition and results of operations.

We may be required to increase our pension fund contributions.

We have made pension commitments to our existing and some of our former employees. These commitments are partially covered by pension schemes, pension and benevolent funds and insurance policies some of which are maintained by previous employers. The amount of obligations is based on certain actuarial assumptions, including discount factors, life expectancy, pension trends and future salary development as well as expected interest rates applicable to the plan assets. Actual results deviating from these assumptions could result in a considerable increase of our pension commitments and liabilities and higher allocations to the pension reserves in future years, which could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Our insurance coverage may not be adequate to cover all the risks we may face and it may be difficult to obtain replacement insurance on acceptable terms or at all.

Our plants, equipment and other assets are insured for property damage and business interruption risks, and our business as a whole is insured for public and products liability risks, with reputable insurance companies. We believe these insurance policies are generally in accordance with customary industry practices, including deductibles and coverage limits. However, we cannot be fully insured against all potential hazards incident to our business, including losses resulting from war risks or terrorist acts, or all potential losses, including damage to our reputation. If we were to incur a significant liability for which we were not fully insured, it could have a material adverse effect on our business, financial condition, results of operations and cash flows.

As a result of market conditions, premiums and deductibles for certain insurance policies can increase substantially, and in some instances, certain insurance may become unavailable at a reasonable cost or available only for certain risks. We can provide no assurances that we would be able to obtain replacement insurance on acceptable terms or at all.

We could experience a material adverse effect on our financial condition if the tax authorities were to successfully challenge decisions and assumptions we have made in assessing and complying with our tax obligations.

We make, and have in the past made, numerous decisions and assumptions in assessing and complying with our tax obligations, including in respect of the tax treatment of the separation of our business from Evonik, the Acquisition, assumptions regarding the tax deductibility of certain interest expenses under German tax regulations, the upholding and recognition of our German tax group and the applicability of the regulations to our business as a group headquartered as a Luxembourg company. Many of the tax laws that apply to us, including tax laws that apply to the separation of our business from Evonik and the Acquisition, are complex and often require judgments to be made when the law is unclear or the facts are uncertain. While we believe the decisions we have made and the assumptions and practices we have applied are reasonable and accurate, we cannot guarantee that these decisions, assumptions and practices will not be questioned or rejected by the tax authorities. In particular, we are subject to tax audits, and could be subject to additional tax audits, for the period in which the Acquisition occurred by tax authorities in multiple jurisdictions worldwide, and in many cases, these audits have not yet begun or have not been completed and could give rise to issues of this kind. If these tax authorities were to successfully challenge such decisions or assumptions, we could be required to pay additional amounts to such authorities to satisfy our tax obligations, which could have a material adverse effect on our business, financial condition, results of operations and cash flows. In particular, the German tax authorities are conducting their first audit of Orion Engineered Carbons GmbH following the Acquisition. Currently, we are unable to assess when this audit will be completed or the possible outcome of this audit. While currently we do not believe this audit will have a material adverse impact on our financial position, it could raise one or more issues of the kind referenced above.

Significant changes in our jurisdictional earnings mix or in the tax laws of those jurisdictions, as well as changes in their interpretation, could adversely affect our business, financial condition, results of operations and cash flows.

Our future tax rates may be adversely affected by a number of factors, including the enactment of new tax legislation, other changes in tax laws or the interpretation of such tax laws, changes in the estimated realization of our net deferred tax assets (arising, among other things, from tax loss carry forwards and the acquisition of the carbon black business line from Evonik), the jurisdictions in which profits are determined to be earned and taxed, adjustments to estimated taxes upon finalization of various tax returns, increases in expenses that are not deductible for tax purposes, including write-offs of acquired in process R&D and impairment of goodwill in connection with acquisitions, changes in available tax credits and additional tax or interest payments resulting from tax audits with various tax authorities. Losses for which no tax benefits can be recorded could materially impact our tax rate and its volatility from period to period. Any significant change in our jurisdictional earnings mix or in the tax laws in those jurisdictions, as well as changes in their interpretation, could increase our tax rates and adversely affect our financial results in those periods.

Additionally, during periods of high profitability in certain industries, there are often calls for increased taxes or surcharges on incremental revenues or profits, often called "*windfall profit*" taxes. Governments in various jurisdictions including Italy and the United Kingdom have

imposed or increased such taxes in the past, including during 2022 for certain companies operating in the energy and oil and gas sector. Such taxes may be imposed or increased in the future in these or other jurisdictions in which we have operations or in which we are subject to taxation. The imposition of, or increase to, such windfall profit taxes could adversely affect our financial results.

Risks Related to Ownership of our Common Shares

We cannot assure investors that we will pay dividends on our common shares at historical rates or at all.

Our ability to pay dividends on our common shares at historical rates, or at all, is generally dependent on a proposal by our Board of Directors subject to approval by our shareholders and will depend on a number of factors, including, among others, our financial condition and results of future operations, growth opportunities and restrictive covenants in our debt instruments.

The rights of our shareholders may differ from the rights they would have as shareholders of a U.S. corporation, which could adversely affect trading in our common shares and our ability to conduct equity financings.

Our corporate affairs are governed by our Articles of Association and the laws of Luxembourg, including the Luxembourg Company Law. The rights of our shareholders and the responsibilities of our directors and officers under Luxembourg law are different from those applicable to a corporation incorporated in the U.S. Luxembourg laws may not be as extensive as those in effect in the U.S., and Luxembourg law and regulations in respect of corporate governance matters might not be as protective of minority shareholders as state corporation laws in the U.S. As a result, our shareholders may have more difficulty in protecting their interests in connection with actions taken by our directors and officers than they would as shareholders of a corporation incorporated in the U.S.

We are organized under the laws of Luxembourg and it may be difficult to obtain or enforce judgments or bring original actions against us or the members of our Board of Directors in the United States.

We are organized under the laws of Luxembourg and the majority of our assets are located outside the U.S. Furthermore, some of the members of our Board of Directors and officers reside outside the U.S., and a substantial portion of their assets are located outside the U.S. Investors may not be able to effect service of process within the U.S. upon us or these persons or to enforce judgments obtained against us or these persons in U.S. courts. Likewise, it may also be difficult for an investor to enforce in U.S. courts judgments obtained against us or these persons in courts located in jurisdictions outside the U.S., including judgments predicated upon the civil liability provisions of the U.S. federal securities laws. Awards of punitive damages in actions brought in the U.S. or elsewhere are generally not enforceable in Luxembourg.

As there is no direct treaty in force on the reciprocal recognition and enforcement of judgments in civil and commercial matters between the U.S. and Luxembourg, courts in Luxembourg will not automatically recognize and enforce a final judgment rendered by a U.S. court. The enforceability in Luxembourg courts of judgments rendered by U.S. courts will be subject to the procedure and the conditions set forth in the Luxembourg procedural code.

Litigation in Luxembourg is also subject to rules of procedure that differ from the U.S. rules, including with respect to the taking and admissibility of evidence, the conduct of the proceedings and the allocation of costs. For these reasons, it may be difficult for a U.S. investor to bring an original action in a Luxembourg court predicated upon the civil liability provisions of the U.S. federal securities laws against us, the members of our Board of Directors or our officers. In addition, even if a judgment is obtained against our Company, the non-U.S. members of our Board of Directors or our officers based on the civil liability provisions of the U.S. federal securities laws, a U.S. investor may not be able to enforce it in U.S. or Luxembourg courts.

Under our Articles of Association, we may indemnify our directors for and hold them harmless against all claims, actions, suits or proceedings brought against them, subject to limited exceptions. The right to indemnification does not exist in the case of gross negligence, fraud or wrongful misconduct. The rights and obligations among or between us and any of our current or former directors and officers are generally governed by the laws of Luxembourg and are subject to the jurisdiction of the Luxembourg courts, unless such rights or obligations do not relate to or arise out of such persons' capacities listed above. Although there is doubt as to whether U.S. courts would enforce this indemnification provision in an action brought in the U.S. under U.S. federal or state securities laws, this provision could make judgments obtained outside Luxembourg more difficult to enforce against our assets in Luxembourg or in jurisdictions that would apply Luxembourg law.

Luxembourg and European insolvency and bankruptcy laws are substantially different from U.S. insolvency laws and may offer our shareholders less protection than they would have under U.S. insolvency and bankruptcy laws.

We are subject to Luxembourg insolvency and bankruptcy laws. Should courts in another European country determine that the insolvency and bankruptcy laws of that country apply to us in accordance with and subject to such EU regulations, the courts in that country could have jurisdiction over any insolvency proceedings initiated against us. Insolvency and bankruptcy laws in Luxembourg or the relevant other European country, if any, may offer our shareholders less protection than they would have under U.S. insolvency and bankruptcy laws and make it more difficult for them to recover the amount they could expect to recover in a liquidation under U.S. insolvency and bankruptcy laws.

Item 1B. Unresolved Staff Comments

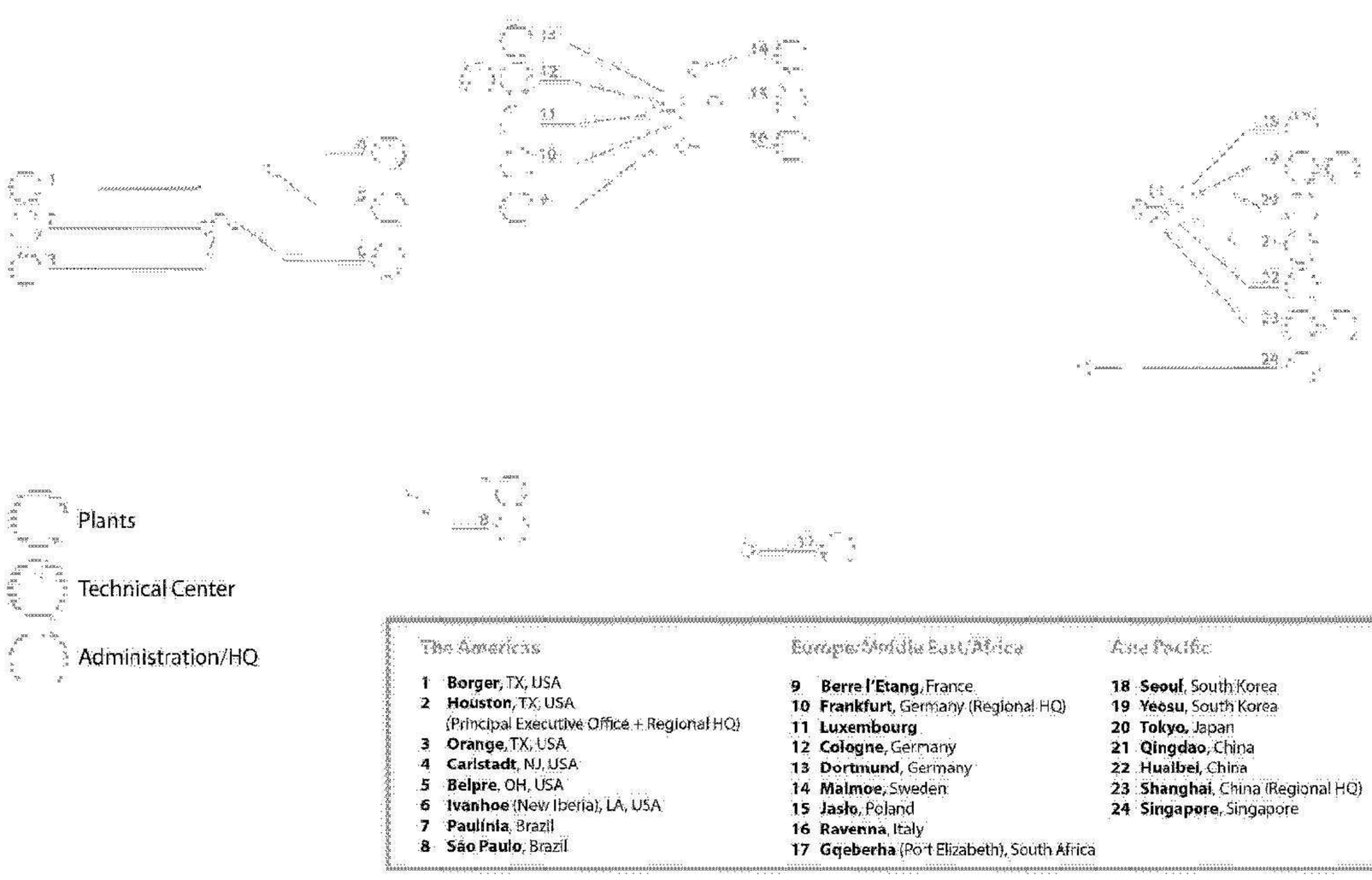
None

Item 2. Properties

Production Facilities

We currently operate 14 wholly owned production facilities in Europe, North and South America, South Africa and Asia, including Huaibei, China (to begin commercial production in 2023), and one jointly-owned production facility at Dortmund, Germany. Most of our production facilities are ISO 9001, *Quality Management* and ISO 14001, *Environmental Management* certified.

The map provides an overview of the geographical footprint of our production network as of December 31, 2022:



Item 3. Legal Proceedings

We have been and expect to become involved from time to time in various claims and lawsuits arising in the ordinary course of our business, such as product related claims, liability claims, employment related claims and asbestos litigation. Some matters involve claims for large amounts of damages as well as other relief. With respect to our settlement of the EPA's enforcement initiative and the settled arbitration proceedings with Evonik related to respectively limited indemnities please see *Item 8. Financial Statements and Supplementary Data, Note Q. Commitments and Contingencies*. We believe, based on currently available information, that the results of the proceedings referenced above, in the aggregate, will not have a material adverse effect on our financial condition, but may be material to our operating results and cash flow for any particular period when the relevant costs are incurred. We note that the outcome of legal proceedings is inherently uncertain, and we offer no assurances as to the outcome of any of these current or future matters or their effect on the Company.

Item 4. Mine Safety Disclosures

Not applicable.

PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

Our common stock is listed on the New York Stock Exchange ("NYSE") under the symbol "OEC".

As of February 17, 2023, there were approximately 11 record holders of our common stock, i.e. stockholders directly registered under their name in the Company's physical share ledger in Luxembourg.

During the fiscal year ended December 31, 2022, we did not sell any equity securities that were not registered under the Securities Act.

From time to time, we may repurchase our common stock in the open market pursuant to programs approved by our Board. See "Stock Repurchase Program" below.

The information required by Item 201(d) of Regulation S-K is incorporated by reference to the Proxy Statement (as defined in Item 10 below) under the heading "*Equity Compensation Plan Information at December 31, 2022.*"

Dividend Policy

In accordance with the Luxembourg Company Law, the general meeting of shareholders has the power to make a resolution on the payment of dividends upon the recommendation of the Board of Directors. In deciding whether to recommend any future dividend, the Board of Directors would take into account any legal or contractual limitation, our actual and anticipated future earnings, cash flows, debt service and capital requirements, our business plans and such other matters as the Board of Directors believes appropriate, in its discretion. Generally, any dividend approved by a general meeting of shareholders would be paid out shortly after the meeting.

Luxembourg withholding tax at a rate of 15% is deducted from dividend payments, subject to certain exemptions and reductions in certain circumstances.

Stock Repurchase Program

On November 3, 2022, our Board of Directors, in line with the respective authorization of the shareholders, resolved in the Company's annual general meeting of shareholders dated June 30, 2022, approved a stock repurchase program with the authorization to management to purchase up to $50 million of its outstanding common stock. Our stock repurchases may occur through open market purchases or trading plans pursuant to Rule 10b5-1 of the Exchange Act. The amount and timing of specific repurchases are subject to market conditions, applicable legal requirements, the thresholds contained in the above referred shareholder authorization by the Board of Directors, may be restricted by payment capacity under our debt instruments and other factors. The authorization may be suspended or discontinued at any time and does not obligate us to acquire any specific amount of common stock.

We started the purchase of equity securities in December of 2022 which were as follows:

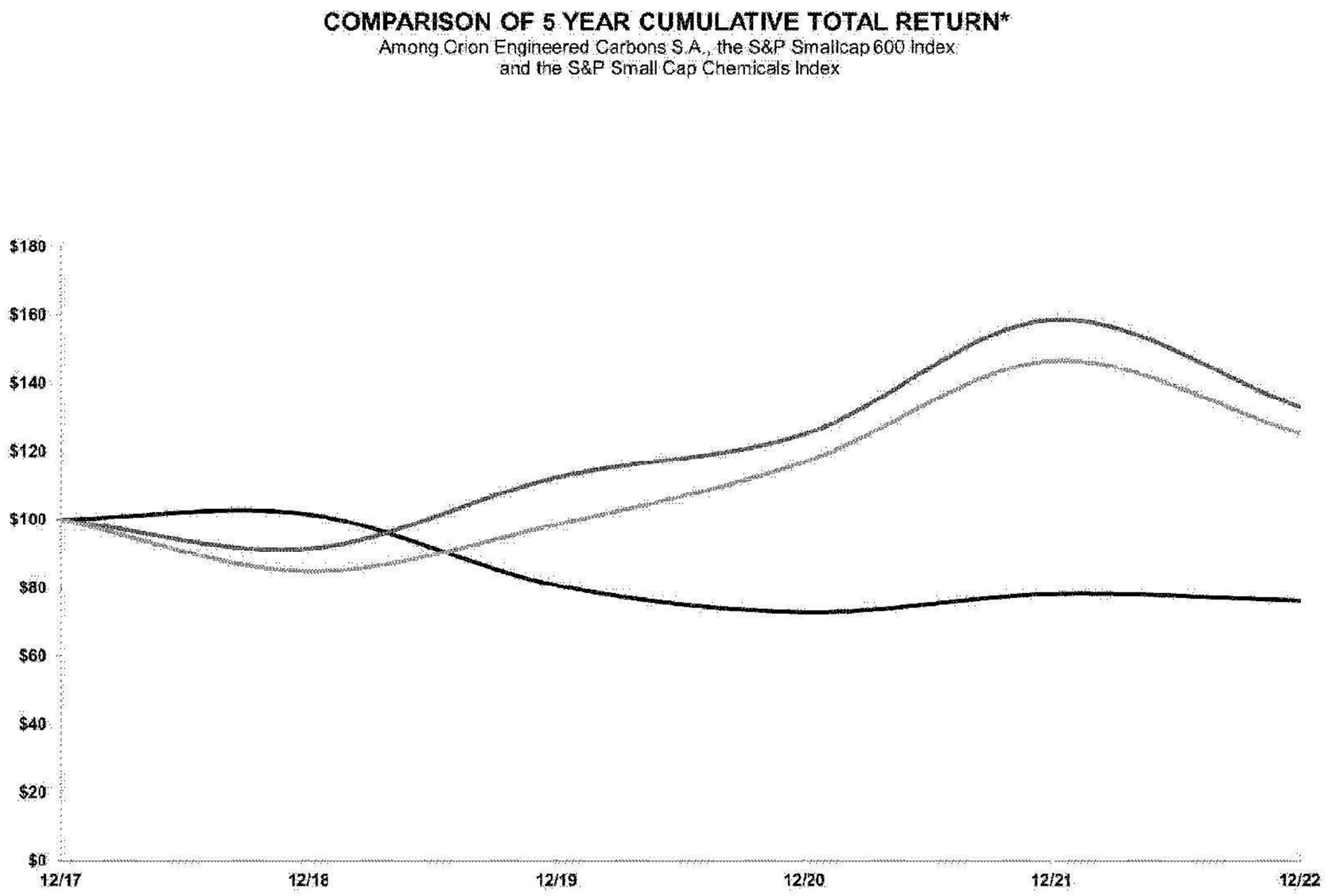
Period	Total number of stock purchased	Average price paid per stock	Total dollar value of stocks purchased as part of publicly announced plans ($ in millions)	Maximum approximate dollar value of stocks yet be purchased ($ in millions)
December 1 — 31, 2022	244,032	$ 17.61	$ 4.3	$ 45.7

Orion Engineered Carbons S.A

Performance Graph

The performance graph and the information contained in this section is not "soliciting material," is being furnished, not filed, with the SEC and is not to be incorporated by reference into any of our filings under the Securities Act or the Exchange Act whether made before or after the date hereof and irrespective of any general incorporation language contained in such filing.

The graph below shows the relative investment performance of Orion Engineered Carbons S.A.'s common stock, the S&P Smallcap 600 Index and S&P Small Cap Chemicals Index since December 31, 2017. The graph assumes that $100 was invested on December 31, 2017 and any dividends paid were reinvested at the date of payment. The graph is presented pursuant to SEC rules and is not meant to be an indication of our future performance.



	2017	2018	2019	2020	2021	2022
Orion Engineered Carbons S.A.	$ 100.00	$ 101.51	$ 80.77	$ 73.01	$ 78.21	$ 76.34
S&P Smallcap 600	100.00	91.52	112.37	125.05	158.59	133.06
S&P Small Cap Chemicals Index	100.00	84.93	98.59	116.93	146.59	125.45

Item 6. Reserved

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

The following discussion and analysis summarizes the significant factors affecting our results of operations and financial condition during the years ended December 31, 2022 and 2021, and should be read in conjunction with the information included under *Item 1. Business* and *Item 8. Financial Statements and Supplementary Data* included elsewhere in this Annual Report. We prepare our financial statements in accordance with accounting principles generally accepted in the United States ("GAAP" or "U.S. GAAP") and in U.S. Dollars.

This section discusses year-to-year comparisons between 2022 and 2021, except as noted below. For discussions on year-to-year comparison between 2021 and 2020, refer to Part II, Item 7. *Management's Discussion and Analysis of Financial Condition and Results of Operations* in our 2021 Annual Report in Form 10-K, which was filed with the United States Securities and Exchange Commission ("SEC") on February 17, 2022 (the "Prior Annual Report"). As described under "Reconciliation of Non-GAAP Financial Measures" below, we implemented certain changes to our financial reporting structure during the fourth quarter of 2022, including the use of new non-GAAP measures (Gross profit per ton) to evaluate our performance, which measures are not discussed in the Prior Annual Report. Accordingly, this section also includes a discussion of year-to-year comparisons of these measures for 2022 compared to 2021, and for 2021 compared to 2020.

