Orion S.A.

Sustainability Report 2023

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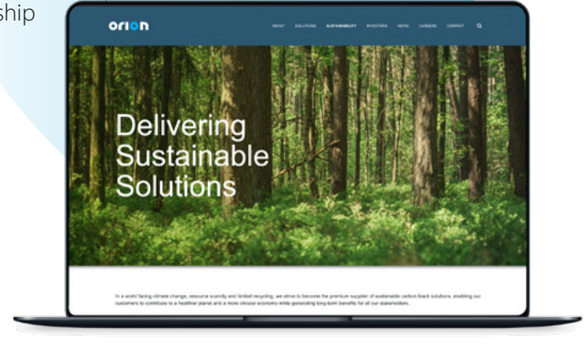
Did you know?

Orion was the first major carbon black producer to develop and commercialize a renewable carbon black a decade ago.

Learn more about sustainability at Orion at:
orioncarbons.com/sustainability



About this report

Our 2023 Sustainability Report outlines our approach to sustainability and our progress to date. We endeavour to be transparent and continue to learn through ongoing monitoring and evaluation of our approach. This report is approved by Orion S.A.'s Board and produced with reference to the GRI 2021 Standards.

The information stated in this report concerns and covers all the consolidated company's business entities from January 1 to December 31, 2023.

How to use this report

The following symbols indicate that additional information can be found either in this report or on our website:

View more online

View a video

Read more in this report

We are Orion

Orion S.A. is a specialty chemicals company that makes carbon black, an essential material for the modern world. With carbon black, products we depend on last longer and perform better – from paints and coatings to tires, lithium-ion batteries and efficient high-voltage cables.

Carbon black is traditionally made by upcycling industrial byproducts that would otherwise create more carbon emissions when disposed of in other ways. Today, we're innovating with this highly engineered material, strengthening carbon black's role in sustainable manufacturing.

We are driving innovation, enabling the everyday.

1,600 employees

Serving customers in over 80 countries worldwide

Our lineage stretches back 160 years to Germany, where we still operate the world's longest-running carbon black facility. Today, over 1,600 Orion employees work to serve customers in over 80 countries around the world.

We have 15* plants on five continents and R&D laboratories on three continents. Our innovations have included the first carbon black made from renewable materials and the first circular carbon black.

Read more online

View video here

* 14 are wholly owned by Orion, and one is a joint venture.