Overview

In 2022, our net sales were $2,030.9 million, sales volume was 962.9 kmt, net income was $106.2 million, and Adjusted EBITDA was $312.3 million.

- *Specialty Carbon Black Segment*—Adjusted EBITDA was $143.9 million, and the Adjusted EBITDA Margin was 21.3%. This segment accounted for 33.3% of our total revenue, 46.1% of total Adjusted EBITDA and 23.3% of our total volume in kmt in 2022.
- *Rubber Carbon Black Segment*—Adjusted EBITDA was $168.4 million, and Adjusted EBITDA Margin was 12.4%. This segment accounted for 66.7% of our total revenue, 53.9% of total Adjusted EBITDA and 76.7% of our total volume in kmt in 2022.

Key Factors Affecting Our Results of Operations

We believe certain factors had, and will continue to have, a material effect on our results of operations and financial condition. As many of these factors are beyond our control and certain of these factors have historically been volatile, past performance will not necessarily be indicative of future performance, and it is difficult to predict future performance with any degree of certainty. In addition, important factors that could cause our actual results of operations or financial conditions to differ materially from those expressed or implied below, include, but are not limited to, factors indicated under "*Item 1A. Risk Factors*" and "*Cautionary Statement for the Purposes of the "Safe Harbor" Provisions of the Private Securities Litigation Reform Act of 1995*" elsewhere in this Annual Report.

Recent Developments and Certain Known Trends

General Economic Conditions, Cyclicality and Seasonality

Our 2022 operating results reflect strong demand for Rubber Carbon Black compared to our 2021 fiscal year. However, this was partly offset by lower demand for our Specialty Carbon Black in 2022 compared with our 2021 fiscal year. Operating results were driven by a favorable product mix in both segments and Rubber segment volume growth, as well as our ability to adjust sales prices to conform to energy prices, raw material costs and cost of utilities, to deliver products that drive enhanced performance in customers' applications, and to increase global and regional capacity utilization. Our ability to generate a financial return on our Rubber Carbon Black business, investments in debottlenecking, yield improvement technologies, etc., including U.S. Environmental Protection Agency ("EPA") related projects, contributed to improved operating results.

In late February 2022, Russia invaded Ukraine, significantly amplifying already existing geopolitical tensions among Russia and other countries in the region and in the West. Currently, the conflict has impacted exports of Russian crude oil and natural gas. The volatility, trading volumes, and prices in global crude oil and natural gas are expected to continue indefinitely. The extent or length of any adverse effects of the war in Ukraine on the supply of oil and natural gas and the quality and availability of carbon black oil is difficult to quantify. We are monitoring the stability of the natural gas supply in Europe though there is less concern this winter as many businesses and households have reduced consumption. The European Union ("EU") has proposed a voluntary gas demand reduction target of 15% to be achieved between August 1, 2022 and March 31, 2023. To reach that target, Member States were encouraged to decrease gas consumption by the public sector and businesses, as well as households.

We have identified investments and operational changes which we believe would allow us to achieve between 35% and 40% reduction in natural gas without significantly affecting our production levels.

Reconciliation of Non-GAAP Financial Measures

We present certain financial measures that are not prepared in accordance with GAAP or the accounting standards of any other jurisdiction and may not be comparable to other similarly titled measures of other companies. For a reconciliation of these non-GAAP financial measures to their nearest comparable GAAP measures, see section *Reconciliation of Non-GAAP Financial Measures* below.

These non-GAAP measures include, but are not limited to, Gross profit per metric ton, Adjusted EBITDA, Net Working Capital, Capital Expenditures and Segment Adjusted EBITDA Margin (in percentage).

We define:

- *Gross profit per metric ton*—Gross profit divided by volume measured in metric tons.
- *Adjusted EBITDA*—Income from operations before depreciation and amortization, share-based compensation, and non-recurring items (such as, restructuring expenses, consulting fees related to Company strategy, legal settlement gain, etc.) plus Earnings in affiliated companies, net of tax.
- *Net Working Capital*—Inventories, net plus Accounts receivable, net minus Accounts payable.
- *Capital Expenditures*—Cash paid for the acquisition of property, plant and equipment.
- *Segment Adjusted EBITDA Margin (in percentage)*—Segment Adjusted EBITDA divided by segment revenue.

Adjusted EBITDA is used by our chief operating decision maker ("CODM") to evaluate our operating performance and to make decisions regarding allocation of capital, because it excludes the effects of items that have less bearing on the performance of our underlying core business. We use this measure, together with other measures of performance under GAAP, to compare the relative performance of operations in planning, budgeting and reviewing our business. We believe these measures are useful measures of financial performance in addition to Net income, Income from operations and other profitability measures under GAAP, because they facilitate operating performance comparisons from period to period. By eliminating potential differences in results of operations between periods caused by factors such as depreciation and amortization, historic cost and age of assets, financing and capital structures and taxation positions or regimes, we believe that Adjusted EBITDA provides a useful additional basis for evaluating and comparing the current performance of the underlying operations. In addition, we believe these non-GAAP measures aid investors by providing additional insight into our operational performance and help clarify trends affecting our business.

However, other companies and analysts may calculate non-GAAP financial measures differently, so making comparisons among companies on this basis should be done carefully. Non-GAAP measures are not performance measures under GAAP and should not be considered in isolation or construed as substitutes for Net sales, Net income, Income from operations, Gross profit and other GAAP measures as an indicator of our operations in accordance with GAAP.

Reconciliation of Non-GAAP Financial Measures

Gross profit per metric ton (A Non-GAAP Financial Measure)

In the fourth quarter of 2022, we implemented certain changes to our financial reporting structure. We now use Gross profit and Gross profit per metric ton to evaluate our performance instead of Contribution margin and Contribution margin per metric ton. This change had no impact on our historical Consolidated Financial Statements or the Footnotes to the Consolidated Financial Statements. This change was made because we believe Gross profit and Gross profit per metric ton better reflect the overall operation of our business.

Reconciliation of Gross profit per metric ton is as follows:

	Year Ended December 31,			Year-Over-Year			
	2022	2021	2020	Delta			
				2022 vs. 2021		2021 vs 2020	
	(In millions, except per ton data and percentage)						
Net sales	$ 2,030.9	$ 1,546.8	$ 1,136.4	$ 484.1	31.3 %	$ 410.4	36.1 %
Cost of sales	(1,582.1)	(1,160.2)	(844.1)	(421.9)	36.4 %	(316.1)	37.4 %
Gross profit	**$ 448.8**	**$ 386.6**	**$ 292.3**	**$ 62.2**	**16.1 %**	**$ 94.3**	**32.3 %**
Volume (in kmt)	962.9	964.3	866.8	(1.4)	(0.1)%	97.5	11.2 %
Gross profit per metric ton	$ 466.1	$ 400.9	$ 337.3	$ 65.2	16.3 %	63.6	18.9 %

Orion Engineered Carbons S.A

Reconciliation of Net income to Adjusted EBITDA (A Non-GAAP financial Measure)

Reconciliation of Net income to Adjusted EBITDA is as follows:

	Year Ended December 31,		Year-Over-Year	
	2022	2021	Delta	
	(In millions)			%
Net income	**$ 106.2**	**$ 134.7**	**$ (28.5)**	**(21.2)%**
Add back Income tax expense	51.5	51.7	(0.2)	(0.4) %
Add back Earnings in affiliated companies, net of tax	(0.5)	(0.7)	0.2	(28.6) %
Income before earnings in affiliated companies and income taxes	**157.2**	**185.7**	**(28.5)**	**(15.3)%**
Add back Interest and other financial expense, net	39.9	38.0	1.9	5.0 %
Add back Reclassification of actuarial losses from AOCI	—	4.8	(4.8)	(100.0) %
Income from operations	**197.1**	**228.5**	**(31.4)**	**(13.7)%**
Add back Depreciation of property, plant and equipment and amortization of intangible assets and right of use assets	105.7	104.1	1.6	1.5 %
EBITDA	**302.8**	**332.6**	**(29.8)**	**(9.0)%**
Earnings in affiliated companies, net of tax	0.5	0.7	(0.2)	(28.6) %
Gain related to litigation settlement	—	(82.9)	82.9	(100.0) %
Long term incentive plan	7.7	5.2	2.5	48.1 %
EPA-related expenses	—	2.3	(2.3)	(100.0) %
Environmental reserve accrual	(0.4)	7.2	(7.6)	(105.6) %
Other adjustments	1.7	3.3	(1.6)	(48.5) %
Adjusted EBITDA	**$ 312.3**	**$ 268.4**	**$ 43.9**	**16.4 %**
Specialty Carbon Black Adjusted EBITDA	$ 143.9	$ 148.4	$ (4.5)	*(3.0) %*
Rubber Carbon Black Adjusted EBITDA	$ 168.4	$ 120.0	$ 48.4	*40.3 %*

Operating Results

2022 Compared to 2021

Operating results for the periods discussed are as follows:

	Year Ended December 31,		Year-Over-Year	
	2022	2021	Delta	
	(In millions)			%
Net sales	**$ 2,030.9**	**$ 1,546.8**	**$ 484.1**	31.3%
Cost of sales	**1,582.1**	**1,160.2**	**421.9**	36.4%
Gross profit	**448.8**	**386.6**	**62.2**	16.1%
Selling, general and administrative expenses	227.1	210.4	16.7	7.9%
Research and development costs	21.7	22.0	(0.3)	(1.4)%
Gain related to litigation settlement	—	(82.9)	82.9	(100.0)%
Other expenses, net	2.9	8.6	(5.7)	(66.3)%
Income from operations	**197.1**	**228.5**	**(31.4)**	(13.7)%
Interest and other financial expense, net	39.9	38.0	1.9	5.0%
Reclassification of actuarial losses from AOCI	—	4.8	(4.8)	(100.0)%
Income before earnings in affiliated companies and income taxes	**157.2**	**185.7**	**(28.5)**	(15.3)%
Income tax expense	51.5	51.7	(0.2)	(0.4)%
Earnings in affiliated companies, net of tax	0.5	0.7	(0.2)	(28.6)%
Net income	**$ 106.2**	**$ 134.7**	**$ (28.5)**	(21.2)%

Net sales

Net sales increased by $484.1 million, or 31.3%, from $1,546.8 million in 2021 to $2,030.9 million in 2022, driven primarily by improved base price, passing through higher feedstock costs, impact of favorable product mix across both segments, plus higher volume in the Rubber Carbon Black segment. Those were partially offset by lower volume in the Specialty Carbon Black segment, and unfavorable foreign currency translation impacted both segments. Increased cogeneration revenue, a by-product, also benefited both segments.

Volumes decreased by 1.4 kmt, or 0.1%, to 962.9 kmt, year-over-year.

Cost of sales

Cost of sales increased by $421.9 million, or 36.4%, from $1,160.2 million in 2021 to $1,582.1 million in 2022, primarily due to higher raw material costs and production-associated costs.

Gross profit

2022 Gross profit increased by $62.2 million or 16.1%, from $386.6 million in 2021 to $448.8 million in 2022, and gross profit per metric ton increased by 16.3% or $65.2 to $466.1.

The increase was primarily driven by improved base price, favorable product mix in both segments and higher volume in the Rubber Carbon Black segment. Those were partially offset by lower volume in the Specialty Carbon Black segment. Higher margins per ton resulted from price increases to recover environmental and reliability-related capital expenditures.

2021 Gross profit increased by $94.3 million or 32.3% from $292.3 million in 2020 to $386.6 million in 2021 and gross profit per metric ton increased by 18.9% or $63.6 to $400.9.

The increase was primarily driven by passing through of higher feedstock costs, higher sales volume due to sharp global recovery from COVID-19 across all regions and segments, favorable product mix and higher energy sales.

Selling, general and administrative expenses

Selling, general and administrative expenses increased by $16.7 million, or 7.9%, from $210.4 million in 2021 to $227.1 million in 2022 driven primarily by higher freight and personnel costs, partially offset by the impact of foreign currency translation.

Gain related to litigation settlement

During the second quarter of 2021, Evonik agreed to make a one-time cash payment of €66.55 million ($79.5 million) to settle a dispute which originated from the acquisition of the carbon black business by Rhône Capital and Triton Partners in 2011. The 2011 acquisition

agreement provided for a partial indemnity from Evonik against various exposures, including capital investments, fines and costs arising in connection with U.S. Clean Air Act violations that occurred prior to the closing of the 2011 acquisition (i.e., under Evonik's control). In addition, we released $3.4 million of net legal reserves related to this dispute. This was not repeated in 2022.

Income tax expense

Income tax expense was $51.5 million and $51.7 million in 2022 and 2021, respectively.

The 2022 effective income tax rate was 32.7% compared with 27.7% in 2021. The increase in the effective tax rate was mainly due to change in valuation allowance and tax rate differences. Those were partially offset by the effects of earnings in various countries with lower statutory tax rates and tax-free income. For details regarding this deviation, see *Item 8. Financial Statements and Supplementary Data* and *Note P. Income Taxes* to the audited Consolidated Financial Statements.

Adjusted EBITDA (A Non-GAAP Financial Measure)

Adjusted EBITDA increased by $43.9 million, or 16.4%, from $268.4 million in 2021 to $312.3 million in 2022. The increase was primarily due to improved base price, impact of favorable product mix across both segments and higher volume in the Rubber Carbon Black segment. Those were partially offset by lower volume in the Specialty Carbon Black segment and the unfavorable impact of foreign currency translation. Increased cogeneration revenue, a by-product, also benefited both segments.

Comprehensive Income

	Year Ended December 31,			Year-Over-Year Delta	
	2022	2021	2020	2022 vs. 2021	2021 vs 2020
	(In millions)				
Comprehensive income	$ 142.2	$ 134.9	$ 3.8	$ 7.3	$ 131.1

2022 vs 2021—Comprehensive income increased by $7.3 million, from $134.9 million to $142.2 million, primarily due to:

- $32.5 million related to financial derivative instruments primarily driven by net periodic changes in cross currency and interest rate swaps, and
- $9.1 million related to net changes in defined pension and other post-retirement benefits driven by discount rates and higher actual returns.

Those increases were partially offset by

- $28.5 million of lower net income; 2021 net income included gain related to litigation legal settlement not repeated in 2022, and
- $5.8 million of net unfavorable impacts of unrealized changes in foreign currency translation adjustments. Relative to the U.S. dollar, the value of the euro weakened during 2022, resulting in net losses related to unrealized changes in foreign currency translation which are reflected in the Consolidated Statements of Comprehensive Income.

2021 vs 2020—Comprehensive income increased by $131.1 million from $3.8 million to $134.9 million, primarily due to:

- $116.5 million of higher net income; 2021 net income included gain related to litigation legal settlement not included in 2020,
- $6.7 million net favorable impacts of unrealized changes in foreign currency translation adjustments. Relative to the U.S. dollar, the value of the euro increased during 2021, resulting in net gain related to unrealized changes in foreign currency translation which are reflected in the Consolidated Statements of Comprehensive Income,
- $5.3 million of net favorable impacts of financial derivative instruments primarily driven by periodic changes in cross currency and interest rate swaps and
- $2.6 million of net favorable changes in defined pension and other post-retirement benefits.

Segment Discussion

Our business operations are divided into two operating segments—Specialty Carbon Black and Rubber Carbon Black. We use Segment Adjusted EBITDA as measures of segment performance and profitability. The table below presents our segment results for 2022, and 2021.

	Year Ended December 31,		Year-Over-Year	
	2022	2021	Delta	
	(In millions, unless otherwise indicated)			%
Specialty Carbon Black				
Net sales	$ 675.4	$ 598.2	$ 77.2	12.9 %
Cost of sales	(474.7)	(400.6)	(74.1)	18.5 %
Gross profit	**$ 200.7**	**$ 197.6**	**$ 3.1**	**1.6 %**
Volume (kmt)[1]	224.3	263.2	(38.9)	(14.8)%
Adjusted EBITDA	$ 143.9	$ 148.4	$ (4.5)	(3.0)%
Adjusted EBITDA Margin (%)	21.3	24.8	(3.5)	(14.1)%
Rubber Carbon Black				
Net sales	$ 1,355.5	$ 948.6	$ 406.9	42.9 %
Cost of sales	(1,107.4)	(759.6)	(347.8)	45.8 %
Gross profit	**$ 248.1**	**$ 189.0**	**$ 59.1**	**31.3 %**
Volume (kmt)	738.6	701.1	37.5	5.3 %
Adjusted EBITDA	$ 168.4	$ 120.0	$ 48.4	40.3 %
Adjusted EBITDA Margin (%)	12.4	12.7	(0.3)	(2.4)%

Specialty Carbon Black

2022 Compared to 2021

Net sales of the Specialty Carbon Black segment increased by $77.2 million, or 12.9%, from $598.2 million in 2021 to $675.4 million in 2022. The net sales increase in 2022 was primarily driven by improved base price and favorable product mix, partially offset by lower sales volume and an unfavorable impact of foreign currency translation.

Volume of the Specialty Carbon Black segment decreased by 38.9 kmt, or 14.8%, from 263.2 kmt in 2021 to 224.3 kmt in 2022. The volumes were lower due to customer destocking and lower demand, primarily in polymers, related to the weakening economy.

Gross profit of the Specialty Carbon Black segment increased marginally by $3.1 million, or 1.6%, from $197.6 million in 2021 to $200.7 million in 2022, primarily driven by higher margins and favorable product mix.

Adjusted EBITDA of the Specialty Carbon Black segment decreased by $4.5 million, or 3.0%, from $148.4 million in 2021 to $143.9 million in 2022. Adjusted EBITDA decrease was due to lower volume, impact of unfavorable foreign currency translation and higher selling, general and administrative costs. Those were partially offset by higher profit margins and favorable product mix.

Rubber Carbon Black

2022 Compared to 2021

Net sales of the Rubber Carbon Black segment increased by $406.9 million, or 42.9%, from $948.6 million in 2021 to $1,355.5 million in 2022. The increase was primarily due to improved base price, pass through of feed stock costs, higher volume and favorable product mix, partially offset by the impact of unfavorable foreign currency translation.

Volume of the Rubber Carbon Black segment increased by 37.5 kmt, or 5.3%, from 701.1 kmt in 2021 to 738.6 kmt in 2022. The increase reflects higher demand in Americas and Europe/Middle East/Africa.

Gross profit of the Rubber Carbon Black segment increased by $59.1 million, or 31.3%, from $189.0 million in 2021 to $248.1 million in 2022. The increase in the period was primarily driven by higher profit margins, higher volume and favorable product mix, partially offset by the impact of unfavorable foreign currency translation. Higher profit margins resulted from base price increases to recover environmental and reliability-related capital expenditures.

Adjusted EBITDA of the Rubber Carbon Black segment increased by $48.4 million, or 40.3%, from $120.0 million in 2021 to $168.4 million in 2022. The increase was primarily due to pricing, higher volume and product mix, partially offset by the impact of unfavorable foreign currency translation and higher selling, general and administrative costs.

Liquidity and Capital Resources

Historical Cash Flows

The table below presents cash flows derived from our Consolidated Financial Statements.

	Year Ended December 31,	
	2022	2021
	(In millions)	
Net cash provided by operating activities	$ 81.0	$ 145.2
Net cash used in investing activities	(232.8)	(214.7)
Net cash provided by financing activities	149.3	73.3

2022

Operating Activities—Cash provided by operating activities primarily reflected our Net income, adjusted for non-cash items and changes in working capital.

Investing Activities—Cash used by investing activities primarily reflects $165.8 million expenditures for safety, maintenance and growth investments and $67.0 million to install emissions reduction technology to meet the Environmental Protection Agency ("EPA") requirements in the U.S. See "*Note Q. Commitments and Contingencies*" to the accompanying Consolidated Financial Statements for further discussion of the Company's commitments and contingencies relating to the EPA.

Financing Activities—$149.3 million of cash provided by financing activities primarily reflects $91.0 million of net borrowings under our Revolving credit facilities ("RCF") and ancillary facilities, $47.8 million to partially finance the construction of our Huaibei facility, China, $36.3 million proceeds from Repurchase agreement, and Other short-term debt and obligations, net. Those were partially offset by a $30.2 million reduction in local uncommitted credit lines, scheduled debt repayments, dividend distributions and stock buybacks. See *Note J. Debt and Other Obligations* to the accompanying Consolidated Financial Statements for further information regarding the Company's indebtedness.

2021

Operating Activities—The cash provided by operating activities primarily reflected our Net income, adjusted for non-cash items, changes in working capital and $82.9 million related to Evonik legal settlement gain.

Investing Activities—Approximately $119.8 million related to capital expenditures comprises a combination of safety, maintenance, sustainability and growth investments. Additionally, approximately $94.9 million was associated with our ongoing efforts to install emissions reduction technology to meet EPA requirements.

Financing Activities—Net cash provided by financing activities is composed primarily of net borrowings under our revolving credit facility of $75.8 million for our working capital. Our financing activity included refinancing of our Term-loan and associated costs. See *Note J. Debt and Other Obligations* to the accompanying Consolidated Financial Statements for further discussion on our Term-loan refinancing.

Sources of Liquidity

Our principal sources of liquidity are the net cash generated (i) from operating activities, primarily driven by our operating results and changes in working capital requirements and (ii) from financing activities, primarily driven by borrowing amounts available under our committed multicurrency, senior secured RCF and related ancillary facilities, various uncommitted local credit lines, and, from time to time, term loan borrowings and Accounts receivable factoring.

We believe our anticipated future operating cash flow, the capacity under our existing credit facilities and uncommitted bilateral lines of credit, along with access to surety bonds, will be sufficient to finance our planned capital expenditures, settle our commitments and contingencies, and address our normal anticipated working capital needs for the foreseeable future.

As of December 31, 2022, the Company had liquidity of $292.2 million, including cash and equivalents of $60.8 million, $165.9 million in availability remaining under our revolving credit facility, including ancillary lines, $25.0 million undrawn on the term-loan for Huaibei, China, and $40.5 million under other available credit lines.

Net Working Capital (Non-GAAP Financial Measure)

We define Net Working Capital as the total of Inventories, net and Accounts receivable, net, less Accounts payable. Net Working Capital is a non-GAAP financial measure, and other companies may use a similarly titled financial measure that is calculated differently from the way we calculate Net Working Capital. The components of Net Working Capital at December 31, are as follows:

	2022	2021
	(In millions)	
Inventories, net	$ 277.9	$ 229.8
Accounts receivable, net	367.8	288.9
Accounts payable	(184.1)	(195.1)
	$ 461.6	**$ 323.6**

Our Net Working Capital position can vary significantly due to fluctuations in oil prices and receipts of carbon black oil shipments. In general, increases in the cost of raw materials lead to an increase in our Net Working Capital requirements. Our inventories and trade receivables increased primarily due to higher carbon black oil prices and higher Rubber Carbon Back sales volume. These increases are partially offset by related increases in Accounts payable. Due to the quantity of carbon black oil that we typically keep in stock, such increases in Net Working Capital occur gradually over a period of two to three months. Conversely, decreases in the cost of raw materials lead to a decrease in our Net Working Capital requirements over the same period of time.

Our Net Working Capital increased to $461.6 million as of December 31, 2022 compared to $323.6 million as of December 31, 2021. The components of working capital that used or provided cash were as follows:

- *Inventories, net*—Higher oil prices and an increase in production to meet forecasted demand resulted in increased raw material and finished goods inventory; and
- *Accounts receivable, net*—Increase was driven by higher sales due to higher product demand and passing through of higher feedstock costs.

Those increases were partially offset by:

- *Accounts payable*—Decrease in accounts payable was primarily due to timing of payments, partially offset by higher production and higher oil prices.

Capital Requirements

Capital Expenditures—We define Capital Expenditures as cash paid for the Acquisition of property, plant and equipment. We plan to finance our capital expenditures with cash generated by our operating activities and/or utilizing existing debt capacity. We currently do not have any material commitments to make capital expenditures and do not plan to make capital expenditures outside the ordinary course of our business. See "*Note Q. Commitments and Contingencies*" to the accompanying Consolidated Financial Statements for further details regarding our prior settlement with the EPA.

Debt and Other Obligations—Our gross debt balance as of December 31, 2022 was $919.7 million, an increase of $131.2 million compared to December 31, 2021. Maturities of $3.0 million of term loan debt, due in 2023, excluding net unamortized premiums and discounts, will be paid from current cash balances and cash generated by operations. For more information on Debt, refer to *Note J. Debt and Other Obligations* to the accompanying Consolidated Financial Statements.

Contractual Obligations—We do not have material contractual obligations. We believe other contractual obligations would be met with cash generated by our operating activities and/or utilizing existing debt capacity. For more information on Contractual obligations, refer to "*Note Q. Commitments and Contingencies*" to the accompanying Consolidated Financial Statements.

Leases—We do not have material short-term lease obligations. We believe lease obligations would be met with cash generated by our operating activities and/or utilizing existing debt capacity. For operating and finance leases, refer to *Note G. Leases* to the accompanying Consolidated Financial Statements.

Trend Information

See *Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations—Recent Developments and Certain Known Trends.*

Critical Accounting Policies and Estimates

The preparation of our financial statements in conformity with accounting principles generally accepted in the United States ("GAAP") requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues, expenses and related disclosure of contingent assets and liabilities. The policies and estimates discussed below are considered by our management to be critical to an understanding of the Consolidated Financial Statements, because their application requires the most significant judgments from management in estimating matters for financial reporting that are inherently uncertain. This discussion should be read in conjunction with our Consolidated Financial Statements and related notes included in this Annual Report in Form 10-K.

Use of Estimates—We consider an accounting estimate to be critical to the financial statements if (i) the estimate is complex in nature or requires a high degree of judgment and (ii) if different estimates and assumptions were used, the results could have a material impact on the Consolidated Financial Statements. Estimates and assumptions are based on information available at the time such estimates and assumptions are made. Adjustments made with respect to the use of these estimates and assumptions often relate to information not previously available. Uncertainties with respect to such estimates and assumptions are inherent in the preparation of the Consolidated Financial Statements. We evaluate our estimates and the application of our policies on an ongoing basis. Actual results may differ from these estimates under different assumptions or conditions.

Inventories—We account for our raw materials, work-in-progress and finished goods inventories using average cost method of accounting. The cost of raw materials, which represents a substantial portion of our operating expenses and energy costs generally follow price trends for crude oil and/or natural gas.

We periodically review inventory for both potential obsolescence and potential declines in anticipated selling prices. Due to natural inventory composition changes, variation in pricing from period to period does not necessarily result in a linear lower of cost or market ("LCM") impact. Fluctuation in the prices from period to period may result in the recognition of charges to adjust the value of inventory to the lower of cost or market in periods of falling prices and the reversal of those charges in subsequent interim periods as market prices recover. We write down the value of our inventories by an amount equal to the difference between the cost of the inventory and its estimated net realizable value. Historically, such write-downs have not been material. However, if actual market conditions are less favorable than those projected by management at the time of the assessment, additional inventory write-downs may be required, which could reduce our gross profit and our earnings.

Goodwill Impairment—We record goodwill for the excess of the cost of an acquisition over the fair value of the net assets of the acquired business. Goodwill is reviewed for impairment at least annually or more frequently if an event or change in circumstance indicates that an impairment may have occurred.

We also have the option to proceed directly to the quantitative impairment test. Under the quantitative impairment test, the fair value of each reporting unit, calculated using a discounted cash flow model, is compared to its carrying value including goodwill. The discounted cash flow model inherently utilizes a significant number of estimates and assumptions including operating margins, tax rates, discount rates, capital expenditures and working capital changes. If the carrying value of the reporting unit including goodwill exceeds its fair value, an impairment charge equal to the excess would be recognized, up to a maximum amount of goodwill allocated to that reporting unit.

For 2022 and 2021, we performed a qualitative impairment assessment of our reporting units. Both periods indicated the fair value of our reporting units was greater than their carrying value including goodwill. Accordingly, a quantitative goodwill impairment test was not required and no goodwill impairment was recognized in 2022 or 2021.

Loss Contingencies—We record liabilities for loss contingencies when it is probable that a liability has been incurred and the amount of loss is reasonably estimable. We provide disclosure when there is a reasonable possibility that the ultimate loss will exceed the recorded provision by a material amount or if the loss is not reasonably estimable but is expected to be material to our financial results. We are currently involved in litigation and other proceedings, as discussed in *Note Q. Commitments and Contingencies* to the accompanying Consolidated Financial Statements. We have accrued our estimates of the probable losses associated with these matters and associated legal costs are generally recognized as incurred. However, our losses are typically resolved over long periods of time and are often difficult to estimate due to various factors including the possibility of multiple actions by third parties. Therefore, it is possible future earnings could be affected by changes in our estimates related to these matters.

Accruals for Taxes Based on Income—The determination of our provision for income taxes and the calculation of our tax benefits and liabilities is subject to management's estimates and judgments due to the complexity of the tax laws and regulations in the tax jurisdictions in which we operate. Uncertainties exist with respect to interpretation of these complex laws and regulations.

Deferred tax assets and liabilities are determined based on temporary differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax basis and are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to reverse.

We recognize future tax benefits to the extent that the realization of these benefits is more likely than not. Our current provision for income taxes is impacted by the recognition and release of valuation allowances related to net deferred tax assets in certain jurisdictions. Further changes to these valuation allowances may impact our future provision for income taxes, which will include no tax benefit with respect to

losses incurred and no tax expense with respect to income generated in these countries until the respective valuation allowance is eliminated.

We recognize the financial statement benefits with respect to an uncertain income tax position that we have taken or may take on an income tax return when we believe it is more likely than not that the position will be sustained with the tax authorities.

ACCOUNTING AND REPORTING CHANGES

For a discussion of the potential impact of new accounting pronouncements on our Consolidated Financial Statements, see *Note B. Recent Accounting Pronouncements* to the accompanying Consolidated Financial Statements.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

Our activities expose us to a variety of market risks. Our primary market risk exposures relate to foreign exchange, interest rate and commodity risks. To manage these risks and our exposure to the unpredictability of financial markets, we seek to mitigate their impact on our financial performance and capital. Where appropriate, we use derivative financial instruments solely for the purpose of hedging the foreign exchange, interest and commodity risks arising from our operations and sources of finance. For this purpose, a systematic financial and risk management system has been established. We do not enter into derivative financial instruments for speculative purposes.

The following discussion and analysis only address our market risk and does not address other financial risks that we face in the normal course of business, including credit risk and liquidity risk.

Interest Rate Risk

Interest rate risk management aims to protect consolidated Net income from negative effects from market interest rate fluctuations. Orion is exposed to interest rate risk, which might arise from incurring new liabilities due to higher interest rates. We also have term loans which are variable interest rate instruments, that exposes us to market risk arising from changes in the yield curve. Appropriate hedging instruments are in place to mitigate the exposure arising from increasing interest rates.

The table below shows the sensitivity of our interest expense to changes in the interest rate, after the impact of hedge accounting. It shows the change resulting from a hypothetical fluctuation in the three-month LIBOR of 50 basis points (0.50%) as of December 31, 2022, assuming that all other variables remain unchanged. For example, changes in USD/EUR currency rate would have an impact on our interest exposure and vice versa. Changes in interest rates would also have a related impact on our foreign currency (USD) exposure. The sensitivity analysis assumes that the hypothetical interest rate was valid and that our Revolving credit facility was utilized in the full amount over the course of the entire year.

The effect of this hypothetical change in the interest rate of the variable rate loan on our consolidated Income before earnings in affiliated companies and income taxes ("income before taxes" in this section) for the year ended December 31, 2022 is as follows:

	December 31, 2022	
	Increase by 0.50%	Decrease by 0.50%
	In millions	
(Increase) decrease in interest expense	$ (0.7)	$ 0.8
Increase (decrease) in total comprehensive income before taxes	0.7	(0.8)

Foreign Currency Risk

A significant portion of our reporting entities use the euro as their functional currency. Our reporting currency is the U.S. dollar. The translation gains or losses that result from the process of translating the euro denominated financial statements to U.S. dollar are deferred in Accumulated other comprehensive income until such time as those entities may be substantially liquidated or sold. Changes in the value of the U.S. dollar relative to the euro can therefore have a significant impact on Comprehensive income.

The table below shows the sensitivity with regard to the effect of a change in the euro/U.S. dollar exchange rate using the outstanding amount and the interest for the U.S. dollar-denominated Term Loan issued by a 100% wholly owned subsidiary whose functional currency is the euro. A fluctuation of the euro/U.S. dollar exchange rate of 10% as of December 31, 2022, with other conditions remaining unchanged, would have the following effect on our Income before earnings in affiliated companies and income taxes:

	December 31, 2022	
	Value of the U.S. Dollar in relation to the Euro [1]	
	Increase by 10%	Decrease by 10%
	In thousands	
FX gain (loss) in financial result	$ 9.0	$ (11.0)

[1] As of December 31, 2022: €1 = $1.0666 (U.S.).

Some of our operations enter into transactions that are not denominated in their functional currency. This results in an exposure to foreign currency risk, including, but not limited to, third party and intercompany receivables and payables and intercompany loans.

Our policy is to maintain a balanced position in foreign currencies to minimize exchange gains and losses arising from changes in exchange rates. To minimize the effects of our net currency exchange exposures, we enter into foreign exchange contracts and cross-currency swaps. Our net position in foreign currencies is monitored daily.

We maintain risk management control practices to monitor foreign currency risk attributable to our intercompany and third party outstanding foreign currency balances. These practices involve the centralization of our exposure to underlying currencies that are not subject to central bank and/or country specific restrictions. By centralizing most of our foreign currency exposure into one subsidiary, we are able to take advantage of any natural offsets, thereby reducing the overall impact of changes in foreign currency rates on our earnings. At December 31, 2022, 2021, and 2020, a 10% fluctuation compared to the U.S. dollar in the underlying currencies that have no central bank or other currency restrictions related to non-hedged monetary assets, net would have resulted in an additional impact to earnings of approximately $11.0 million, $8.3 million, and $4.2 million, respectively.

Interest and other financial expense, net, in the Consolidated Statements of Operations reflected net exchange rate foreign currency losses of $3.5 million, $6.4 million and $15.2 million in 2022, 2021, and 2020, respectively.

Commodity Risk

Commodity risk results from changes in market prices for raw materials, mainly carbon black oil. Raw materials are primarily purchased to meet our production requirements. Costs for raw materials and energy have fluctuated significantly in past years and may continue to fluctuate in the future. We endeavor to reduce purchasing risks on the procurement markets through worldwide purchasing activities and optimized processes for the purchase of additional raw materials. Raw materials are purchased exclusively to cover our own requirements.

A significant portion of our volume, approximately 70%, is sold based on formula-driven price adjustment mechanisms for changes in costs of raw materials. Sales prices under non-indexed contracts are reviewed on a quarterly basis to reflect raw material and market fluctuation. We believe that our contracts enable us to generally maintain our Segment Adjusted EBITDA Margins.

Item 8. Financial Statements and Supplementary Data

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Orion Engineered Carbons S.A.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Shareholders and the Board of Directors of Orion Engineered Carbons S.A.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Orion Engineered Carbons S.A. (the Company) as of December 31, 2022 and 2021, the related consolidated statements of operations, comprehensive income, changes in stockholders' equity and cash flows for each of the two years in the period ended December 31, 2022, and the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2022 and 2021, and the results of its operations and its cash flows for each of the two years in the period ended December 31, 2022, in conformity with the U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2022, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organization of the Treadway Commission (2013 framework) and our report dated February 23, 2023 expressed an unqualified opinion thereon.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audit included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audit also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audit provides a reasonable basis for our opinion.

Critical Audit Matter

The critical audit matter communicated below is a matter arising from the current period audit of the financial statements that was communicated or required to be communicated to the audit committee and that: (1) relates to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective or complex judgments. The communication of the critical audit matter does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the account or disclosure to which it relates.

Inventory Reserves- Valuation

Description of the Matter	As discussed in Note A and D of the financial statements, the Company records an adjustment to the cost basis of inventory when evidence exists that the net realizable value of inventory is lower than its cost, which occurs when the Company has excess or obsolete inventory. The Company's model to estimate excess or obsolete inventory is based on an analysis of existing inventory quantities compared to historical and expected future consumption. Expected future consumption is estimated based upon historical consumption, recent purchase volumes, product age and condition, and market factors. Auditing management's reserves for excess or obsolete inventories associated with spare parts and finished goods involved significant auditor judgement because write-downs of inventories are based on subjective factors including inventory condition and projected sales and usage of inventory which are affected by market and economic conditions outside the Company's control.
How We Addressed the Matter in Our Audit	We obtained an understanding, evaluated the design, and tested the operating effectiveness of internal controls over the Company's inventory reserve process. This included management's assessment of the assumptions and data underlying the inventory reserve. Our substantive audit procedures included, among others, evaluating the significant assumptions stated above and the accuracy and completeness of the underlying data management used to value excess or obsolete inventory. We compared inventories on-hand to historical usage and forecasts of future demand obtained from entity-specific and available market information. We also performed sensitivity analyses over the significant assumptions to evaluate the changes in the excess and obsolete inventory estimates that would result from changes in the underlying assumptions.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 2021.
Houston, TX
February 23, 2023

Orion Engineered Carbons S.A.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Shareholders and the Board of Directors of Orion Engineered Carbons S.A.

Opinion on the Financial Statements

We have audited the accompanying consolidated statements of operations, comprehensive income, changes in stockholders' equity and cash flows of Orion Engineered Carbons S.A. (the Company) for the year ended December 31, 2020, and the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the consolidated results of the Company's operations and its cash flows for the year ended December 31, 2020 in conformity with U.S. generally accepted accounting principles.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ Ernst & Young GmbH

We have served as the Company's auditor from 2011 to 2021
Cologne, Germany
February 18, 2021

Orion Engineered Carbons S.A
Consolidated Statements of Operations

	Years Ended December 31,		
	2022	2021	2020
	(In millions, except share and per share data)		
Net sales	$ 2,030.9	$ 1,546.8	$ 1,136.4
Cost of sales	1,582.1	1,160.2	844.1
Gross profit	448.8	386.6	292.3
Selling, general and administrative expenses	227.1	210.4	176.1
Research and development costs	21.7	22.0	20.2
Gain related to litigation settlement	—	(82.9)	—
Other expenses, net	2.9	8.6	21.6
Income from operations	197.1	228.5	74.4
Interest and other financial expense, net	39.9	38.0	38.7
Reclassification of actuarial losses from AOCI	—	4.8	9.9
Income before earnings in affiliated companies and income taxes	157.2	185.7	25.8
Income tax expense	51.5	51.7	8.1
Earnings in affiliated companies, net of tax	0.5	0.7	0.5
Net income	$ 106.2	$ 134.7	$ 18.2
Weighted-average shares outstanding (in thousands):			
Basic	60,902	60,708	60,430
Diluted	61,378	60,951	61,407
Earnings per share			
Basic	$ 1.74	$ 2.22	$ 0.30
Diluted	$ 1.73	$ 2.21	$ 0.30

The accompanying notes are an integral part of these Consolidated Financial Statements.

Orion Engineered Carbons S.A
Consolidated Statements of Comprehensive Income

	Years Ended December 31,		
	2022	2021	2020
	(In millions)		
Net income	**$ 106.2**	**$ 134.7**	**$ 18.2**
Other comprehensive income (loss), net of tax			
Foreign currency translation adjustments	(13.4)	(7.6)	(14.3)
Net gains (losses) on derivatives	35.2	2.7	(2.6)
Defined benefit plans, net	14.2	5.1	2.5
Other comprehensive income (loss)	**36.0**	**0.2**	**(14.4)**
Comprehensive income	**$ 142.2**	**$ 134.9**	**$ 3.8**

The accompanying notes are an integral part of these Consolidated Financial Statements.

Orion Engineered Carbons S.A
Consolidated Balance Sheets

	December 31	
	2022	2021
	(In millions, except share data)	
ASSETS		
Current assets		
Cash and cash equivalents	$ 60.8	$ 65.7
Accounts receivable, net	367.8	288.9
Inventories, net	277.9	229.8
Income tax receivables	5.2	12.1
Prepaid expenses and other current assets	66.8	68.5
Total current assets	**778.5**	**665.0**
Property, plant and equipment, net	818.5	707.9
Right-of-use assets	97.6	84.6
Goodwill	73.4	78.0
Intangible assets, net	27.8	36.3
Investment in equity method affiliates	5.0	5.3
Deferred income tax assets	29.1	50.4
Other assets	58.8	3.5
Total non-current assets	**1,110.2**	**966.0**
Total assets	**$ 1,888.7**	**$ 1,631.0**
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities		
Accounts payable	$ 184.1	$ 195.1
Current portion of long term debt and other financial liabilities	258.3	151.7
Accrued liabilities	44.7	50.9
Income taxes payable	31.3	16.9
Other current liabilities	34.4	34.1
Total current liabilities	**552.8**	**448.7**
Long-term debt, net	657.0	631.2
Employee benefit plan obligation	50.0	74.4
Deferred income tax liabilities	70.0	61.8
Other liabilities	99.5	95.2
Total non-current liabilities	**876.5**	**862.6**
Stockholders' equity		
Common stock		
Authorized: 65,035,579 and 65,035,579 shares with no par value		
Issued – 60,992,259 and 60,992,259 shares with no par value		
Outstanding – 60,571,556 and 60,656,076 shares	85.3	85.3
Treasury stock, at cost, 420,703 and 336,183	(8.8)	(6.3)
Additional paid-in capital	76.4	71.4
Retained earnings	319.0	217.8
Accumulated other comprehensive loss	(12.5)	(48.5)
Total stockholders' equity	**459.4**	**319.7**
Total liabilities and stockholders' equity	**$ 1,888.7**	**$ 1,631.0**

The accompanying notes are an integral part of these Consolidated Financial Statements.