We are Orion *continued*

Orion at a glance

OPERATIONAL HIGHLIGHTS

80+
countries in which we support our customers

~1,600
employees

~1,150 KMT
functional capacity

15*
Plants

1,000
customers supplied

30–40 yrs
length of average customer relationship

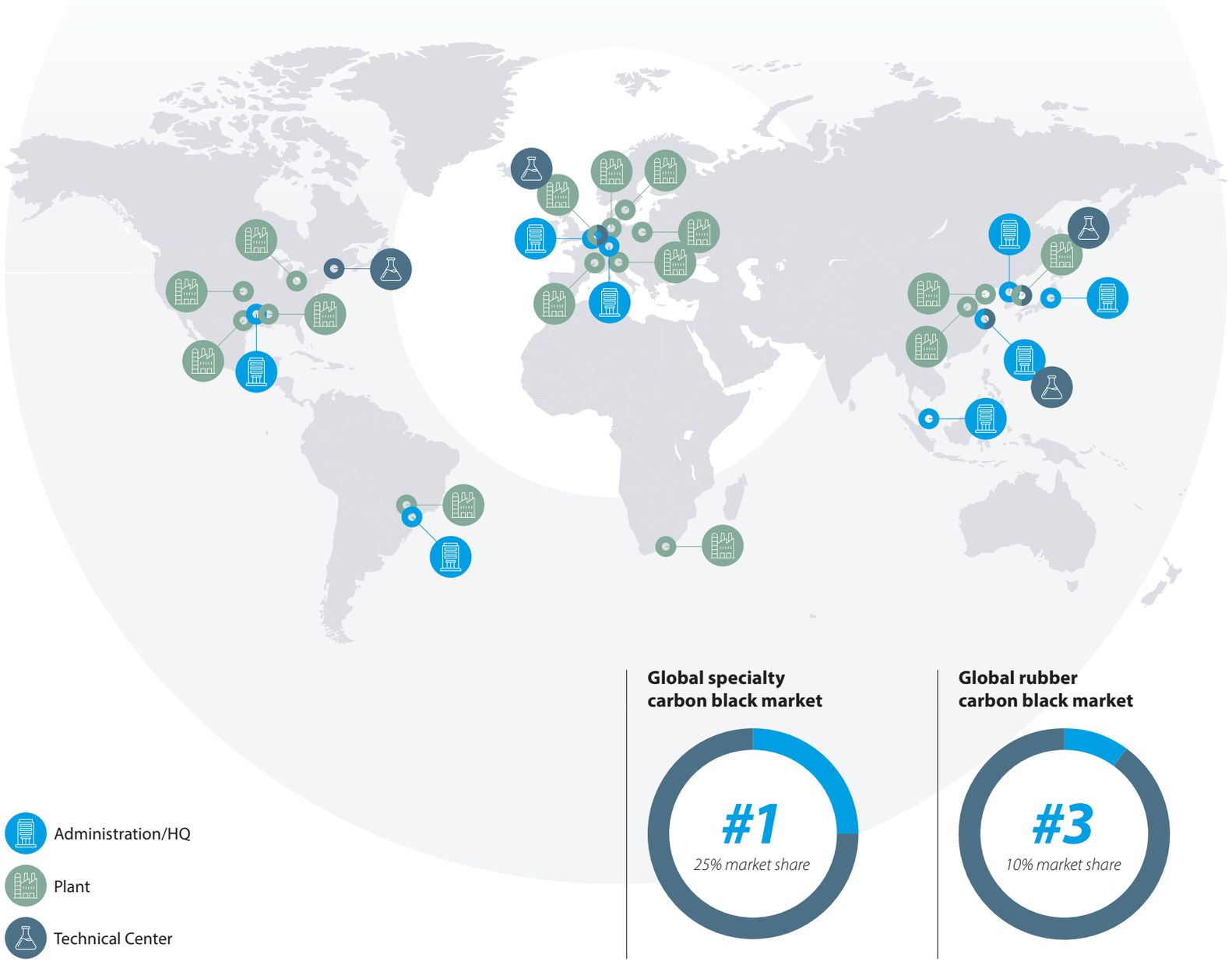
FINANCIAL HIGHLIGHTS

963 KMT
annual sales volume

$1,894 MM
revenue

$332 MM
adjusted EBITDA

$344 MM
operating cash generation



Global specialty carbon black market

Global rubber carbon black market

* 14 are wholly owned by Orion, and one is a joint venture.

How we create value

We create value by operating profitably within planetary boundaries, meaning we strive to be profitable while recognizing the limits of what the biosphere can tolerate. Orion's solutions enable our customers to create environmentally efficient products and participate in a circular economy. This way, we create long-term value for all our stakeholders – from employees to investors and the communities in which we operate.

STRENGTHS

- Differentiated production capabilities with proprietary after-treatments
- Customer-centric products and solutions that are diverse, customizable and versatile
- Technology-enabled to deliver industry's broadest product portfolio
- Global Innovation capabilities with integrated R&D platform
- Disciplined capital allocation strategy with focus on discretionary free cash flow
- Strong operational excellence
- Competitive pricing strategy
- High-performance colleagues and culture

HOW WE DELIVER

ENABLE
our people and relationships to shape a sustainable future

INVEST
in innovation to advance circularity and green products

DELIVER
differentiated products that create sustainable value whilst decarbonizing our own operations

INDUSTRY SEGMENTS ENABLED

- Tires
- Mechanical rubber goods
- Batteries
- Coating systems
- Printing systems
- Polymers
- Special applications

VALUE CREATED

Shareholders
Our investment approach continues to enable our growth with a 6% increase from 2022 on our adjusted EBITDA to $332MM.

Customers
We support our customers on their sustainability targets by creating sustainable products from our ECORAX® product lines which are made from bio-circular and circular feedstocks.

Employees
Expanded our training programs to upskill and encourage career growth for employees. 80% of employees received 40 hours of training to enhance their career.

Environment
We continue to reduce our impact on the environment with a 4% reduction in absolute emissions in 2023.