Orion Engineered Carbons S.A
Consolidated Statements of Cash Flows

	Years Ended December 31,		
	2022	2021	2020
	(In millions)		
Cash flows from operating activities:			
Net income	$ 106.2	$ 134.7	$ 18.2
Adjustments to reconcile net income to net cash provided by (used in) operating activities:			
Depreciation of property, plant and equipment and amortization of intangible assets and right of use assets	105.7	104.1	96.6
Amortization of debt issuance costs	1.9	4.1	2.1
Share-based incentive compensation	7.7	5.2	4.4
Deferred tax (benefit) provision	7.2	20.3	(12.2)
Foreign currency transactions	(8.4)	(11.5)	(4.9)
Reclassification of actuarial losses from AOCI	—	4.8	9.9
Other operating non-cash items, net	(0.3)	(1.8)	0.1
Changes in operating assets and liabilities, net:			
Trade receivables	(95.6)	(67.6)	(16.5)
Inventories	(60.1)	(94.9)	30.0
Trade payables	9.2	65.0	(18.7)
Other provisions	(3.7)	7.0	2.3
Income tax liabilities	20.3	(6.3)	16.4
Other assets and liabilities, net	(9.1)	(17.9)	(2.4)
Net cash provided by operating activities	**81.0**	**145.2**	**125.3**
Cash flows from investing activities:			
Acquisition of property, plant and equipment	(232.8)	(214.7)	(144.9)
Net cash used in investing activities	**(232.8)**	**(214.7)**	**(144.9)**
Cash flows from financing activities:			
Proceeds from long-term debt borrowings	47.8	213.4	—
Repayments of long-term debt	(3.0)	(213.0)	(8.2)
Payments for debt issue costs	(1.5)	—	—
Cash inflows related to current financial liabilities	223.2	188.4	206.0
Cash outflows related to current financial liabilities	(107.7)	(112.6)	(171.1)
Dividends paid to shareholders	(5.0)	—	(12.0)
Repurchase of common stock under Stock Repurchase Program	(4.3)	—	—
Other financing activities	(0.2)	(2.9)	(1.2)
Net cash provided by financing activities	**149.3**	**73.3**	**13.5**
Increase (decrease) in cash, cash equivalents and restricted cash	**(2.5)**	**3.8**	**(6.1)**
Cash, cash equivalents and restricted cash at the beginning of the period	68.5	67.9	68.2
Effect of exchange rate changes on cash	(2.6)	(3.2)	5.8
Cash, cash equivalents and restricted cash at the end of the period	**63.4**	**68.5**	**67.9**
Less restricted cash at the end of the period	2.6	2.8	3.0
Cash and cash equivalents at the end of the period	**$ 60.8**	**$ 65.7**	**$ 64.9**
Cash paid for interest, net	$ (33.5)	$ (22.8)	$ (20.8)
Cash paid for income taxes	$ (23.9)	$ (37.6)	$ (7.9)
Supplemental disclosure of non-cash activity:			
Lease liabilities	$ 25.8	$ 11.6	$ 66.6

The accompanying notes are an integral part of these Consolidated Financial Statements.

Orion Engineered Carbons S.A
Consolidated Statements of Changes in Stockholders' Equity

(In millions, except share and per share data)	Common stock Number	Amount	Treasury shares	Additional paid-in capital	Retained earnings	Accumulated other comprehensive loss	Total
As of January 1, 2020	**60,224,147**	**$ 85.0**	**$ (8.5)**	**$ 65.6**	**$ 78.2**	**$ (34.3)**	**$ 186.0**
Net income	—	—	—	—	18.2	—	18.2
Other comprehensive loss, net of tax	—	—	—	—	—	(14.4)	(14.4)
Dividends - $0.20 per share	—	—	—	—	(12.0)	—	(12.0)
Share based compensation	—	—	—	2.9	—	—	2.9
Issuance of stock under equity compensation plans	262,970	0.3	—	—	—	—	0.3
As of December 31, 2020	**60,487,117**	**85.3**	**(8.5)**	**68.5**	**84.4**	**(48.7)**	**181.0**
Net income	—	—	—	—	134.7	—	134.7
Other comprehensive income, net of tax	—	—	—	—	—	0.2	0.2
Dividends - $0.02 per share	—	—	—	—	(1.3)	—	(1.3)
Share based compensation	—	—	—	5.1	—	—	5.1
Issuance of stock under equity compensation plans	168,959	—	2.2	(2.2)	—	—	—
As of December 31, 2021	**60,656,076**	**85.3**	**(6.3)**	**71.4**	**217.8**	**(48.5)**	**319.7**
Net income	—	—	—	—	106.2	—	106.2
Other comprehensive income, net of tax	—	—	—	—	—	36.0	36.0
Dividends - $0.08 per share	—	—	—	—	(5.0)	—	(5.0)
Repurchases of Common stock	(244,032)	—	(4.3)	—	—	—	(4.3)
Share based compensation	—	—	—	7.7	—	—	7.7
Issuance of stock under equity compensation plans	159,512	—	1.8	(2.7)	—	—	(0.9)
As of December 31, 2022	**60,571,556**	**$ 85.3**	**$ (8.8)**	**$ 76.4**	**$ 319.0**	**$ (12.5)**	**$ 459.4**

The accompanying notes are an integral part of these Consolidated Financial Statements.

Orion Engineered Carbons S.A
Notes to the Consolidated Financial Statements

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Note A. Significant Accounting Policies

Orion Engineered Carbons S.A. ("Orion", the "Company", "we", "us", "our", or "OEC") is a Luxembourg joint stock corporation (société anonyme or S.A.), incorporated on July 28, 2014 as a Luxembourg limited liability company (société à responsabilité limitée).

Principles of Consolidation

The accompanying Consolidated Financial Statements have been prepared, in U.S. dollars, in conformity with accounting principles generally accepted in the United States ("U.S. GAAP" or "GAAP"). The Consolidated Financial Statements include the accounts of Orion Engineered Carbons S.A. and its wholly-owned subsidiaries and majority-owned and controlled entities. Subsidiaries are defined as being those companies over which we, either directly or indirectly, have control through a majority of the voting rights or the right to exercise control or to obtain the majority of the benefits and be exposed to the majority of the risks. Subsidiaries are consolidated from the date on which control is obtained until the date such control ceases.

All intercompany transactions and balances have been eliminated in consolidation.

Use of Estimates and Assumptions

We make estimates and assumptions to prepare our financial statements in conformity with GAAP. Those estimates and assumptions affect the amount we report in our Consolidated Financial Statements and accompanying Notes. Our actual results could differ from those estimates, and variances could materially affect our financial condition and results of operations in future periods.

Cash, Cash Equivalents and Restricted Cash

Cash and cash equivalents comprise bank balances, checks and cash on hand and include highly liquid investments with maturities of three-months or less at the date of purchase. We record cash and cash equivalents as restricted when we are unable to freely use such cash and cash equivalents for our general operating purposes.

A majority of our restricted cash and cash equivalents serves as cash collateral deposits, voluntary and/or mandatory, for third-party bank guarantees.

Accounts and Notes Receivables

Accounts receivable are amounts due from customers for merchandise sold or services performed in the ordinary course of business and are carried at transaction price net of allowance for credit losses. Allowance for credit losses is measured using historical loss rates for the respective risk categories and incorporating forward-looking estimates. The corresponding expense for the credit loss allowance is reflected in Selling, general and administrative expenses in the Consolidated Statements of Operations. Past due balances are written-off against credit loss allowance when the accounts are deemed no longer to be collectible.

Inventories

The Company values inventory at the lower of cost or net realizable value using the average cost method. We periodically evaluate the net realizable value of inventories based primarily upon their age, but also upon assumptions of future usage in production, customer demand and market conditions. Inventories have been reduced to the lower of cost or net realizable value by allowances for slow moving or obsolete goods. If actual circumstances are less favorable than those projected by management in its evaluation of the net realizable value of inventories, additional write-downs may be required.

Property, Plant and Equipment

Property, plant and equipment are recorded at historical cost. Historical cost includes expenditures that are directly attributable to the acquisition of the items. Costs may also include borrowing costs incurred on debt during construction of major projects exceeding one year, costs of major maintenance arising from turnarounds of major units and committed decommissioning costs. Expenditures for major renewals and improvements, which significantly extend the useful lives of the existing property, plant and equipment, are capitalized and depreciated.

Routine maintenance costs are expensed as incurred.

Depreciation is computed using the straight-line method over the estimated useful lives of assets. Depreciation of property, plant and equipment is calculated using the straight-line method over the expected useful lives of the related assets. The depreciable lives for Buildings, Plant and machinery, as well as Furniture, fixtures and office equipment, are between 5 and 50 years, 3 and 25 years, and 3 and 25 years, respectively.

Land is not depreciated.

We evaluate property, plant and equipment for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Long-lived assets are grouped at the lowest level for which there are identifiable cash flows that are

largely independent of the cash flows of other groups of assets, which, for us, is generally at the plant group level. If it is determined that an asset or asset group's undiscounted future cash flows will not be sufficient to recover the carrying amount, the asset is written down to its estimated fair value.

Gain or loss on retirement or sale of property, plant and equipment is reflected in *Other expenses, net* in the Consolidated Statements of Operations. There were no material write-offs in 2022, 2021 or 2020.

Goodwill

Goodwill is tested for impairment annually as of September 30, or whenever events or changes in circumstances indicate that the fair value of a reporting unit with goodwill is below its carrying amount.

We first assess qualitative factors to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying value. Qualitative factors assessed for each of the reporting units include, but are not limited to, changes in long-term commodity prices, discount rates, competitive environments, planned capacity, cost factors such as raw material prices, and financial performance of the reporting units. If the qualitative assessment indicates that it is more likely than not that the carrying value of a reporting unit exceeds its estimated fair value, a quantitative test is required. If the carrying value of the reporting unit including goodwill exceeds its fair value, an impairment charge equal to the excess would be recognized up to a maximum amount of goodwill allocated to that reporting unit.

For 2022 and 2021, we performed qualitative impairment assessments of our reporting units, which indicated that the fair value of our reporting units was more likely than not greater than their carrying value including goodwill. Based on this assessment, our historical assessment for impairment and forecasted demand for our products, a quantitative goodwill impairment test was not required and no goodwill impairment was recognized.

Intangible Assets

Intangible assets are comprised of trade names and trademarks, customer relationships, developed technologies and software costs. These assets are amortized, using the straight-line method, over their estimated useful lives of 3-15 years or over the term of the related agreement. The useful lives of intangibles related to customer relationships acquired in business combinations are estimated on the basis of contractual arrangements and the probability of a continuing relationship.

We evaluate definite-lived intangible assets with the associated long-lived asset group for impairment whenever impairment indicators are present, such as a significant reduction in cash flows associated with the assets.

Investments in Equity Method Affiliates

We account for equity investments ("equity investments") using the equity method of accounting if we have the ability to exercise significant influence over, but not control of, an investee. Significant influence generally exists if we have an ownership interest representing between 20% and 50% voting rights. Under the equity method of accounting, investments are stated initially at cost and are adjusted for subsequent additional investments and our proportionate share of profit or losses and distributions.

We record our share of the profit or losses of the equity method investments, net of income taxes, in the Consolidated Statements of Operations. When our share of losses in an equity investment equals or exceeds our interest in the equity investment, including any other unsecured receivables, we do not recognize further losses, unless we have incurred obligations or made payments on behalf of the equity investment.

We evaluate our equity method investments for impairment when events or changes in circumstances indicate, in our management's judgment, that the carrying value of such investments may have experienced other-than-temporary decline in value. When evidence of loss in value has occurred, we compare the estimated fair value of investment to the carrying value of investment to determine whether an impairment has occurred. If the estimated fair value is less than the carrying value and our management considers the decline in value to be other-than-temporary, the excess of the carrying value over the estimated fair value is recognized in the Consolidated Financial Statements as an impairment.

We have investments in *Kommanditgesellschaft Deutsche Gasrußwerke GmbH & Co* and *Kommanditgesellschaft Deutsche Gasrußwerke GmbH & Co*, (together "DGW"), which are accounted for using the equity method.

Income Taxes

The income tax for the period comprises current and deferred tax. Income tax is recognized in the Consolidated Statements of Operations, except to the extent that it relates to items recognized in other comprehensive income or directly in equity. In these cases, the applicable tax amount is recognized in other comprehensive income or directly in equity, respectively.

Deferred income taxes reflect the net tax effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes, as well as the net tax effects of tax carryforwards. Valuation allowances are provided against deferred tax assets when it is more likely than not that some portion or all of the deferred tax asset will not be realized.

We recognize uncertain income tax positions in our financial statements when we believe it is more likely than not, based on the technical merits, that the position or a portion thereof will be sustained upon examination. For a position that is more likely than not to be sustained, the benefit recognized is measured at the largest cumulative amount that is greater than 50 percent likely of being realized.

Other Provisions

Asset retirement obligations—At some sites, we are contractually obligated to decommission our plants upon site exit. Asset retirement obligations are recorded at the present value of the estimated costs to retire the asset at the time the obligation is incurred. That cost, which is capitalized as part of the related long-lived asset, is depreciated on a straight-line basis over the remaining useful life of the related asset. Accretion expense in connection with the discounted liability is also recognized over the remaining useful life of the related asset.

Environmental provisions—We accrue for environmental remediation costs and other obligations when it is probable that a liability has been incurred and we can reasonably estimate the amount. The amount accrued reflects our assumptions about remediation requirements at the contaminated site, the nature of the remedy, the outcome of discussions with regulatory agencies and other potentially responsible parties at multi-party sites, and the number and financial viability of other potentially responsible parties. We do not reduce its estimated liability for possible recoveries from insurance carriers. Proceeds from insurance carriers are recorded when realized by either the receipt of cash or a contractual agreement. We determine the timing and amount of any liability based upon assumptions regarding future events. Inherent uncertainties exist in such evaluations primarily due to unknown conditions and other circumstances, changing governmental regulations and legal standards regarding liability, and evolving technologies. We adjust these liabilities periodically as remediation efforts progress or as additional technical or legal information becomes available.

Concentrations of Credit Risk

This concentration of customers may impact our overall exposure to credit risk, either positively or negatively, in that our customers may be similarly affected by changes in economic or other conditions. In addition, we and many of our customers operate worldwide and are therefore exposed to risks associated with the economic and political forces of various countries and geographic areas. We generally do not obtain any collateral for our receivables.

Foreign Currency Translation

Functional and Reporting Currency—Items included in the financial information of each of Orion's entities are measured using the currency of the primary economic environment in which the entity operates ("the functional currency") and then translated to the U.S. dollar ("the reporting currency") as follows:

- Assets and liabilities for each balance sheet presented are translated at the closing rate at the date of that balance sheet;
- Income and expenses for each income statement are translated at monthly average exchange rates; and
- All resulting exchange differences are recognized as a separate component within Other comprehensive income (foreign currency translation adjustments).

Transactions and Balances—Foreign currency transactions are recorded in their respective functional currency using exchange rates prevailing at the dates of the transactions. Exchange gains and losses, resulting from the settlement of such transactions and from remeasurement of monetary assets and liabilities denominated in foreign currencies at period-end exchange rates, are recognized in Interest and other financial expense, net in the Consolidated Statements of Operations.

Revenue Recognition

We recognize revenue when the customers obtain control of promised goods or services. The revenue recognized is the amount of consideration which we expect to receive in exchange for those goods or services. Our contracts with customers are generally for products only and do not include other performance obligations. Generally, we consider purchase orders, which in some cases are governed by master supply agreements, to be contracts with customers. The transaction price as specified on the purchase order or sales contract is considered the standalone selling price for each distinct product. To determine the transaction price at the time when revenue is recognized, we evaluate whether the price is subject to adjustments, such as for discounts or volume rebates, which are stated in the customer contract, to determine the net consideration to which we expect to be entitled.

Revenue from product sales is recognized based on a point in time model when control of the product is transferred to the customer, which typically occurs upon shipment or delivery of the product to the customer and title, risk and rewards of ownership have passed to the customer.

Taxes collected on sales to customers are excluded from the transaction price.

Shipping and handling activities that occur after the transfer of control to the customer are billed to customers and are recorded as sales revenue, as we consider these to be fulfillment costs. Shipping and handling costs are expensed in the period incurred and included in Selling, general and administration expenses in our Consolidated Statements of Operations.

Payment terms on product sales to our customers typically range from 30 to 90 days. When the period of time between the transfer of control of the goods and the time the customer pays for the goods is one year or less, we do not consider there to be a significant financing component associated with the contract.

We do not have contract assets or liabilities that are material.

Stock-based compensation

Equity instruments are measured at fair value on the grant date. Stock-based compensation expense is generally recognized on a straight-line basis over the requisite service periods of the awards.

We use a Monte Carlo model to determine the fair value of certain share-based awards that contain market and performance-based conditions. The use of these models requires highly subjective assumptions, such as assumptions about the expected life of the award, vesting probability, expected dividend yield and the volatility of our stock price.

Compensation expense for liability-classified share-based awards are recognized on a straight-line basis over the vesting period as a liability and remeasured, at fair value, at the balance sheet date.

Leases

At inception of a contract, we determine if the contract contains a lease. When a lease is identified, we recognize a leased asset (i.e., "Right-of-Use" or "ROU" assets) and a corresponding lease liability based on the present value of the lease payments over the lease term, discounted using our incremental borrowing rate, unless an implicit rate is readily determinable. Lease payments include fixed and variable lease components derived from usage or market-based indices, such as the consumer price index. Variable lease payments may fluctuate for a variety of reasons including usage, output, insurance or taxes. These variable amounts are expensed as incurred and not included in the lease assets or lease liabilities. Options to extend or terminate a lease are reflected in the lease payments and lease term when it is reasonably certain that we will exercise those options. Leases are classified as either finance or operating, with classification affecting the pattern of expense recognition in the Consolidated Statements of Operations.

Majority of our leases are operating leases for which we recognize lease expense on a straight-line basis over the lease term. We apply the practical expedient to account for lease and associated nonlease components as a single lease component.

Leases with an initial term of 12 months or less are recognized in the Consolidated Statements of Operations on a straight-line basis over the lease term.

Financial Instruments and Hedging Activities

Pursuant to our risk management policies, we may choose to enter into derivative transactions to manage market risk volatility associated with changes in commodity pricing, currency exchange rates and interest rates. Derivatives used for this purpose are generally designated as net investment hedges, cash flow hedges or fair value hedges. Derivative instruments are recorded at fair value in the balance sheet. Gains and losses related to changes in the fair value of derivative instruments not designated as hedges are recorded in Interest and other financial expense, net, in the Consolidated Statements of Operations.

Cash flows from derivatives designated as hedges are reported in our Consolidated Statements of Cash Flows under the same category as the cash flows from the hedged items unless the derivative contract contains a significant financing element. Cash flows for derivatives with a significant financing element are classified as Cash flows from financing activities.

Cash Flow Hedges—We enter into accounting cash flow hedges to manage the variability in cash flows of a future transaction. Our cash flow hedges include cross currency swaps, and options and swaps to hedge interest rate and foreign exchange risk. For derivatives designated as accounting cash flow hedges, the gains and losses are recorded in Other comprehensive income (loss) and released to earnings in the same line item and in the same period during which the hedged item affects earnings.

We use regression analysis to assess initial hedge effectiveness. Following the inception of a hedging relationship, hedge effectiveness is assessed quarterly based on qualitative factors, if applicable, or regression analysis.

We have *cross-currency swap contracts* designated as cash flow hedges to reduce our exposure to the foreign currency exchange risk associated with certain intercompany loans and debt denominated in currencies other than the functional currency of the issuer. Under the terms of these contracts, we make interest payments in euros and receive interest in U.S. dollars. Upon the maturities of these contracts, we will pay the principal amount of the loans in euros and receive U.S. dollars from our counterparties.

Net Investment Hedges—We enter into foreign currency derivatives and foreign currency denominated debt to reduce the volatility in shareholders' equity resulting from changes in currency exchange rates of our foreign subsidiaries with respect to the U.S. dollar. Our foreign currency derivatives consist of cross-currency contracts and forward exchange contracts.

For derivatives designated as accounting net investment hedges, gains or losses attributable to changes in spot foreign exchange rates over the designation period are reflected in foreign currency translation adjustments within Other comprehensive income (loss). Recognition in

earnings is delayed until the net investment is sold or substantially liquidated. At that time, the amount recognized is reported in the same line item as the gain or loss on the liquidation of the hedged foreign operations. For our cross-currency swaps, the associated interest receipts and payments are recorded in Interest expense. For our foreign currency forward contracts, we amortize initial forward point values on a straight-line basis to Interest expense over the life of the hedging instrument. We monitor on a quarterly basis for any overhedged positions requiring de-designation and re-designation of the hedge to remove such over-hedged condition.

Fair Value of Financial Instruments

Fair value is defined as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in an orderly transaction between market participants at the measurement date. An established hierarchy for inputs is used in measuring fair value that maximizes the use of observable inputs and minimizes the use of unobservable inputs by requiring that the most observable inputs be used when available. Observable inputs are inputs that market participants would use in valuing the asset or liability and are developed based on market data obtained from sources independent of Orion. Unobservable inputs are inputs that reflect our assumptions about the factors that market participants would use in valuing the asset or liability.

Fair value is estimated by applying the following hierarchy, which prioritizes the inputs used to measure fair value into three levels and bases the categorization within the hierarchy upon the lowest level of input that is available and significant to the fair value measurement.

- *Level 1*—inputs are based on quoted prices for identical instruments traded in active markets.
- *Level 2*—inputs are based on quoted prices for similar instruments in active markets, quoted prices for similar or identical instruments in inactive markets and model-based valuation techniques for which all significant assumptions are observable in the market or can be corroborated by observable market data for substantially the full term of the assets and liabilities.
- *Level 3*—one or more significant inputs are generally unobservable and typically reflect management's estimates of assumptions that market participants would use in pricing the asset or liability. The fair values are therefore determined using model-based techniques that include option pricing models, discounted cash flow models and similar valuation techniques.

For level 2, we use the following inputs and valuation techniques to estimate the fair value of our financial instruments:

- *Cross-Currency Swaps*—The fair value of our cross-currency swaps is calculated using the present value of future cash flows discounted using observable inputs such as known notional value amounts, yield curves, basis curves, as applicable, and with the foreign currency leg revalued using published spot and forward exchange rates on the valuation date.
- *Floating-for-Fixed Interest Rate Swaps*—The fair value of our floating-for-fixed interest rate swaps is calculated using the present value of future cash flows using observable inputs such as benchmark interest rates and market yield curves.
- *Long-Term Debt*—The fair value of our Term-Loan is calculated using pricing data obtained from well-established and recognized vendors of market data for debt valuations. The fair value of our term loan is determined based on a discounted cash flow model using observable inputs such as benchmark interest rates and public information regarding our credit risk.

The carrying amounts that we have reported for financial instruments, including Cash and cash equivalents, Restricted cash and cash equivalents, Accounts receivable, Accounts payable and Short-term debts, approximate their fair values due to the short maturity of those instruments.

Employee Benefits

Pension Plans:

Defined Benefit Plans—Our defined benefit pension obligations are measured in accordance with the projected unit credit method. The calculations and the resulting amounts recorded in our Consolidated Financial Statements are affected by assumptions including the discount rate, expected long-term rate of return on plan assets, the annual rate of change in compensation for plan-eligible employees, mortality tables, and other factors. We evaluate the assumptions used on an annual basis.

Past service cost and actual return on plan assets in excess of expected return are initially recorded in Other comprehensive income and subsequently recognized in earnings over the average remaining service period of the participants to the extent it exceeds the "corridor". The corridor is defined as the greater of 10 percent of the accumulated projected benefit obligation or the fair value of the plan assets as of the beginning of the year.

Defined contribution obligations—Defined contribution obligations arise from commitments and state pension schemes (statutory pension insurance). We account for our contributions to a defined contribution plan on an accrual basis. An asset or liability may result from advance payments or payments due, respectively, to a defined contribution fund.

Note B. Recent Accounting Pronouncements

Recently Adopted Accounting Standards

Government Assistance—On November 17, 2021, the FASB issued Accounting Standards Update (ASU) No. 2021-10, *Disclosures by Business Entities About Government Assistance,* which requires business entities to provide certain disclosures when they have received government assistance and use a grant or contribution accounting model by analogy to other accounting guidance (e.g., a grant model under IAS 20, *Accounting for Government Grants and Disclosure of Government Assistance*; *Assistance*; ASC 958-605, *Not-for-Profit Entities—Revenue Recognition*). The guidance is effective for financial statements issued for annual periods beginning after December 15, 2021. Entities may apply the ASU's provisions either (1) prospectively to all transactions within the scope of ASC 832 that are reflected in the financial statements as of the adoption date and all new transactions entered into after the date of adoption or (2) retrospectively. We adopted this standard on January 1, 2022. The adoption of this standard did not materially impact our Consolidated Financial Statements.

Note C. Accounts Receivable

Accounts receivable, at December 31, are as follows:

	2022	2021
	(In millions)	
Accounts receivable	$ 370.4	$ 291.5
Expected credit losses	(2.6)	(2.6)
Accounts receivable, net of expected credit losses	**$ 367.8**	**$ 288.9**

Allowance for credit losses, at December 31, are as follows:

	2022	2021
	(In millions)	
Allowance for credit losses as of January 1,	$ (2.6)	$ (5.8)
Credit loss expense	(0.2)	(0.6)
Credit loss income and utilization	—	3.6
Foreign currency translation effects	0.2	0.2
Allowance for credit losses as of December 31,	$ (2.6)	$ (2.6)

Note D. Inventories

Inventories, net of reserves, at December 31, are as follows:

	2022	2021
	(In millions)	
Raw materials, consumables and supplies, net	$ 108.3	$ 97.1
Work in process	—	0.2
Finished goods, net	169.6	132.5
Total	**$ 277.9**	**$ 229.8**

As of December 31, 2022 and 2021, inventory reserves were approximately $21.4 million and $15.9 million, respectively.

Note E. Prepaid Expenses and Other Current Assets and Other Assets

Prepaid expenses and Other current assets, at December 31, consist of the following components:

	December 31	
	2022	2021
	(In millions)	
VAT	$ 31.3	$ 23.4
Deposits	18.7	17.5
Restricted Cash	2.6	2.8
Miscellaneous other	14.2	24.8
Total	**$ 66.8**	**$ 68.5**

Other assets, at December 31, consist of the following components:

	December 31	
	2022	2021
	(In millions)	
Financial assets	$ 56.9	$ 0.7
Miscellaneous other	1.9	2.8
Total	**$ 58.8**	**$ 3.5**

Note F. Property, Plant and Equipment

Property, plant and equipment, at December 31, consists of the following:

	2022	2021
	(In millions)	
Land	$ 31.0	$ 32.6
Land rights and buildings	104.1	104.1
Plant and machinery	1,054.9	1,029.9
Other equipment, furniture and fixtures	38.1	38.4
Construction in progress	260.2	115.2
Total property, plant and equipment	**1,488.3**	**1,320.2**
Less: accumulated depreciation	669.8	612.3
Net property, plant and equipment	**$ 818.5**	**$ 707.9**

Depreciation expense was $89.0 million, $86.5 million and $81.0 million for fiscal years ending December 31, 2022, 2021 and 2020, respectively.

Note G. Leases

Orion has entered into lease contracts as a lessee and is not acting as a lessor. The vast majority of Orion's lease contracts are for operating assets such as rail cars, company cars, offices and office equipment, etc. Lease costs for the years ended December 31, are as follows:

	2022	2021	2020
	(In millions)		
Finance lease costs	$ 7.1	$ 6.4	$ 2.3
Operating lease costs	7.1	7.6	8.5
Short-term leasing costs	4.6	3.8	3.1
Total	**$ 18.8**	**$ 17.8**	**$ 13.9**

ROU assets and lease liabilities related to operating and finance leases reflected in the Consolidated Balance Sheets, at December 31, are as follows:

	2022	2021
	(In millions)	
ROU Assets		
Operating leases	$ 19.0	$ 20.0
Finance leases	78.6	64.6
Total	**$ 97.6**	**$ 84.6**
Lease Liabilities[1]		
Operating leases		
Current	$ 6.3	$ 7.9
Long-term	12.3	12.0
	18.6	**19.9**
Finance leases		
Current	4.1	3.7
Long-term	75.6	61.0
	79.7	**64.7**
Total	**$ 98.3**	**$ 84.6**

[1] Reflected in Current and Other liabilities in the Consolidated Balance Sheets.

The weighted remaining average minimum lease period for finance and operating leases are 20.0 years and 5.3 years, respectively.

Maturities of operating and finance lease liabilities are as follows:

	Finance Leases	Operating Leases	Total
		(In millions)	
Next 12 months	$ 7.3	$ 7.0	$ 14.3
1 to 2 years	6.1	4.6	10.7
2 to 3 years	6.0	3.7	9.7
3 to 4 years	5.6	1.7	7.3
4 to 5 years	5.6	1.2	6.8
More than 5 years	91.7	2.7	94.4
Total undiscounted minimum lease payments	**122.3**	**20.9**	**143.2**
Imputed interest	(42.6)	(2.3)	(44.9)
Lease liability (current and non-current)	**$ 79.7**	**$ 18.6**	**$ 98.3**

The weighted average discount rate applied to the lease liabilities is 4.47%.

Note H. Goodwill and Intangible Assets

Goodwill

The carrying amount of goodwill attributable to each reportable segment for the years ended December 31, are as follows:

	Rubber	Specialty	Total
		(In millions)	
Balance as of January 1, 2021	**$ 33.8**	**$ 50.7**	**$ 84.5**
Foreign currency impact	(2.6)	(3.9)	(6.5)
Balance as of December 31, 2021	**31.2**	**46.8**	**78.0**
Foreign currency impact	(1.8)	(2.8)	(4.6)
Balance as of December 31, 2022	**$ 29.4**	**$ 44.0**	**$ 73.4**

Intangible Assets

The components of identifiable intangible assets, at cost, and the related accumulated amortization, at December 31, are as follows:

	2022			2021		
	Cost	Accumulated Amortization	Net	Cost	Accumulated Amortization	Net
	(In millions)					
Developed technology and patents	$ 67.4	$ 52.7	$ 14.7	$ 71.5	$ 51.8	$ 19.7
Customer relationships	72.6	69.8	2.8	76.9	73.6	3.3
Trademarks	18.3	13.8	4.5	19.5	13.4	6.1
Long-term contracts	7.5	2.3	5.2	7.9	1.9	6.0
Other intangible assets	42.6	42.0	0.6	42.8	41.6	1.2
Total intangible assets	**$ 208.4**	**$ 180.6**	**$ 27.8**	**$ 218.6**	**$ 182.3**	**$ 36.3**

Amortization expense for the years ended December 31, 2022, 2021 and 2020 was $6.6 million, $7.8 million and $8.2 million, respectively, and is included in Cost of sales and Selling, general and administrative expenses in the Consolidated Statements of Operations.

The estimated aggregate amortization expense for intangible assets for the fiscal years ending December 31, are as follows:

Year	(In millions)
2023	$ 6.0
2024	5.9
2025	5.9
2026	4.6
2027	0.7
Thereafter	4.7
Total aggregated amortization	**$ 27.8**

Note I. Accruals and Other Liabilities

The components of Current accrued liabilities, at December 31, are as follows:

	2022	2021
	(In millions)	
Accrued employee compensation	$ 24.7	$ 26.1
Accrued liabilities for sales and procurement	7.2	5.6
Accrued liabilities for restructuring	3.8	9.3
Environmental reserves	2.0	3.4
Other accrued liabilities	7.0	6.5
Total	**$ 44.7**	**$ 50.9**

The components of Other current liabilities, at December 31, are as follows:

	2022	2021
	(In millions)	
Employee related liabilities	$ 5.3	$ 5.6
Current lease liabilities (refer to *Note G. Leases*)	10.4	11.6
Other current liabilities	18.7	16.9
Total	**$ 34.4**	**$ 34.1**

The components of Other long-term liabilities, at December 31, are as follows:

	2022	2021
	(In millions)	
Employee related liabilities	$ 4.5	$ 4.9
Liabilities for asset retirement obligation	4.3	4.1
Environmental reserve	2.8	4.4
Long-term lease liabilities (refer to *Note G. Leases*)	87.9	73.0
Other non-current liabilities	—	8.8
Total	**$ 99.5**	**$ 95.2**

Note J. Debt and Other Obligations

Debt and Other Obligations, at December 31, are as follows:

	2022	2021
	(In millions)	
Current		
Current portion of Term Loans	$ 3.0	$ 3.0
Deferred debt issuance costs - Term loans	(0.7)	(0.8)
Other short-term debt and obligations	256.0	149.5
Current portion of long-term debt and other financial liabilities	**258.3**	**151.7**
Non-current		
Term Loans	613.2	636.0
Deferred debt issuance costs - Term loans	(3.7)	(4.8)
China Term loan	47.5	—
Long-term debt, net	**657.0**	**631.2**
Total	**$ 915.3**	**$ 782.9**

(a) Term Loan

In 2014, Orion entered into Credit Agreement, which included an $895.0 million term loan, which was allocated to a term loan facility denominated in U.S. Dollars of $358.0 million and a term loan facility denominated in Euros of €399.0 million with both having an original maturity date of July 25, 2021 (the "Prior Term Loans"). Initial interest was calculated based on three-month EURIBOR (for the Euro-denominated loan), and three-month USD-LIBOR (for the USD-denominated loan) plus a 3.75% - 4.00% margin depending on the Company's net leverage ratio. For both EURIBOR and USD-LIBOR a floor of 1.0% applied. At least 1% of the principal amount is required to be repaid per annum.

Subsequent to 2014, Orion entered into a number of amendments, achieving a significant reduction of both interest margins to 2.00% for the U.S. dollar term loan and 2.25% for the Euro term loan. In addition, the interest margin was no longer linked to Orion's net leverage ratio and the EURIBOR and USD-LIBOR floors were eliminated. In 2017, the duration of the Prior Term Loans was extended to July 25, 2024.

In September 2021, Orion entered into the Ninth Amendment to the Credit Agreement, which includes an amended and restated term loan agreement (the "Term Loans"). The Term Loan facility was allocated to a term loan facility denominated in U.S. dollars of $300 million and denominated in Euros of €300 million with both having a maturity date of September 24, 2028, replacing the Prior Term Loans. Interest is calculated based on three months EURIBOR (for the Euro-denominated loan) plus a margin of 2.50%, or three-month USD-LIBOR (for the USD-denominated loan) plus a margin of 2.25%. For the U.S. dollar loan, a floor of 0.50% applies and for the Euro-denominated loan no floor exists. 1% of the principal amount is required to be repaid per annum in respect to the USD-denominated loans, whereas there is no scheduled amortization for the Euro-denominated loans. The Credit Agreement was also amended to include LIBOR replacement language in preparation for the eventual phase out of the London Interbank Offered Rate (LIBOR).

The Term Loans include a sustainability-linked margin adjustment that applies to both the Euro and U.S. dollar loans. The margin adjustment is based on annual SO_2 and NOx emission reduction targets for the Company's North American plants between 2022 and 2028, respectively. Specifically, the credit spread on the Term Loans will decline or rise by up to 10 basis points depending on the emissions profile of the Company's North American plants, in aggregate. Starting in 2022 and continuing through 2025, the Company reviews annually whether both interim targets have been met. The review of 2022 is in process. If the Company achieves both targets, it will benefit from up to a 10-basis point credit spread reduction for the prospective 12 months period following the submission of the annual ESG compliance certificate. For the period from 2026 to 2028, a margin step-up by 5 or 10 basis points would occur if Orion does not maintain the reduced emissions profile of one or both targets.

Other provisions of the Credit Agreement relating to the Term Loan remained substantially unchanged.

In connection with the September 2021 modification of the Term Loan, Orion incurred approximately $7.8 million of refinancing costs of which $2.8 million of loan origination costs were capitalized and $5.0 million of other fees were directly expensed.

The Term Loan interest rates as of December 31, 2022 and 2021 were as follows:

	2022	2021
Euro-denominated Term Loan	2.80 %	2.31 %
U.S. dollars denominated Term Loan	4.11 %	2.34 %

(b) China Term Loan

To partially finance the construction of our Huaibei facility in China, on March 16, 2022, our wholly owned subsidiary, Orion Engineered Carbons (Huaibei) Co., Ltd. ("OECCL"), entered into a 4.5% fixed interest rate, CNY500 million (approximately $72 million), eight-year term-loan agreement with The Bank of China ("BOC Term-Loan") maturing on December 21, 2029. OECCL is required to repay the BOC Term-Loan principal in semi-annual payments beginning June 2024. Interest is payable quarterly, beginning June 2022. The agreement restricts OECCL's ability to make external investments, repay intercompany loan or distribute dividends. The principal repayments under the agreement are: 2% in 2024, 10% in 2025 and 22% each year thereafter, concluding in June 2029. The BOC Term-Loan is secured with the Huaibei facility's land, construction in progress, and buildings as collateral. As of December 31, 2022, we have drawn $47.5 million on the facility.

(c) Other Short-Term Debt and Obligations

Other short-term debt and obligations, at December 31, 2022 and 2021, as follows :

	2022	2021
	(In millions)	
Revolving Credit Facility	$ 53.3	$ —
Ancillary Credit Facilities		
OEC GmbH outstanding borrowings	148.7	103.0
OEC LLC outstanding borrowings	5.4	13.4
Uncommitted Local Lines of Credit:		
Korea (capacity $45.6 million)	—	30.8
Brazil (capacity $2.9 million)	2.9	2.3
Korea Working Capital Loan	7.9	—
China Working Capital Loan	1.5	—
Repurchase Agreement	36.3	—
Total of Other Short-term Debt and Obligations	**$ 256.0**	**$ 149.5**
Supplemental information:		
Total ancillary capacity - EUR	**€ 268.3**	**€ 170.0**
Total ancillary capacity - U.S. Dollars	**$ 286.1**	**$ 192.5**

Revolving Credit Facility

In 2014, under the Credit Agreement, we entered into a €115.0 million multicurrency revolving credit facility ("RCF") with an original maturity date of July 25, 2019. Interest is calculated based on EURIBOR (for euro drawings), and USD-LIBOR (for U.S. Dollar drawings) plus a 2.5% - 3.0% margin (depending on leverage ratio).

Subsequent to 2014, Orion entered into a number of amendments, which largely were made to increase the RCF capacity. The RCF amendment completed in April 2019, extended the RCF maturity date to April 25, 2024, increased the aggregate amount of revolving credit commitments in Euro by €75.0 million and reduced the interest margin to a 1.7% to 2.7% range, using a revised pricing grid. In May 2022, we added an additional €100 million of capacity to our RCF which expands our facility to €350.0 million.

All other terms of the RCF remained substantially unchanged, including the commitment fee, which remains at 35% of the interest margin or 0.8% at December 31, 2022. As of and for the year ended December 31, 2022, $53.3 million and RCF borrowings, as defined in the RCF agreement, had been drawn. There were no amounts drawn during 2021. We classify amounts outstanding under the RCF as current in our Consolidated Balance Sheets as the borrowings are for short-term working capital needs, typically for one-month periods, and based on management's intention to repay the amounts outstanding within one year from the date of drawing.

Letters of credit can be issued for the amount available under the RCF and ancillary facilities. The weighted average interest rates on the RCF as of December 31, 2022 and 2021 were 4.8% and 2.4%, respectively.

For the years ended December 31, 2022, 2021 and 2020, amortized transaction costs were immaterial.

Unamortized transaction costs included in the Consolidated Balance Sheets, as of December 31, 2022 and 2021, were approximately $2.2 million and $2.2 million, respectively.

As of December 31, 2022, the Company's net leverage ratio was 2.8x, which corresponds to an interest margin of 2.40 for both USD and Euro denominated borrowings.

Ancillary Credit Facilities—As part of the RCF, the Company can also establish ancillary credit facilities by converting the commitments of select lenders under the €350.0 million RCF into bilateral credit agreements. Original borrowings under ancillary credit facilities reduce availability under the RCF. Borrowings under ancillary credit facilities do not count toward debt drawn under the RCF for the purposes of determining whether the financial covenant under the Credit Agreement related to the RCF must be tested.

During the second quarter 2020, the Company increased the number of RCF banks and total converted ancillary borrowings from €130 million to €170 million. During 2022, the Company further increased the number of RCF banks and total converted ancillary borrowings to €268 million.

Full RCF utilization will not trigger the 35% covenant threshold (for discussion see *Covenant Compliance,* First Lien Leverage Ratio covenant section below).

As of December 31, 2022, the total commitment of €350 million (approximately $373 million) was split between an €82 million RCF tranche and €268 million of bilateral ancillary facilities established directly with several banks under the RCF.

As of December 31, 2022 and 2021, committed ancillary credit facilities totaled $286.1 million and $192.5 million, respectively.

As of December 31, 2022, unutilized ancillary borrowing capacity was approximately $165.9 million.

The general terms of the ancillary credit facilities are linked to the terms in the RCF.

Uncommitted Local Lines of Credit—The uncommitted local lines of credit in Brazil and Korea are with local banks that are not lenders under the Credit Agreement and were negotiated bilaterally.

Korea Working Capital Loan—For working capital flexibility, in June 2022, we entered in a one-year term-loan agreement for ₩10.0 billion Korean won ($7.9 million) with Hana Bank. The interest rate on this loan at inception is 4.3%. For early repayment, we are required to pay a 1% prorated early repayment fee. In the Consolidated Statements of Cash Flows, this loan is reflected in *Cash inflows related to current financial liabilities*. Due to the short maturity, the carrying value approximates the fair value.

China Working Capital Loan—For working capital flexibility in Qingdao, we have a CNY 30 million ($4.3 million) facility with a local branch of Bank of China with no commitment fee. Interest is calculated based on People's Bank of China ("PBOC") one-year loan prime rate ("LPR") plus 0.35% margin. As of December 31, 2022, we have drawn CNY 10 million ($1.5 million) as a one-year term-loan. There were no drawings in 2021. The 2022 weighted average interest rate was 4%. In the Consolidated Statements of Cash Flows, this loan is reflected in *Cash inflows related to current financial liabilities*. Due to the short maturity, the carrying value approximates the fair value.

Repurchase Agreement—On March 15, 2022, we entered into a repurchase agreement to sell European Emission Allowance ("EUA") certificates. Under the agreement, we sold 450 thousand EUA certificates for €33.5 million cash to a counterparty. The same counterparty has an obligation to resell, and we have the obligation to purchase, the same or substantially the same EUA certificates on January 27, 2023 for €34.0 million.

In January 2023, we resold 450 thousand EUA certificates for €34.7 million cash to a counterparty. The same counterparty is obligated to resell, and we have the obligation to purchase, the same or substantially the same EUA certificates on April 5, 2023 for €35.0 million.

The difference between the consideration received and the amount of consideration to be paid is recognized as interest expense.

At December 31, 2022, the amount outstanding was $36.3 million. Due to the short maturity, the carrying value approximates the fair value.

Accounts Receivable Factoring Facilities—During the fourth quarter of 2022, for sale of certain Accounts receivable, we entered into an agreement with third-party financial institutions. No sales were made during 2022. We have concluded that there would generally be no risk of loss to us from non-payment of the sold receivables.

Future Years Payment Schedule

The aggregate principal amounts of long-term debt, excluding finance lease liabilities presented in *Note G. Leases*, are as follows:

	Repayment (In millions)
2023	$ 3.0
2024	4.4
2025	10.2
2026	18.9
2027	18.9
2028	608.3
Total	**$ 663.7**

Covenant Compliance

The Credit Agreement contains certain non-financial covenants that, among other things, limit the Company's ability and the ability of certain of its subsidiaries to (i) incur additional debt, (ii) pay dividends, repurchase shares or make certain other restricted payments or investments, (iii) incur liens, (iv) sell assets, (v) to pay dividends or to make other payments to the Company, (vi) enter into affiliate transactions, (vii) engage in sale and leaseback transactions, and (viii) consolidate, merge, sell or otherwise dispose of all or substantially all of the Company's assets. These covenants are subject to significant exceptions and qualifications.

In addition, there is one financial covenant under the Credit Agreement, the First Lien Leverage Ratio ("FLLR"), defined as Consolidated First Lien Debt divided by Consolidated Adjusted EBITDA for the trailing twelve months ("TTM"). The FLLR is not permitted to exceed 5.5x TTM EBITDA and is tested each quarter RCF utilization exceeds 35%, as defined in the Credit Agreement (the "Covenant Trigger"). Notably, not all debt counts toward RCF utilization for purposes of calculating the Covenant Trigger, namely, term debt, debt drawn under ancillary credit facility lines and debt drawn under any uncommitted local credit lines are excluded. FLLR, Consolidated First Lien Debt and Consolidated Adjusted EBITDA have the meanings given to them in the Credit Agreement.

As of December 31, 2022, we are in compliance with our debt covenants.