Communities
Globally, we generate safe jobs, pay fair wages, and support communities through charitable activities and respectful workplaces.

Q&A with Corning Painter, Orion Chief Executive Officer

Achieving net-zero might seem like an extremely challenging aspiration for a company like Orion S.A., which has long relied on fossil feedstocks like oil and coal tar to make carbon black. But after joining the company as CEO six years ago, Corning Painter has positioned Orion as the leader in developing sustainable solutions with recycled and renewable materials in the carbon black industry. In this interview, Corning discusses the company's approach to innovation and how a focus on biogenic carbon is key to Orion's vision for net zero.

Read more about our net zero vision on page 14

Q: How has Orion developed a reputation for being the leader in developing sustainable products in the carbon black industry?

Over a decade ago, we were the first in our industry to develop a sustainable carbon black. We have now successfully made a range of bio-circular and circular grades that are commercially available to our customers and suitable for a wide scope of applications. We are not the biggest carbon black player in the world of rubber and tires. But our history of innovation around sustainability makes us the perfect disruptor. We won't overtake our bigger competitors by playing the same game – so we're changing the game. Making sustainable products is not only the right thing to do, it's also what customers want. So, we've positioned ourselves as the company that listens to our customers and sees the future.

Q: Orion is the leader on the Specialty side. How is Specialty part of Orion's innovation story?

Orion's strength in Specialty gives us an edge because it is more innovation-intensive than Rubber. We have to tailor-make products for a wide variety of applications – from coatings and polymers to inks and batteries. We have innovation teams across our global markets and a tradition of focusing on what the customer needs. This means we can leverage our formidable innovation capacity in Specialty to also create new products for Rubber. Simply put, we can go from concept to reality very quickly in both major markets.

Q: How does Orion's legacy of innovation ethos align with its net zero vision? How will a business that has long been dependent on fossil fuels drastically reduce its emissions of carbon dioxide (CO_2)?

Key to our strategy is shifting away from fossil fuel-derived raw materials and instead using plant-based or bio feedstocks and circular raw materials from recycling. We also believe that our processes can help sequester carbon.

When we step back and look at the natural biological cycle, we see that all carbon in plants comes from the atmosphere, where they remove CO_2 with photosynthesis. We call this biogenic carbon. When plants die or decay, they release this CO_2 back into the atmosphere. However, if we can take some of the carbon that a plant has removed from the atmosphere and make carbon black with it, we're taking that portion of it out of the natural carbon cycle. This, combined with building a circular economy – for example, with recycling tires – means that we could trap a portion of the carbon in this cycle for an extended period of time.

Q: How does recycling factor into Orion's net zero strategy?

Tires are a good way to illustrate this because about 70% of the carbon black made today goes into tires. Because they contain natural rubber, tires trap biogenic carbon from the atmosphere. Right now, many are burned once they are worn out and discarded, releasing CO_2 back into the atmosphere. But we can use a process called pyrolysis to make carbon black from end-of-life tires. The process can be repeated again and again, trapping the carbon in the product. To our knowledge, Orion is the only company that has carbon black from 100% pyrolysis oil, and we see great promise in this technology.

Q: Are consumers ready for tires made from sustainable carbon black?

When they buy a tire, most people are not thinking about the environment. They are thinking about how much the tire costs and how long it lasts. That is understandable. So, can we make these tires more attractive financially? This means getting higher yields, which also makes production more sustainable. That's what we're working on. Developing ways to make sustainable products more cost-effective.

Corning Painter
Chief Executive Officer

2023 Highlights

Plant upgrades

We invested in a new air pollution control technology at our Belpre, Ohio, plant to reduce emissions, and we continue to add cogeneration capabilities at other facilities

Investment in lower-impact technology.

Orion began work on a €12.8 million research program (including up to €6.4 million funding from the German Federal Ministry for Economic Affairs and Energy) to develop technology to use circular feedstocks in the production of carbon black while improving yield, reducing our environmental impacts. The intent of this project is to accelerate the shift to a circular economy and feed the growing demand for sustainable materials in the tire industry.