Note K. Financial Instruments and Fair Value Measurement

Risk management

We have policies governing the use of derivative instruments and do not enter into financial instruments for trading or speculative purposes.

By using derivative instruments, we are subject to credit and market risk. To minimize counterparty credit (or repayment) risk, we enter into transactions, primarily with investment grade financial institutions. The market risk exposure is not hedged in a manner to completely eliminate the effects of changing market conditions on earnings or cash flow. No significant concentration of credit risk existed as of December 31, 2022 and 2021.

Cash flow hedge

On November 14, 2017 the Company acquired floored forward interest rate swaps to hedge interest rate risk on current Euro-denominated term loan financing. On May 15, 2018 the Company entered into a $235.0 million cross-currency swap to hedge interest rate risk on current USD-denominated term loan financing which replaced the USD-denominated Caps terminated on May 14, 2018. In December 2020, the Company unwound $38.0 million of the $235.0 million cross currency swap maturing in 2024 at a realized loss of approximately $2.4 million. In a separate transaction occurring in December 2020, the Company unwound a $30 million swap maturing in 2021 at a realized loss of approximately $3.9 million.

We designated the Euro-denominated interest rate swap at closing in November 2017 and the cross-currency swaps at closing in May 2018 in the same manner as an accounting hedge. We performed a hedge effectiveness test based on the critical terms match method (prospectively) and the dollar offset test (retrospectively).

In September 2021, the Company restructured its previously existing cross-currency swaps in the amount of $197 million, to align them with the new U.S. dollar denominated term loan credit facility. Specifically for changes in the loan interest margin of 2.25% (formerly 2.0%) and the three-month USD-LIBOR floor of 0.50% (formerly 0.00%). The cross-currency swap became effective on September 30, 2021 and will expire on September 30, 2028, in line with the maturity of the term loan. This cross-currency swap was determined to be highly effective, continues to qualify for hedge accounting and was cost-neutral.

Fair value measurement

The following table summarizes outstanding financial instruments that are measured at fair value on a recurring basis:

	December 31, 2022		December 31, 2021		
	Notional Amount	Fair Value	Notional Amount	Fair Value	Balance Sheet Classification
	(In millions)				
Assets					
Derivatives designated as hedges:					
Cross currency swaps	$ 197.0	$ 46.6	$ 197.0	$ 4.3	Other financial assets (non-current)
Interest rate swaps	293.3	9.6	—	—	Other financial assets (non-current)
Total	**$ 490.3**	**$ 56.2**	**$ 197.0**	**$ 4.3**	
Liabilities					
Derivatives designated as hedges:					
Cross currency swaps	$ —	$ —	$ —	$ —	Other liabilities (non-current)
Interest rate swaps	—	—	311.5	8.6	Other liabilities (non-current)
Total	**$ —**	**$ —**	**$ 311.5**	**$ 8.6**	

All financial instruments in the table above are classified as Level 2. We present the gross assets and liabilities of our derivative financial instruments on the Consolidated Balance Sheets.

For financial assets and liabilities that are recognized in the financial statements on a recurring basis, the Company determines whether transfers have occurred between levels in the hierarchy by re-assessing categorization at the end of each reporting period. There were no transfers of assets measured at fair value between Level 1 and Level 2, and there were no Level 3 investments during fiscal 2022 and 2021.

Our cross currency swaps designated as a cash flow hedge of principal and interest payments related to our Term Loan matures in September 2028.

The following table presents the carrying value and estimated fair value of our financial instruments that are not measured at fair value on a recurring basis for the periods presented. Due to the short maturity, the fair value of all non-derivative financial instruments included in Current assets and Current liabilities for which the carrying value approximates fair value are excluded from the table below. Short-term and long-term debt are recorded at amortized cost in the Consolidated Balance Sheets.

	December 31, 2022		December 31, 2021	
	Notional Amount	Fair Value	Notional Amount	Fair Value
	(In millions)			
Non-derivatives:				
Liabilities:				
Term loan	$ 616.2	$ 596.8	$ 639.0	$ 637.2
BOC Term-loan	47.5	42.9	—	—
Total	**$ 663.7**	**$ 639.7**	**$ 639.0**	**$ 637.2**

Term-Loan and BOC Term-loan in the table above are classified as Level 2.

At both December 31, 2022 and 2021, the fair values of Cash and cash equivalents and restricted cash, Accounts receivable, net, accounts payable and accrued liabilities, and short term borrowings approximated their carrying values due to the short-term nature of these instruments.

The following tables summarize the pre-tax effect of derivative and non-derivative instruments recorded in Accumulated other comprehensive loss ("AOCI"), the gains (losses) reclassified from AOCI to earnings and additional gains (losses) recognized directly in earnings:

	Effect of Financial Instruments			
	Year Ended December 31, 2022			
	Gain (Loss) Recognized in AOCI	Gain (Loss) Reclassified from AOCI to Income	Additional Gain (Loss) Recognized in Income	Income Statement Classification
	(In millions)			
Derivatives designated as hedges:				
Cross currency swaps	$ 31.1	$ 1.7	$ —	Interest and other financial expense, net
Interest rate swaps	18.1	—	—	Interest and other financial expense, net
Total	**$ 49.2**	**$ 1.7**	**$ —**	

	Effect of Financial Instruments			
	Year Ended December 31, 2021			
	Gain (Loss) Recognized in AOCI	Gain (Loss) Reclassified from AOCI to Income	Additional Gain (Loss) Recognized in Income	Income Statement Classification
	(In millions)			
Derivatives designated as hedges:				
Cross currency swaps	$ 2.4	$ (0.5)	$ —	Interest and other financial expense, net
Interest rate swaps	1.5	—	—	Interest and other financial expense, net
Total	**$ 3.9**	**$ (0.5)**	**$ —**	

	Effect of Financial Instruments			
	Year Ended December 31, 2020			
	Gain (Loss) Recognized in AOCI	Gain (Loss) Reclassified from AOCI to Income	Additional Gain (Loss) Recognized in Income	Income Statement Classification
	(In millions)			
Derivatives designated as hedges:				
Cross currency swaps	$ (1.0)	$ —	$ (6.0)	Interest and other financial expense, net
Interest rate swaps	(2.3)	—	—	Interest and other financial expense, net
Total	**$ (3.3)**	**$ —**	**$ (6.0)**	

The amount recognized in AOCI related to cash flow hedges that will be reclassified to the Consolidated Statement of Operations in the next twelve months is approximately $1.7 million.

Note L. Employee Benefit Plans

Provisions are established to cover defined benefit plans for retirement, disability and surviving dependents' pensions. The benefit obligations vary depending on the legal, tax and economic circumstances in the various countries in which we operate. Generally, the level of benefit depends on the length of service and the remuneration.

We have defined benefit plans in Germany and South Korea for which Germany accounted for approximately 92.4% and 93.2% in 2022 and 2021, respectively, of provisions for projected defined benefit pension plan obligations. Effective at the end of 2013, all defined benefit plans in Germany were modified to close access to new participants and freeze benefits accrued under these plans at December 31, 2013 levels. Interest expense on the frozen obligation relating to these plans will continue to accrue.

We have defined contribution plans in Germany and the U.S. Most employees are eligible to participate by contributing a portion of their compensation. We make employer contributions, such as matching contributions, to certain of these plans.

In South Korea, the Company's pension plan provides, at the option of employees for either projected benefit or defined contribution benefits. Plan assets relating to this plan reduce the pension provision disclosed.

Obligations and Funded Status

The following provides information about projected benefit obligations, plan assets, the funded status and weighted-average assumptions of the defined benefit pension plan:

Change in Projected Benefit Obligation

	December 31	
	2022	2021
	(In millions)	
Present value of projected benefit obligation at the beginning of the year	**$ 81.9**	**$ 91.3**
Actuarial (gain)/ loss	(19.5)	(1.7)
Service cost	0.4	0.5
Interest cost	1.5	1.0
Benefits paid	(1.3)	(1.3)
Curtailments, settlements, special and contractual termination benefits	(2.0)	(0.8)
Currency translation	(4.9)	(7.1)
Present value of projected benefit obligation at the end of the year	**$ 56.1**	**$ 81.9**

Based on the weighted Macaulay method the projected benefit obligation has a duration of 16.0 years (20.0 years in 2021).

Change in Plan Assets

	December 31	
	2022	2021
	(In millions)	
Fair value of plan assets at the beginning of the year	**$ 6.3**	**$ 6.8**
Actual return on plan assets	0.1	0.1
Employer contributions	0.3	0.7
Settlement	(1.8)	(0.7)
Currency translation	(0.4)	(0.6)
Fair value of plan assets at the end of the year	**$ 4.5**	**$ 6.3**

The plan assets are held by Orion Engineered Carbons Co. Ltd. Korea, Bupyeong-gu, South Korea, and relate to qualifying insurance policies. These insurance policies do not have a quoted market price. The actual return on plan assets amounted to $0.1 million and $0.1 million for the years ended December 31, 2022 and 2021, respectively.

Net Unfunded Status

	December 31	
	2022	2021
	(In millions)	
Projected benefit obligation	$ 56.1	$ 81.9
Less: Fair value of plan assets	4.5	6.3
Net unfunded status	**$ 51.6**	**$ 75.6**

Amount Recognized in the Consolidated Balance Sheets

	December 31	
	2022	2021
	(In millions)	
Non-current assets	$ —	$ —
Current liabilities	1.6	1.2
Non-current liabilities	50.0	74.4
Net liability recognized - pension plans	**$ 51.6**	**$ 75.6**

Pension Assumptions and Strategy

The assumptions used in the actuarial valuation of the underlying the obligations are as follows:

Assumptions	December 31	
	2022	2021
Discount rate	4.2 %	1.5 %
Expected long-term rate of return on plan assets	4.3 %	1.8 %
Rate of compensation/salary increase	3.0 %	3.0 %
Future pension increase	2.1 %	1.6 %
Mortality	Heubeck 2018G	Heubeck 2018G

Mortality is based on Heubeck guidelines, the generally accepted biometric calculation bases for the balance sheet valuation of pension obligations in Germany. A 0.5% increase or decrease in the discount rate or in the future pension increase would have impacted the projected benefit obligation as follows:

Sensitivities	December 31, 2022			
	Discount rate		Future pension increase	
	0.5% decrease	0.5% increase	0.5% decrease	0.5% increase
	(In millions)			
Impact on projected benefit obligation	$ 4.0	$ (3.5)	$ (4.8)	$ 5.2

Net Periodic Pension Cost (Benefit)

	Years Ended December 31,		
	2022	2021	2020
	(In millions)		
Service cost	$ 0.4	$ 0.5	$ 0.6
Interest cost	1.5	1.0	1.2
Expected return on plan assets	(0.1)	(0.1)	(0.1)
Net periodic pension cost	**$ 1.8**	**$ 1.4**	**$ 1.7**

The total expected defined benefit pension contribution amounts to $1.4 million in 2023.

The Company paid $15.0 million, $15.0 million and $12.5 million for the years ended December 31, 2022, 2021 and 2020, respectively, for state defined contribution pension schemes (statutory pension insurance) in Germany and other countries. This amount is recognized as personnel expenses in cost of sales and in selling, general and administrative expenses in the Consolidated Statements of Operations.

Estimated Future Benefit Payments

We expect the following benefit payments will be made to plan participants in the years from 2023 to 2032:

Benefit payments	(In millions)
2023	$ 1.8
2024	2.4
2025	2.1
2026	2.0
2027	2.3
2028 - 2032	14.9

We do not anticipate making funding contributions to the Pension Plan in 2023.

Amounts Recognized in Accumulated Other Comprehensive (Income)/Loss

Amounts recognized in AOCI, at December 31, related to the Company's defined benefit pension plan are as follows:

	2022	2021	2020
	(In millions)		
Net actuarial (gain) loss	$ (19.5)	$ (1.7)	$ 4.9
Net prior service cost	—	—	—
Balance in accumulated other comprehensive (income) / loss	**$ (19.5)**	**$ (1.7)**	**$ 4.9**

The estimated amounts that will be amortized from accumulated other comprehensive loss into net periodic cost in 2023:

	2023
	(In millions)
Net actuarial (gain) loss	$ (9.2)
Prior service cost (credit)	—
Net amount recognized	**$ (9.2)**

Plan Assets

The fair value (all Level 2) of Orion's pension plan assets, at December 31, are as follows:

	2022	2021
	(In millions)	
Government and corporate fixed income financial instruments	4.5	6.3
Total pension plan assets	**$ 4.5**	**$ 6.3**

Defined Contribution Plans

We provide tax-qualified retirement contribution plans in the United States for the benefit of all full-time employees. The plans are designed to provide employees with an accumulation of funds for retirement on a tax-deferred basis. For the years ended December 31, 2022, 2021 and 2020 the Company contributions to the Employee Savings Plans were $2.0 million, $1.9 million and $2.6 million, respectively.

Note M. Stock-Based Compensation

Under our 2014 Omnibus Incentive Compensation Plan (the "Omnibus Plan"), we are authorized to grant Restricted Stock Units ("RSU"), Performance-based Restricted Stock Units ("PSU"), and other cash and stock awards under our Long-Term Incentive Plan ("LTIP"). The Compensation Committee of the Board of Directors (the "Compensation Committee") oversees our equity award grants, the type of awards, the required performance measures and the timing and duration of each grant.

Performance-Based Restricted Stock Units—PSU awards are earned based on achievement against one or more performance metrics established by the Compensation Committee in respect of a specified performance period. Earned PSUs range from zero to a specified maximum percentage of a participant's target award based on the achievement of applicable performance metrics, and are subject to vesting terms based on continued employment.

Certain PSU awards are based on the relative Total Shareholder Return ("TSR"). TSR is an objective calculation that takes into account our TSR rank within our peer group and whether our specific TSR is positive or negative. The fair value of PSUs is estimated on the grant date using a Monte-Carlo simulation.

Under the LTIP plans, the PSU vesting period is three years with cliff vesting occurring on December 31 of the second full year subsequent to the date of the grant. For example, if a PSU grant was issued in June 2020, the PSUs would fully vest on December 31, 2022 with no ratable vesting during the vesting period.

Restricted Stock Units—RSUs entitle the recipient to be paid out an equal number of common stocks upon vesting. The RSUs vesting period is ratably over three years starting on January 1 in the year of the grant. For example, the employee would earn one third of the RSU on December 31 starting in the year of the grant and the remaining two thirds each December 31 for 2 years immediately subsequent to the year of the grant.

In certain instances, we issue RSU as sign-on incentives and one-time grants for employees. These RSUs vest ratably over a three-year period, and vesting occurs on the anniversary of the grant.

Restricted Stock—Certain members of our Board of Directors receive compensation in form of Restricted Stock ("RS") in accordance with our 2014 Non-employee Director Plan. Under this plan 57,951 RS are currently outstanding. The RS vest and become non-forfeitable on the first anniversary of the grant date.

Performance-based Restricted Stock Units

In the following table summarizes PSU activity:

	Number of units		Weighted-average grant-date fair value per unit
Unvested at January 1, 2022	788,335	$	15.19
Granted	312,538		16.14
Vested	(63,369)		12.51
Forfeited	(413,997)		12.43
Unvested at December 31, 2022	623,507	$	17.86

During 2021 and 2020 we granted 360,178 and 290,906 performance-based units, respectively, with a per unit weighted-average grant-date fair value of $19.01 and $11.60, respectively.

The 2020 PSU awards based on relative TSR expired as the performance conditions were not met.

Restricted Stock Units

In the following table summarizes RSU activity:

	Number of units		Weighted-average grant-date fair value per unit
Unvested at January 1, 2022	514,599	$	16.03
Granted	238,010		15.83
Vested	(474,462)		15.57
Forfeited	(25,295)		16.17
Unvested at December 31, 2022	252,852	$	16.67

During 2022, 2021 and 2020 weighted average RSU grant-date fair value was $15.83, $18.46 and $12.54, respectively. Total grant date fair value of RSU's were approximately $3.8 million, $4.0 million and $2.3 million during 2022, 2021 and 2020, respectively.

Total fair value of RSU vested was approximately $7.4 million, $3.0 million and $1.3 million during 2022, 2021 and 2020, respectively.

As of December 31, 2022, we had unrecognized compensation cost of $10.7 million, based on the target amounts, related to unvested PSU, RSU and RS, which is expected to be recognized over a weighted average period of 2.14 years.

During 2022, 2021 and 2020 fiscal years, we recognized compensation expenses of $7.7 million, $5.2 million and $4.4 million, respectively, in our Consolidated Statements of Operations.

Note N. Accumulated Other Comprehensive Income (Loss)

Changes in each component of AOCI, net of tax, for fiscal 2022, 2021 and 2020, are as follows:

	Currency Translation Adjustments	Hedging Activities Adjustments	Pension and Other Postretirement Benefit Liability Adjustment	Total
	(In millions)			
Balance at January 1, 2020	**$ (12.1)**	**$ (11.0)**	**$ (11.2)**	**$ (34.3)**
Other comprehensive loss before reclassifications	(13.1)	(2.6)	(5.3)	(21.0)
Income tax effects before reclassifications	(1.3)	0.8	1.8	1.3
Amounts reclassified from AOCI	—	—	9.9	9.9
Income tax effects on reclassifications	—	—	(3.3)	(3.3)
Currency translation AOCI	—	(0.7)	(0.6)	(1.3)
Balance at December 31, 2020	**(26.5)**	**(13.5)**	**(8.7)**	**(48.7)**
Other comprehensive loss before reclassifications	(7.3)	2.3	2.0	(3.0)
Income tax effects before reclassifications	(0.3)	(0.7)	(0.7)	(1.7)
Amounts reclassified from AOCI	—	—	4.8	4.8
Income tax effects on reclassifications	—	—	(1.6)	(1.6)
Currency translation AOCI	—	1.1	0.6	1.7
Balance at December 31, 2021	**(34.1)**	**(10.8)**	**(3.6)**	**(48.5)**
Other comprehensive income (loss) before reclassification	(13.6)	46.9	20.3	53.6
Income tax effects	0.2	(15.2)	(6.3)	(21.3)
Amounts reclassified from AOCI	—	1.7	—	1.7
Income tax effects	—	(0.5)	—	(0.5)
Currency translation AOCI	—	2.3	0.2	2.5
Balance at December 31,2022	**$ (47.5)**	**$ 24.4**	**$ 10.6**	**$ (12.5)**

In prior years, the amounts recorded in AOCI exceeding 10% of the defined benefit obligation are recorded ratably as reclassification of actuarial losses over the current year through profit and loss separately from income from operations and amounted to $4.8 million and $9.9 million for the years end December 31, 2021 and 2020, respectively. We were not outside of the 10% corridor for 2022.

Note O. Earnings Per Share

Basic earnings per share ("EPS") is computed by dividing net income attributable to Orion by the weighted average number of common stock outstanding during the period. Diluted EPS equals net income attributable to Orion divided by the weighted average number of common stock outstanding during the period, adjusted for the dilutive effect of our stock–based and other equity compensation awards.

The following table reflects the income and share data used in the basic and diluted EPS computations:

	Years Ended December 31,		
Dollars in millions, shares in thousands and per share amount in dollars	**2022**	**2021**	**2020**
Net income for the period - attributable to ordinary equity holders of the parent	$ 106.2	$ 134.7	$ 18.2
Weighted average number of ordinary shares	60,902	60,708	60,430
Basic EPS	**$ 1.74**	**$ 2.22**	**$ 0.30**
Dilutive effect of share-based payments	475	243	977
Weighted average number of diluted ordinary shares	61,378	60,951	61,407
Diluted EPS	**$ 1.73**	**$ 2.21**	**$ 0.30**

Note P. Income Taxes

The Company operates in multiple jurisdictions with complex tax and regulatory environments and our income tax returns are periodically audited or subjected to review by tax authorities. We monitor tax law changes and the potential impact to our results of operations including potential proposals in the U.S. as a result of a new administration.

Tax provision (benefit) for income taxes consisted of the following:

	Years Ended December 31,		
	2022	2021	2020
	(In millions)		
Current			
Domestic [1]	$ 17.8	$ 21.7	$ 16.3
Foreign	26.5	9.7	4.0
Total	**44.3**	**31.4**	**20.3**
Deferred			
Domestic [1]	7.4	(1.4)	(4.9)
Foreign	(0.2)	21.7	(7.3)
Total	**7.2**	**20.3**	**(12.2)**
Provision for income taxes	**$ 51.5**	**$ 51.7**	**$ 8.1**

[1] Domestic refers to Germany.

The following table presents the components of income before income taxes for continuing operations for fiscal years 2022, 2021 and 2020 is as follows:

	Years Ended December 31,		
	2022	2021	2020
	(In millions)		
Domestic [1]	$ 35.5	$ 89.2	$ 25.6
Foreign	122.2	97.2	0.7
Income before income taxes	**$ 157.7**	**$ 186.4**	**$ 26.3**

[1] Domestic refers to Germany.

A statutory corporate income tax rate of 15.00% was used to calculate the current and deferred taxes for the German entities. A solidarity surcharge of 0.825% and a trade tax rate of 16.18%, for the years ended December 31, 2022, 2021 and 2020, respectively, were also reflected in the calculation. As a result, the overall statutory income tax rate for the German entities was 32.00%, for the years ended December 31, 2022, 2021 and 2020. The current and deferred taxes for the non-German entities were calculated using their respective country-specific tax rates.

Our effective income tax rate fluctuates based on, among other factors, changes in pre-tax income in countries with varying statutory tax rates, changes in valuation allowances, the amount of tax-free income, and impact of non-deductible expenses.

The following table reconciles the expected tax expense (benefit) at the German statutory tax rate of 32.0% as calculated for the years ended December 31, 2022, 2021 and 2020.

	Years Ended December 31,		
	2022	2021	2020
	(In millions)		
Income before income taxes	**$ 157.7**	**$ 186.4**	**$ 26.3**
Expected income tax thereon	50.5	59.6	8.4
Tax rate differences	(4.0)	(9.8)	(1.4)
Change in valuation allowance	1.8	(6.0)	(1.3)
Change in the tax rate and tax laws	—	—	(0.1)
Income taxes for prior years	—	—	—
Non-deductible interest expenses	1.9	1.2	1.1
Non-deductible expenses, and non-deductible taxes	3.5	5.4	2.8
Effects of changes in permanent differences	0.7	—	—
Tax effect on tax-free income	(1.4)	(0.4)	(0.2)
Other tax effects	(1.5)	1.7	(1.2)
Income tax expense	**$ 51.5**	**$ 51.7**	**$ 8.1**
Effective tax rate	32.70 %	27.74 %	30.80 %

The increase in the effective tax rate was mainly due to an increase of non-deductible business and interest expenses. Those were partially offset by the effects of earnings in various countries with lower statutory tax rates, and tax-free income.

The deferred tax effects of tax loss, credit and interest carryforwards ("tax attributes") and the tax effects of temporary differences between the tax basis of assets and liabilities and their reported amounts in the Consolidated Financial Statements, reduced by a valuation allowance where appropriate, are presented below.

	December 31	
	2022	2021
	(In millions)	
Deferred tax assets		
Inventories	$ 3.1	$ 3.3
Deferred compensation	15.1	15.8
Liabilities including leases liabilities	39.0	36.3
Loss carryforwards	44.9	47.0
Interest carryforwards	7.8	9.8
Tax credits	7.7	8.4
Total deferred tax assets	117.6	120.6
Deferred tax asset valuation allowances	(38.1)	(36.3)
Net deferred tax assets	$ 79.5	84.3
Deferred Tax Liabilities		
Intangible assets	$ 2.4	$ 2.9
Property, plant and equipment including right of use assets	64.2	65.9
Financial assets	14.8	1.0
Inventories	—	—
Receivables, other assets	15.0	14.3
Other	23.9	11.6
Total deferred tax liabilities	$ 120.3	$ 95.7
Net deferred tax assets / (liabilities)	**$ (40.9)**	**$ (11.4)**

Our net deferred tax assets and liabilities reflected in our balance sheet are as follows:

Net deferred tax position	December 31	
	2022	2021
	(In millions)	
Deferred tax assets		
Net deferred tax assets	$ 29.1	$ 50.4
Deferred tax liabilities		
Net deferred tax liabilities	70.0	61.8
Net deferred tax asset / (liability) positions	**$ (40.9)**	**$ (11.4)**

As of each reporting date, management considers the weight of all evidence, both positive and negative, to determine if a valuation allowance is necessary for each jurisdiction's deferred tax assets. We place greater weight on historical evidence over future projections of our ability to utilize deferred tax assets. We consider future reversals of existing taxable temporary differences, future taxable income exclusive of reversing temporary differences, and taxable income in prior carryback year(s) if carryback is permitted under applicable law, as well as available prudent and feasible tax planning strategies that would, if necessary, be implemented to ensure realization of the net deferred tax assets. The following table presents a summary of our valuation allowance positions:

Valuation allowance	2022	2021	2020
		(In millions)	
As of January 1,	**$ 36.3**	**$ 42.7**	**$ 41.9**
Additions for Tax Credits	—	3.5	—
Additions for Loss carryforwards	5.2	—	1.8
Additions for Interest carryforwards	—	—	1.3
Additions Other	0.8	0.4	0.2
Reduction for Tax Credits	(4.2)	—	(2.5)
Reduction for Loss carryforwards	—	(1.8)	—
Reductions for Interest carryforwards	—	(8.5)	—
As of December 31,	**$ 38.1**	**$ 36.3**	**$ 42.7**

The following table provides detail surrounding the expiration dates of the gross amount of tax loss carryforwards and tax credits:

	December 31	
	Net operating loss carryforwards	Tax Credits
	(In millions)	
2023 to 2029	$ —	$ —
2030 and thereafter	54.1	—
Indefinite carryforwards	97.7	13.3
Total	**$ 151.8**	**$ 13.3**

We continue to make an assertion to indefinitely reinvest the unrepatriated earnings of most of our foreign subsidiaries that would incur incremental tax consequences upon the distribution of such earnings. As of December 31, 2022, we did not provide for deferred taxes on earnings of most of our foreign subsidiaries that are indefinitely reinvested. If we were to make a distribution from the unremitted earnings of these subsidiaries, we could be subject to taxes in various jurisdictions. However, it is not practical to estimate the amount of tax that could ultimately be due if such earnings were remitted. If our expectations were to change regarding future tax consequences, we may be required to record additional deferred taxes that could have a material effect on our consolidated financial statements. Deferred tax liabilities amounting to $1.4 million, (2021: $0.7 million, 2020: $0.8 million) were recognized for certain subsidiaries for which we are not indefinitely reinvested, and a dividend distribution is expected in the future.

Tax uncertainties

Tax benefits totaling $11.6 million, $12.1 million and $13 million relating to uncertain tax positions were unrecognized as of December 31, 2022, 2021 and 2020, respectively. The following table presents a reconciliation of the beginning and ending amounts of unrecognized tax benefits:

	2022	2021	2020
		(In millions)	
Balance at beginning of the year	**$ 12.1**	**$ 13.0**	**$ 11.6**
Additions based on tax positions related to the current year	—	0.3	0.1
Additions for tax positions of prior year	—	—	1.3
Reductions of tax positions of prior year	(0.5)	(1.2)	—
Balance at end of the year	**$ 11.6**	**$ 12.1**	**$ 13.0**

We recognize interest and penalties associated with unrecognized tax benefits in income tax expense. Income tax expense includes a benefit of interest and penalties of $0.4 million and $0.7 million in 2022 and 2021, respectively, and an expense of interest and penalties totaling $1.1 million in 2020. We had accrued $4.0 million, $4.4 million and $5.1 million for interest and penalties as of December 31, 2022, 2021 and 2020, respectively. The majority of the unrecognized tax benefits for the fiscal years ended December 31, 2022, 2021 and 2020, respectively would affect our effective income tax rate.

Orion and certain subsidiaries are under audit in several jurisdictions, and in particular in Germany, for periods 2011-2017. It is reasonably possible that our existing liabilities for unrecognized tax benefits may increase or decrease, primarily due to the progression of open audits and the expiration of statutes of limitation, during the next twelve months. We cannot reasonably estimate a range of potential changes in our existing liabilities for unrecognized tax benefits due to various uncertainties, such as the unresolved nature of various audits.

On August 16, 2022, the U.S. enacted the Inflation Reduction Act ("IRA") which is intended to address several environmental, social and tax topics. We are continuing to analyze the provisions included in the IRA and await proposed and final regulations from the Department of the Treasury. We believe it will not have a material impact on our Consolidated Financial Statements.

Note Q. Commitments and Contingencies

Long-Term Commitments—To safeguard the supply of raw materials, contractual purchase commitments under long-term supply agreements for raw materials, primarily carbon black oil and natural gas, are in place are as follows:

Maturity	December 31, 2022
	(In millions)
2023	$ 3.1
2024	3.1
2025	3.1
2026	3.1
2027	3.1
2027 and thereafter	18.7
Total	**$ 34.2**

Restructuring—In 2016, the Company ceased operations at its plant in Ambes, France as part of the restructuring of its Rubber business segment. Expenses related to the closing include personnel costs, demolition, removal costs and remediation costs. Total estimated and recognized costs and total costs remaining as of December 31, 2022 are $46.5 million and $3.8 million, respectively. Orion's reserves for restructuring of its Rubber segment in 2022 are reflected in Accrued liabilities on the Consolidated Balance Sheets. Orion has accrued liabilities for personnel expenses of $3.2 million and $2.6 million, and ground remediation costs of $0.6 million and $6.7 million, as of December 31, 2022 and 2021 respectively.

In the periods ending December 31, 2022, 2021 and 2020, restructuring expense, net including Ambes, amounted to $1.9 million, $2.2 million, and $7.5 million, respectively.

Environmental Reserves—Our accrued liability for future environmental reserves at our current and former plant sites and other sites totaled $4.8 million and $7.8 million as of December 31, 2022 and 2021, respectively. During the fourth quarter of 2021, we recognized an additional reserve of $7.2 million reflected in the Consolidated Statement of Operations in the Other expense, net. The environmental-related costs are expected to occur over a number of years and are not concentrated in any single year. In our opinion, it is reasonably possible that losses in excess of the liabilities recorded may have been incurred. However, we cannot estimate any amount or range of such possible additional losses. New information about sites, new technology or future developments, such as involvement in investigations by regulatory agencies, could require us to reassess our potential exposure related to environmental matters.

Legal Proceedings—We are subject to various lawsuits and claims, including but not limited to, matters involving contract disputes, environmental damages, personal injury and property damage. We vigorously defend ourselves and prosecute these matters as appropriate. We regularly assess the adequacy of legal accruals based on our professional judgment, experience and the information available regarding our cases.

Based on a consideration of all relevant facts and circumstances, we do not believe the ultimate outcome of any currently pending lawsuit against us will have a material adverse effect upon our operations, financial condition or Consolidated Financial Statements.

City of Hürth, Germany (Stadtwerke Hürth/Hürth municipal utilities)—In 2020, one of our wholly-owned subsidiaries and the City of Hürth entered into a long-term steam supply contract. The Hürth municipality financed certain turbines and infrastructure which are operated by us under a finance lease agreement. In addition, we entered into a long-term supply agreement with the City of Hürth for delivery of heat. Since the fourth quarter of 2020, the City of Hürth has not fully honored the contractually stipulated calculation for heat deliveries, amongst other stipulations. As a result, Orion has open receivables from the City of Hürth totaling $9.8 million and $5.5 million as of December 31, 2022 and 2021, respectively. The City of Hürth argues it has open claims of approximately $7.0 million and $3.3 million related to lease payments as of December 31, 2022 and 2021, respectively. Orion is in negotiations with the City of Hürth but is prepared to pursue its rights vigorously through legal enforcement if necessary.

EPA Action—During 2008 and 2009, the U.S. Environmental Protection Agency ("EPA") contacted all U.S. carbon black producers as part of an industry-wide EPA initiative, requesting extensive and comprehensive information under Section 114 of the U.S. Clean Air Act. The EPA used that information to determine, for each facility, that either: (i) the facility has been in compliance with the Clean Air Act; (ii) violations have occurred and enforcement litigation may be undertaken; or (iii) violations have occurred and a settlement of an enforcement case is appropriate. In response to information requests received by the Company's U.S. facilities, the Company furnished information to the EPA on each of its U.S. facilities. The EPA subsequently sent notices under Section 113(a) of the Clean Air Act in 2010 alleging violations of Prevention of Significant Deterioration ("PSD") and Title V permitting requirements under the Clean Air Act at the Company's Belpre (Ohio) facility. In October 2012, the Company received a corresponding notice and finding of violation (a "NOV") alleging the failure to obtain PSD and Title V permits reflecting Best Available Control Technology ("BACT") at several units of the Company's Ivanhoe (Louisiana) facility, and in January 2013, the Company also received an NOV issued by the EPA for its facility in Borger (Texas) alleging the failure to obtain PSD and Title V permits reflecting BACT during the years 1996 to 2008. A comparable NOV for the Company's U.S. facility in Orange (Texas) was issued by the EPA in February 2013, and the EPA issued an additional NOV in March 2016 alleging more recent non-PSD air emissions violations primarily at the dryers and the incinerator of the Orange facility.

In 2013, Orion began discussions with the EPA and the U.S. Department of Justice ("DOJ") about a potential settlement to resolve the NOVs received, which ultimately led to a consent decree executed between Orion Engineered Carbons LLC (for purpose of this *Note Q.* "Orion LLC") and the United States (on behalf of the EPA), as well as the Louisiana Department of Environmental Quality. The consent decree (the "EPA CD") became effective on June 7, 2018. The EPA CD resolves and settles the EPA's claims of noncompliance set forth in the NOVs described above and in a respective complaint filed in court against Orion LLC by the United States immediately prior to the filing of the consent decree.

Under the EPA CD, Orion LLC had to install certain pollution control technology in order to further reduce emissions at its four U.S. manufacturing facilities. In line therewith, Orion LLC installed emissions control technology to remove SO_2, NOx and dust particles from tail gases at its Ivanhoe (Louisiana) facility in 2021 and emissions controls were installed in accordance with the EPA CD at Orion's facility in Orange (Texas) in 2020. In fourth quarter of 2022, Orion LLC reached mechanical completion for the installation of emissions control technology to remove SO_2, NOx and dust particles from tail gases at its Borger (Texas) facility. The installation of pollution control technology at its fourth and last U.S. manufacturing facility in Belpre (Ohio) has started and is scheduled to complete in 2023, in line with the EPA CD terms. The EPA CD also requires continuous monitoring of emissions reductions that Orion LLC will need to comply with over a number of years.

As of December 31, 2022, we have spent $277 million of capital expenditures related to the EPA CD of which approximately $80 million was received as an indemnity from Evonik.

Pledges and guarantees

The Company has pledged the majority of its assets (amongst others shares in affiliates, bank accounts and receivables) within the different regions excluding China as collateral under the Credit Agreement. As of December 31, 2022, the Company had guarantees totaling $25.4 million issued by various financial institutions.

Note R. Segment Financial Information

Segment information

We disclose the results of each of our operating segments in accordance with ASC 280, *Segment Reporting*. We manage our business in two operating segments as follows:

- *Rubber Carbon Black*—Used in the reinforcement of rubber in tires and mechanical rubber goods, and

- *Specialty Carbon Black*—Used for protection, colorization and conductivity in coatings, polymers, batteries, printing and special applications.

Corporate includes income and expense that cannot be directly allocated to the business segments or are managed on the corporate level. This includes finance income and expenses, taxes and items with less bearing on the underlying core business.

Discrete financial information is available for each of the segments, and the chief operating decision maker ("CODM") uses operating results of each operating segments for performance evaluation and resource allocation.

Our CODM uses Adjusted EBITDA as the primary measure for reviewing our segment profitability. We define Adjusted EBITDA as Income from operations before depreciation and amortization, share-based compensation, and non-recurring items (such as, restructuring expenses, consulting fees related to Company strategy, legal settlement gain, etc.) plus Earnings in affiliated companies, net of tax.

The CODM does not review reportable segment asset or liability information for purposes of assessing performance or allocating resources.

Segment operating results are as follows:

	Rubber	Specialty	Corporate	Total
	(In millions)			
2022				
Net sales from external customers	$ 1,355.5	$ 675.4	$ —	$ 2,030.9
Depreciation and amortization of intangible assets, right of use assets, and property, plant and equipment	65.1	40.6	—	105.7
Equity in earnings of affiliated companies, net of tax	0.5	—	—	0.5
Interest and other financial expense, net	—	—	39.9	39.9
Adjusted EBITDA	168.4	143.9	—	$ 312.3
Assets	$ 1,085.6	$ 647.1	$ 156.0	$ 1,888.7
Capital expenditures	134.1	98.7	—	232.8
2021				
Net sales from external customers	$ 948.6	$ 598.2	$ —	$ 1,546.8
Depreciation and amortization of intangible assets, right of use assets, and property, plant and equipment	59.0	45.1	—	104.1
Gain related to litigation settlement	—	—	(82.9)	(82.9)
Equity in earnings of affiliated companies, net of tax	0.7	—	—	0.7
Interest and other financial expense, net	—	—	38.0	38.0
Reclassification of actuarial losses from AOCI	—	—	4.8	4.8
Adjusted EBITDA	120.0	148.4	—	$ 268.4
Assets	$ 912.2	$ 582.1	$ 136.7	$ 1,631.0
Capital expenditures	149.1	65.6	—	214.7
2020				
Net sales from external customers	$ 691.2	$ 445.2	$ —	$ 1,136.4
Depreciation and amortization of intangible assets, right of use assets, and property, plant and equipment	57.0	39.6	—	96.6
Equity in earnings of affiliated companies, net of tax	0.5	—	—	0.5
Interest and other financial expense, net	—	—	38.7	38.7
Reclassification of actuarial losses from AOCI	—	—	9.9	9.9
Adjusted EBITDA	90.0	110.0	—	$ 200.0
Assets	$ 789.3	$ 467.0	$ 133.5	$ 1,389.8
Capital expenditures	111.5	27.3	—	138.8

A reconciliation of Adjusted EBITDA to Income from continuing operations before income taxes for each of the periods presented is as follows:

	2022	2021	2020
		(In millions)	
Income before earnings in affiliated companies and income taxes	$ 157.2	$ 185.7	$ 25.8
Corporate charges	9.0	18.0	28.5
Depreciation and amortization of intangible assets, right of use assets, and property, plant and equipment	105.7	104.1	96.6
Gain related to litigation settlement	—	(82.9)	—
Equity in earnings of affiliated companies, net of tax	0.5	0.7	0.5
Interest and other financial expense, net	39.9	38.0	38.7
Reclassification of actuarial losses from AOCI	—	4.8	9.9
Adjusted EBITDA	**$ 312.3**	**$ 268.4**	**$ 200.0**

Corporate charges includes the following:

	2022	2021	2020
		(In millions)	
Expense related to COVID-19	—	—	3.9
Long Term Incentive Plan	7.7	5.2	4.4
EPA-related expenses	—	2.3	5.2
Environmental reserve accrual	(0.4)	7.2	—
Other non-operating	1.7	3.3	15.0
	$ 9.0	**$ 18.0**	**$ 28.5**

Geographic information:

Net sales

	Years Ended December 31,		
	2022	2021	2020
		(In millions)	
Germany	$ 829.4	$ 648.6	$ 486.5
United States	564.9	405.1	289.5
South Korea	237.5	208.9	173.5
Brazil	156.3	100.1	64.8
China	114.2	92.7	60.1
South Africa	69.9	53.3	34.0
Other	25.3	24.9	19.5
Rest of Europe [1]	33.4	13.2	8.5
Total	**$ 2,030.9**	**$ 1,546.8**	**$ 1,136.4**

[1] Only a holding company is located in Luxembourg; no revenue is generated in the country of domicile.

For the year ended December 31, 2022, two customers accounted for 10% or more revenue in the Rubber segment aggregating to approximately $480.2 million in combined sales. For the years ended December 31, 2021 and 2020, one customer accounted for 10% or more revenue in the Rubber segment totaling approximately $218.6 million and $170.3 million, respectively.

Net sales to top ten customers

	Years Ended December 31,		
	2022	2021	2020
		(In millions)	
Rubber segment	864.1	590.9	437.7
Specialty segment	177.0	148.7	100.8

Long-lived tangible assets[1]

	December 31	
	2022	2021
	(In millions)	
Germany	$ 145.6	$ 149.5
Sweden	23.8	23.9
Italy	64.0	70.8
Poland	11.5	12.8
Rest of Europe	21.5	21.9
Subtotal Europe	**266.4**	**278.9**
United States	406.6	319.6
South Korea	101.1	109.1
South Africa	14.1	15.1
Brazil	17.9	15.4
China	109.9	53.2
Other	0.1	1.2
Total	**$ 916.1**	**$ 792.5**

[1] Long-lived assets include property, plant and equipment, net and right-of-use assets, net.

Note S. Related Parties

As of December 31, 2022, related parties primarily includes one joint venture that is accounted for using the equity method, "Deutsche Gaßrußwerke" (DGW).

Related parties include key management personnel having authority and responsibility for planning, directing and monitoring the activities of the Company directly or indirectly and their close family members.

In the normal course of business Orion from time to time receives services from, or sells products to, related unconsolidated parties, in transactions that are either not material or approved in accordance with our Related Party Transaction Approval Policy.

	December 31,	
	2022	2021
	(In millions)	
Trade receivables	$ 0.9	$ 0.6
Trade payables	25.3	24.9

	Years Ended December 31,		
	2022	2021	2020
	(In millions)		
Purchases	$ 157.1	$ 113.2	$ 68.8
Sales and services	5.6	5.7	1.6

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

None.

Item 9A. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

As of the end of the period covered by this Annual Report on Form 10-K, we carried out an evaluation, under the supervision and with the participation of management, including the Chief Executive Officer ("CEO") and Chief Financial Officer ("CFO"), of the effectiveness of the design and operation of our disclosure controls and procedures as defined in Rule 13a-15(e) and 15d-15(e) of the Exchange Act. Based on that evaluation, the CEO and the CFO have concluded that our disclosure controls and procedures are effective in ensuring that material information that is required to be disclosed in our reports filed under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms, and that such information is accumulated and communicated to our management, including our CEO and CFO, as appropriate, to allow timely decisions regarding required disclosure as of December 31, 2022.

Management's Annual Report on Internal Control over Financial Reporting

Management is responsible for establishing and maintaining adequate internal control over financial reporting (as such term is defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act). The Company's internal control over financial reporting was designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation and fair presentation of the Company's financial statements for external purposes in accordance with GAAP.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect all misstatements or omissions. In addition, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Management conducted its assessment of the effectiveness of our internal control over financial reporting as of December 31, 2022 based on the framework in Internal Control-Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Based on that assessment and discussion with the Company's Audit Committee, management has concluded that, as of December 31, 2022, the Company's internal control over financial reporting was effective.

Audit Report of the Independent Registered Public Accounting Firm

The Company's independent registered public accounting firm, Ernst & Young, has issued an audit report on management's internal control over financial reporting which appears below.

Changes in Control over Financial Reporting

There were no changes in our internal control over financial reporting that occurred during the fiscal year ended December 31, 2022 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information

None

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections

Not applicable.

Orion Engineered Carbons S.A

Report of Independent Registered Public Accounting Firm

To the Shareholders and the Board of Directors of Orion Engineered Carbons S.A.