Platinum Medal from EcoVadis

Orion achieved an EcoVadis Platinum Medal, rising from Gold with an increased score, positioning us in the 99th percentile of companies evaluated, for our commitment to holistic sustainability management.

CDP "B" score

Orion achieved the second highest CDP score, recognizing its efforts to address its climate impact and ensure effective emissions management.

Linking finance with environmental outcomes

Orion's renewed €300 million senior secured revolving credit facility is now also linked to sustainability. If Orion meets its targets set for the improvement of its EcoVadis ratings and emissions intensity reduction for all term years of the credit facility, the company could significantly reduce its financing costs. Orion has also linked its term loans to the emissions targets of its U.S. plants. After achieving its goals during the first year, Orion saved approximately $650,000 in interest payments in 2023.

Battery Innovation Center in Germany

The new facility helps us to develop new products and formulations for electrodes in lithium-ion batteries. As we scale this technology worldwide, we will be able to meet the high demand from lithium-ion battery producers to drive electrification.

New products

We launched PRINTEX® kappa 10, a high-quality conductive additive, which facilitates an efficient transfer of electrical energy within lithium-ion batteries. It forms a percolating network that enables the electrons to flow and enhances the performance and power response during both charging and discharging.

We're focused on products enabling more efficient and powerful lithium-ion batteries that help to decarbonize mobility. PRINTEX® kappa 10 is a key part of our strategy for expanding our business for such conductive additives.

ISCC certifications

Orion leads the carbon black industry for the number of production sites with ISCC (International Sustainability & Carbon Certification) PLUS certification. We have 5* sites with certification.

* 4 are wholly owned by Orion, and one is a joint venture.

Awards

Orion is a key partner in the BlackCycle project, which received the "Recircle" Award for the "Best Tyre Recycling Research Project." The company also earned a "Top Work Places" award from the Houston Chronicle.

The global trends shaping our business

CLIMATE CHANGE

We need to operate within planetary boundaries, which means cutting emissions, saving resources and reducing waste and biodiversity loss.

How we deliver

- Our ECORAX® Nature products are based on oils derived from biological waste materials.
- Our ECORAX® Circular products use end-of-life tires as a primary raw material.
- We recover heat and steam from our production processes to generate energy.
- Reducing our environmental impact through actions like investing in air emission controls, gray water systems, and developing technology to efficiently recycle old tires.

GROWING WORLD POPULATION

The rapidly growing middle class is boosting demand for consumer products and personal transportation and creating a need for more resource-efficient production.

How we deliver

- As the only company that can make carbon black with four different production technologies, we offer the broadest portfolio of products to the specialty market.
- To meet the demands of consumer product and automotive businesses, we continue to invest in innovation across both rubber and specialty carbon black.
- By producing circular and bio-circular carbon black, we reduce the need for fossil-based raw materials.

ELECTRIFICATION AND SUSTAINABLE MOBILITY

Renewable energy systems and electric vehicles are growing fast worldwide, driving a need for advanced materials.

How we deliver

- Our advanced conductive additives make lithium-ion batteries more efficient, powerful and long-lasting.
- These materials also enhance the performance of high-voltage cables needed to connect renewable energy systems to the electric grid.
- Improving fuel efficiency in Internal Combustion Engine (ICE) vehicles and range in Electric Vehicles (EV) by reducing rolling resistance in tires.

> Key to our strategy is shifting away from fossil fuel-derived raw materials and instead using plant-based or bio feedstocks and circular raw materials from recycling.

Corning Painter
Chief Executive Officer

Materiality

We use a double-materiality assessment to guide us toward sustainable practices that deliver long-term value to both investors and other stakeholders.

The rigor of this approach ensures that our business decisions are economically viable, ethically sound and environmentally responsible. It enables us to identify risks, seize opportunities and strive to create positive change, not just within our own operations but across the entire carbon black industry.

We engaged a third-party organization to conduct a thorough double-materiality assessment in 2021 (See pages 19–25 of our 2021 Sustainability report for details). Each year, we review and analyze current and upcoming global megatrends and regulations. We then reconnect with our stakeholders to sense-check and refresh material topics. This ensures the topics are aligned with our business strategy and risk management approach.

Our review in 2023 did not find any major shifts from our current material topics. We will continue to deliver across the following material fields of action within environment, social and governance.