Opinion on Internal Control over Financial Reporting

We have audited Orion Engineered Carbons S.A.'s internal control over financial reporting as of December 31, 2022, based on criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). In our opinion, Orion Engineered Carbons S.A. (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 2022, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Company as of December 31, 2022 and 2021, the related consolidated statements of operations, comprehensive income, changes in stockholders' equity and cash flows for each of the two years in the period ended December 31, 2022, and the related notes and our report dated February 23, 2023 expressed an unqualified opinion thereon.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Management's Annual Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ Ernst & Young LLP

Houston, TX
February 23, 2023

PART III

Item 10. Directors, Executive Officers and Corporate Governance

The Directors and certain Governance information required by this item will be included in our Proxy Statement for the 2023 Annual Meeting of Stockholders ("Proxy Statement") and is herein incorporated by reference.

Executive Officers

The following table sets forth certain information concerning our executive officers:

Name	Age	Title
Corning F. Painter	60	Chief Executive Officer
Jeffrey Glajch	60	Chief Financial Officer
Sandra Niewiem	46	Senior Vice President, Global Specialty Carbon Black and EMEA Region
Pedro Riveros	52	Senior Vice President, Global Rubber Carbon Black and Americas Region
Carlos J. Quinones	58	Senior Vice President, Global Operations

Corning F. Painter—Mr. Painter became the CEO of Orion Engineered Carbons in September 2018. He is responsible for setting strategy and policy, developing leadership talent, meeting customer and shareholder commitments, and setting Company culture. Prior to joining Orion, he was the Executive Vice President for Industrial Gases at Air Products and Chemicals, a global industrial gas company from 2014 until he left the company in 2018. Prior to that he was Senior Vice Present of the Merchant Gases division of Air Products from 2013 to 2014. Mr. Painter joined Air Products in 1984 as a participant in a career development program and held various positions including Vice President, Global Electronics, Senior Vice President, Corporate Strategy and Technology, and Senior Vice President Supply Chain (operations, engineering, procurement, safety). He was based overseas in Asia and Europe for ten years. Mr. Painter has served on numerous non-profit boards. He holds a B.S. in chemical engineering degree from Carnegie-Mellon University and is a Certified Professional Engineer.

Jeffrey Glajch—Mr. Glajch joined Orion on April 18, 2022 as Chief Financial Officer. Mr. Glajch has over 30 years of experience leading corporate finance and accounting control functions for both public and private companies. Prior to joining Orion, he served as CFO for 13 years for Graham Corporation, a leading designer and manufacturer of vacuum and heat transfer equipment for energy markets and process industries. Prior to Graham Corporation, he held senior financial roles at a number of companies. Mr. Glajch has also served on numerous non-profit boards. He holds an MBA from Purdue University, a master's degree in chemical engineering from Clarkson University and a bachelor's degree in chemistry from Carnegie-Mellon University.

Sandra Niewiem—Dr. Niewiem was appointed Senior Vice President Global Specialty Carbon Black and EMEA Region in September 2019. She joined Orion in December 2013 and previously held the position of Vice President Global Product Management and Business Development Specialty Carbon Black. She has over 19 years of experience in process industries, engineering and industrial goods, and more than 13 years in management consulting at a global consulting firm. Dr. Niewiem holds an Economics Doctorate from European Business School and a Master's in business administration from James Madison University, Virginia.

Pedro Riveros—Mr. Riveros joined Orion Engineered Carbons in the current role in June 2019. Immediately prior to Orion, he served in multiple business leadership roles at Air Products from 1994 to 2019 where his key areas of expertise included Business Strategy, Margin Enhancement, Productivity and Supply Chain Management. He has 25 years of experience in varied general management and business management roles in the industrial gas and chemicals area both in North and South America. Mr. Riveros holds a Bachelor's degree in mechanical engineering from Rensselaer Polytechnic Institute, New York.

Carlos Quinones—Mr. Quinones joined Engineered Orion Carbons in the current role in June 2019. Immediately prior to joining Orion, he held multiple Operations leadership positions at Air Products from 2015 to 2019. Prior to Air Products, Mr. Quinones held positions of increasing leadership responsibilities in the chemical industry experience with Praxair, Rohm and Haas/Dow Chemical, and Arco Chemical. Mr. Quinones holds a Bachelor of Science degree in Mechanical Engineering from Texas A&M University.

Code of Conduct/Code of Ethics

Orion has adopted a Code of Conduct that applies to all Company employees and directors, including the Chief Executive Officer, the Chief Financial Officer, senior management, the Controller and other senior financial officers. The Code of Conduct is posted on our website, www.orioncarbons.com (under "Legal" then "Compliance Policies" section). In addition, the Company has adopted a Code of Ethics that applies to its Chief Executive Officer, Chief Financial Officer and Chief Accounting Officer. The Code of Ethics is posted on our website, www.orioncarbons.com (under "Investors" then "Governance" section). We intend to satisfy the disclosure requirement regarding any amendment to, or waiver of, a provision of the Code of Conduct and Code of Ethics applicable to the Chief Executive Officer, the Chief Financial Officer, senior management, the Controller or other senior financial officers by posting such information on our website.

Item 11. Executive Compensation

The information required by this item will be included in our proxy statement for the Company's 2023 annual meeting of stockholders (the "2023 Proxy Statement") and is incorporated herein by reference.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

The information relating to security ownership of certain beneficial owners of our common stock and information relating to the security ownership of our management required by this item will be included in our 2023 Proxy Statement and is incorporated herein by reference.

Item 13. Certain Relationships and Related Transactions, and Director Independence

The information required by this item will be included in our 2023 Proxy Statement and is incorporated herein by reference.

Item 14. Principal Accounting Fees and Services

The information required by this item will be included in our 2023 Proxy Statement and is incorporated herein by reference.

PART IV

Item 15. Exhibits, Financial Statement Schedules

(a) Financial Statements.

See *Item 8* of this Form 10-K.

(b) Schedules.

The Schedules have been omitted since the required information is not applicable or is not present in amounts sufficient to require submission of the schedule, or because the information required is included in the consolidated financial statements and notes thereto included in this Form 10-K.

(c) Exhibits. (Certain exhibits not included in copies of the Form 10-K sent to stockholders.)

The exhibit numbers in the Exhibit Index correspond to the numbers assigned to such exhibits in the Exhibit Table of Item 601 of Regulation S-K. Orion will furnish to any stockholder, upon written request, any exhibit listed in the Exhibit Index, upon payment by such stockholder of the Company's reasonable expenses in furnishing such exhibit.

Item 16. 10-K Summary

None applicable.

Exhibit Number	Description
3.1	Articles of Association of Orion Engineered Carbons S.A. (incorporated by reference to Exhibit 1.1 to the Current Report on Form 6-K furnished on April 16, 2019 (File No. 001-36563)
4.1	Form of Specimen of Common Share Certificate (incorporated by reference to Exhibit 4.1 to Amendment No. 2 to the Registration Statement on Form F-1 filed on July 14, 2014 (File No. 333-196593))
4.2	Description of Orion Engineered Carbons S.A.'s Common Shares (incorporated by reference to Exhibit 4(b) to the Annual Report on Form 10-K for the year ended December 31, 2019 filed on February 20, 2020
10.1	Credit Agreement, dated as of July 25, 2014, among the Company, Orion Engineered Carbons Holdings GmbH, Orion Engineered Carbons Bondco GmbH, Orion Engineered Carbons GmbH, OEC Finance US LLC, the revolving borrowers named therein, the guarantors named on the signature page thereto, the lenders named therein, and Goldman Sachs Bank USA as administrative agent (incorporated by reference to Exhibit 99.1 to the Current Report on Form 6-K furnished on July 31, 2014 (File No. 001-36563)
10.2	First Amendment, dated as of August 7, 2014, to the Credit Agreement, by and among Orion Engineered Carbons S.A., Orion Engineered Carbons Holdings GmbH, Orion Engineered Carbons BondCo GmbH, Orion Engineered Carbons GmbH, OEC Finance US LLC, the Revolving Borrowers named therein, the Guarantors party thereto, the Lenders party thereto, Goldman Sachs Bank USA, in its capacity as administrative agent for the Lenders
10.3	Second Amendment, dated as of September 29, 2016, to the Credit Agreement, by and among Orion Engineered Carbons S.A., Orion Engineered Carbons Holdings GmbH, Orion Engineered Carbons BondCo GmbH, Orion Engineered Carbons GmbH, OEC Finance US LLC, the Revolving Borrowers named therein, the Guarantors party thereto, the Lenders party thereto, Goldman Sachs Bank USA, as Assuming Lender with respect to the Initial Dollar Term Loans and Initial Euro Term Loans
10.4	Third Amendment, dated as of May 5, 2017, to the Credit Agreement, by and among Orion Engineered Carbons S.A., Orion Engineered Carbons Holdings GmbH, Orion Engineered Carbons BondCo GmbH, Orion Engineered Carbons GmbH, OEC Finance US LLC, the Revolving Borrowers named therein, the Guarantors party thereto, the Lenders party thereto, Goldman Sachs Bank USA, as Assuming Lender with respect to the Initial Dollar Term Loans and Initial Euro Term Loans
10.5	Fourth Amendment, dated as of May 31, 2017, to the Credit Agreement, by and among Orion Engineered Carbons S.A., Orion Engineered Carbons Holdings GmbH, Orion Engineered Carbons BondCo GmbH, Orion Engineered Carbons GmbH, OEC Finance US LLC, the Revolving Borrowers named therein, the Guarantors party thereto, the Lenders party thereto, Goldman Sachs Bank USA, in its capacity as administrative agent for the Lenders, and UniCredit Bank AG, as arranger with respect to the Amendment (incorporated by reference to Exhibit 99.1 to the Current Report on Form 6-K furnished on July 25, 2017 (File No. 001-36563))

10.6	Fifth Amendment, dated as of November 2, 2017, to the Credit Agreement, by and among Orion Engineered Carbons S.A., Orion Engineered Carbons Holdings GmbH, Orion Engineered Carbons BondCo GmbH, Orion Engineered Carbons GmbH, OEC Finance US LLC, the Revolving Borrowers named therein, the Guarantors party thereto, the Lenders party thereto, Goldman Sachs Bank USA, as administrative agent for the Lenders.
10.7	Sixth Amendment, dated as of May 3, 2018, to the Credit Agreement, by and among Orion Engineered Carbons S.A., Orion Engineered Carbons Holdings GmbH, Orion Engineered Carbons BondCo GmbH, Orion Engineered Carbons GmbH, OEC Finance US LLC, the Revolving Borrowers named therein, the Guarantors party thereto, the Lenders party thereto, Goldman Sachs Bank USA, as administrative agent for the Lenders.
10.8	Seventh Amendment, dated as of October 29, 2018, to the Credit Agreement, by and among Orion Engineered Carbons S.A., Orion Engineered Carbons Holdings GmbH, Orion Engineered Carbons BondCo GmbH, Orion Engineered Carbons GmbH, OEC Finance US LLC, the Revolving Borrowers named therein, the Guarantors party thereto, the Lenders party thereto, Goldman Sachs Bank USA, as administrative agent for the Lenders.
10.9	Eighth Amendment, dated as of April 2, 2019, to the Credit Agreement, by and among Orion Engineered Carbons S.A., Orion Engineered Carbons Holdings GmbH, Orion Engineered Carbons BondCo GmbH, Orion Engineered Carbons GmbH, OEC Finance US LLC, the Revolving Borrowers named therein, the Guarantors party thereto, the Lenders party thereto, Goldman Sachs Bank USA, as administrative agent for the Lenders.
10.10	Ninth Amendment, dated as of September 30, 2021, by and among Orion Engineered Carbons GmbH, a limited liability company (Gesellschaft mit beschränkter Haftung) organized under the laws of Germany, the other Loan Parties party thereto, the New Term Lenders party thereto, Goldman Sachs Bank USA, in its capacity as administrative agent for the Lenders, Goldman Sachs Bank USA as sole book runner and Deutsche Bank Securities Inc., ING Bank, a branch of ING-DiBa AG and UniCredit Bank AG in their capacities as exclusive mandated lead arrangers (incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K filed on October 5, 2021).
10.11	Tenth Amendment, dated as of May 26, 2022, by and among Orion Engineered Carbons GmbH, a limited liability company (Gesellschaft mit beschränkter Haftung) organized under the laws of Germany, the other Loan Parties party hereto, each Lender party hereto, Goldman Sachs Bank USA, in its capacity as administrative agent for the Lenders and UniCredit Bank AG in its capacity as exclusive coordinator, bookrunner and mandated lead arranger (incorporated by reference to Exhibit 10.1 to the Quarterly Report on Form 10-Q filed on August 4, 2022).
10.12+	Fixed Asset Loan Agreement, dated March 16, 2022, by and between Orion Engineered Carbons (Huaibei) Co., Ltd. and Bank of China Limited Shanghai Pilot Free Trade Zone Sub-Branch
10.13†	Orion Engineered Carbons S.A. 2014 Omnibus Incentive Compensation Plan (incorporated by reference to Exhibit 4.2 to the Registration Statement on Form S-8 filed on August 5, 2014)
10.14†	Orion Engineered Carbons S.A. 2014 Non-Employee Director Plan (incorporated by reference to Exhibit 4.3 to the Registration Statement on Form S-8 filed on August 5, 2014)
10.15†	Employment Agreement, dated as of September 2, 2018, by and between Corning Painter and Orion Engineered Carbons S.A. (incorporated by reference to Exhibit 10.1 to the Quarterly Report on Form 10-Q filed on May 7, 2020).
10.16†	Restrictive Covenants Agreement, dated as of September 2, 2018, by and between Corning Painter and Orion Engineered Carbons S.A. (incorporated by reference to Exhibit 10.2 to the Quarterly Report on Form 10-Q filed on May 7, 2020).
10.17†	Restricted Stock Unit Award (sign-on grant), dated as of November 4, 2019, by and between Corning Painter and Orion Engineered Carbons S.A. (incorporated by reference to Exhibit 10.3 to the Quarterly Report on Form 10-Q filed on May 7, 2020).
10.18†	Form of PSU Award Agreement (incorporated by reference to Exhibit 10.6 to the Quarterly Report on Form 10-Q filed on May 7, 2020).
10.19†	Form of RSU Award Agreement (incorporated by reference to Exhibit 10.7 to the Quarterly Report on Form 10-Q filed on May 7, 2020).
10.20†	Form of Director Restricted Share Award Agreement (incorporated by reference to Exhibit 10.8 to the Quarterly Report on Form 10-Q filed on May 7, 2020).
21.1	Subsidiaries of the Registrant
23.1	Consent of Ernst & Young LLP
23.2	Consent of Ernst & Young GmbH Wirtschaftsprüfungsgesellschaft

31.1	Certification by Corning F. Painter pursuant to Rule 13a-14(a) of the Securities Exchange Act of 1934
31.2	Certification by Jeffrey Glajch pursuant to Rule 13a-14(a) of the Securities Exchange Act of 1934
32.1	Certification by Corning F. Painter pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
32.2	Certification by Jeffrey Glajch pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101	XBRL
104	Cover Page Interactive Data File (embedded within the Inline XBRL document)
+	Certain confidential information — identified by bracketed asterisks "[****]" — has been omitted from this exhibit pursuant to Item 601 (b)(10) of Regulation S-K because it is both (i) not material and (ii) the type that the registrant treats as private or confidential
†	Management compensatory arrangement

Orion Engineered Carbons S.A

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

ORION ENGINEERED CARBONS S.A.

February 23, 2023

By /s/ Corning F. Painter
Name: Corning F. Painter
Title: Chief Executive Officer

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

Signature	Title	Date
/s/ Corning F. Painter Corning F. Painter	Chief Executive Officer (Principal Executive Officer)	February 23, 2023
/s/ Jeffrey Glajch Jeffrey Glajch	Chief Financial Officer (Principal Financial Officer)	February 23, 2023
/s/ Kerry A. Galvin Kerry A. Galvin	Director	February 23, 2023
/s/ Paul Huck Paul Huck	Director	February 23, 2023
/s/ Mary Lindsey Mary Lindsey	Director	February 23, 2023
/s/ Didier Miraton Didier Miraton	Director	February 23, 2023
/s/ Yi Hyon Paik Yi Hyon Paik	Director	February 23, 2023
/s/ Dan F. Smith Dan F. Smith	Director	February 23, 2023
/s/ Hans Dietrich Winkhaus Hans Dietrich Winkhaus	Director	February 23, 2023
/s/ Michel Wurth Michel Wurth	Director	February 23, 2023
/s/ Anthony L. Davis Anthony L. Davis	Director	February 23, 2023

CORPORATE INFORMATION

Board of Directors*

Dan Smith
Chairman
Former Chairman, President
and Chief Executive Officer
Lyondell Chemical

Corning Painter
Chief Executive Officer
Orion Engineered Carbons

Tony Davis
Chief Executive Officer
and Chief Investment Officer
Inherent Group

Kerry Galvin
Former General Counsel
Lyondell Chemical

Paul Huck
Former Chief Financial Officer
Air Products and Chemicals

Mary Lindsey
Former Chief Financial Officer
Commercial Metals Company

Didier Miraton
Former Chief Executive Officer
Alméry's SAS

Yi Hyon Paik
Former President and
Chief Strategy Officer
Samsung SDI Company

Hans-Dietrich Winkhaus
Former Chief Executive Officer
Henkel KGaA

Michel Wurth
Chairman of the Board of
ArcelorMittal Luxembourg S.A.
and Non-Independent Director
ArcelorMittal

Management Team

Corning Painter
Chief Executive Officer
and Class A Daily Manager

Jeff Glajch
Chief Financial Officer
and Class A Daily Manager

Sandra Niewiem
Senior Vice President Global Specialty
Carbon Black and EMEA Region

Carlos Quinones
Senior Vice President, Global Operations

Pedro Riveros
Senior Vice President Global Rubber
Carbon Black and Americas Region

Transfer Agent

The transfer agent and registrar for Orion Engineered Carbons' common shares is American Stock Transfer and Trust Company LLC. The transfer agent's address is 6201 15th Avenue, Brooklyn, New York 11219.

Stock Exchange Listing

Orion Engineered Carbons is listed on the New York Stock Exchange under the ticker symbol OEC.

Independent Auditors

Orion Engineered Carbons' auditors are Ernst and Young LLP.

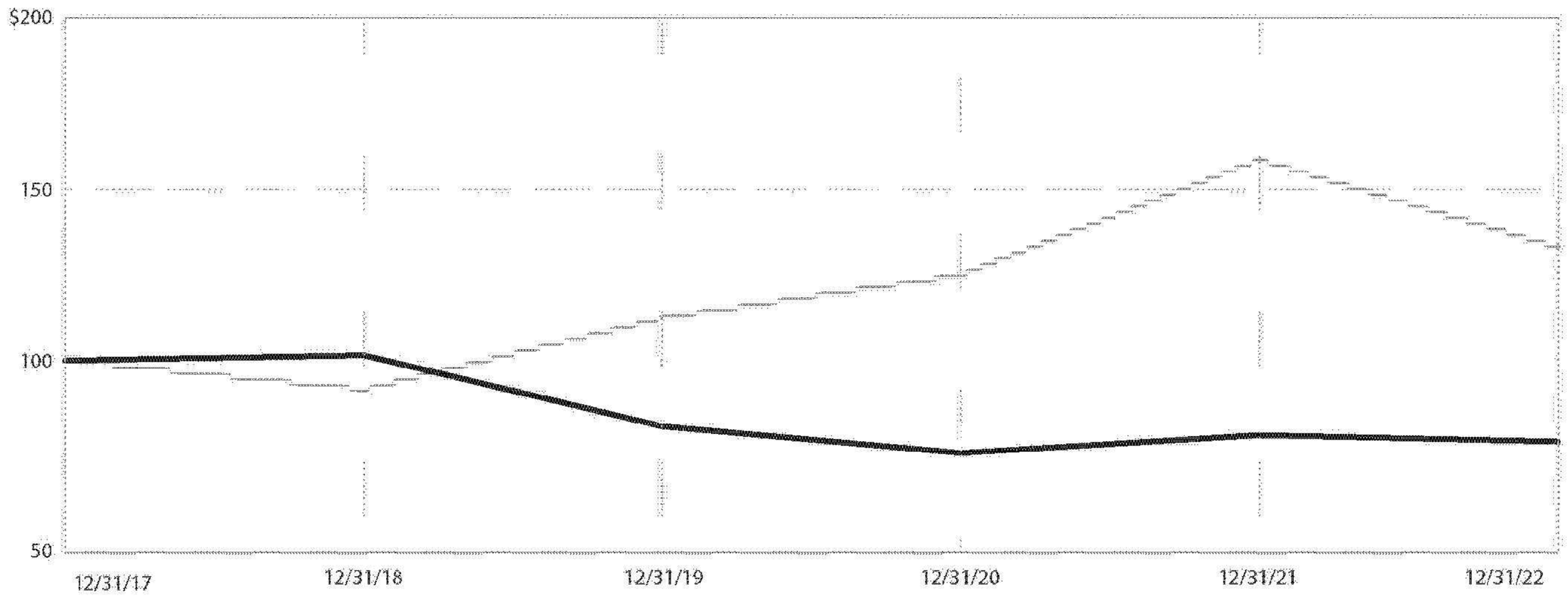
Annual Meeting

The Annual Meeting of Stockholders will be held on Wednesday, June 7, 2023, at 2:00 pm Central European Time at the company's office, located at 6, Route de Trèves, L-2633 Senningerberg (Municipality of Niederanven), Grand Duchy of Luxembourg.

*Above mentioned positions held by Directors are exemplary and do not reflect all positions currently or formerly held

COMPARISON OF 5 YEAR CUMULATIVE TOTAL RETURNS*

Among Orion Engineered Carbons LLC, the S&P SmallCap 600 Index and the S&P SmallCap Chemicals Index



*$100 invested on 12/31/17 in stock or index, including reinvestment of dividends.
Fiscal year ending December 31.

1700 City Plaza Drive
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Spring, TX 77389

orioncarbons.com