This report details our goals and actions in each of these areas. We review materiality every year and are now carrying out a comprehensive double materiality analysis, fully aligned with the requirements and guidance of the EU Corporate Sustainability Reporting Directive (CSRD).

Environment

- Climate change and net zero
- Emissions management
- Energy management
- Air pollution
- Resource management
- Waste management
- Water management
- Circularity
- Biodiversity

Social

- Diversity, equity and inclusion
- Occupational health and safety
- Human rights
- Employee recruitment and retention
- Talent management and development
- Employee engagement
- Local community engagement and charitable giving

Governance

- Business ethics and compliance
- Environmental health and safety
- Cybersecurity
- IP Protection
- Risk management
- Supply chain management
- Product quality, safety and stewardship
- Public policy and engagement

Our strategy

Orion's sustainability strategy is driven by the global trends that shape our business and the outcomes of our materiality analysis.

These drivers stress the importance of operating to minimize environmental impact – especially in relation to greenhouse gas emissions – while at the same time supporting the world's growing need for sustainable products and electrification. To realize these objectives, beyond just having operating licenses we strive to earn the support of our communities by being a good neighbor and responsible steward of the environment.

"To succeed today and long into the future, Orion is innovating solutions and playing a key role in driving change within the industry and is strategically positioned to support the transition to net zero.

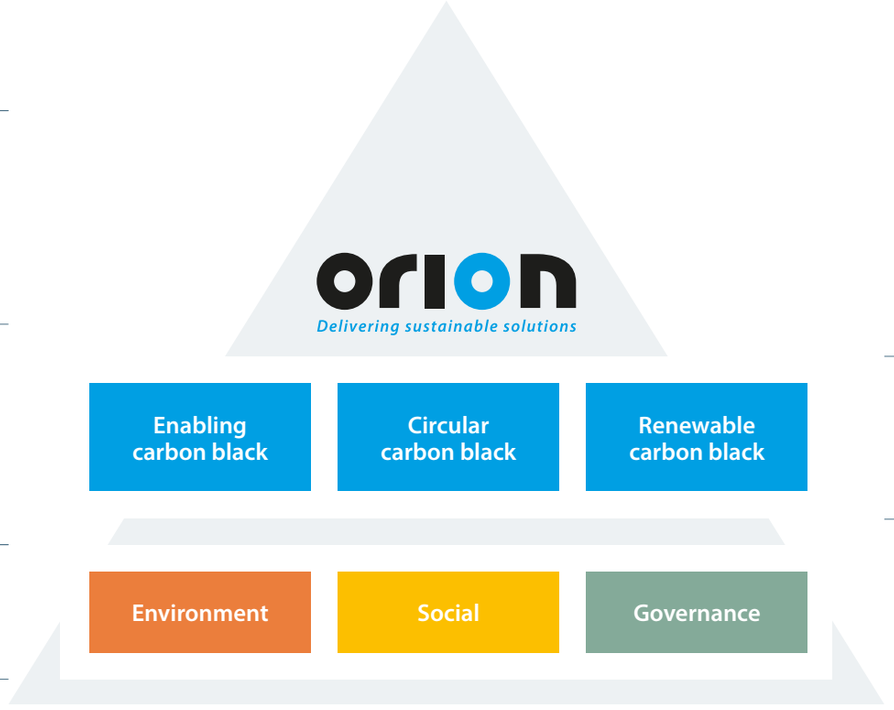
Jochen Rother
Head of Corporate Sustainability

Our approach

Our operations and strategic approach are therefore increasingly oriented toward sustainability, with a focus on delivering sustainable solutions, while ensuring we are a responsible and successful business. We are using well-established as well as new technologies to decarbonize our production facilities, reduce our environmental impacts, strengthen a culture of safety and leverage our innovation capabilities to drive circularity in our products for the rubber and specialty carbon black markets.

Our foundation

Our work to continue to innovate these products is made possible by a strong foundation across the three core pillars of sustainability: environment, social and governance (ESG). Through our materiality assessment, we understand our ESG impacts and address these by embedding ESG into our policies, procedures, culture and our day-to-day business operations. This will enable us to mitigate, adapt and ensure resilience for Orion in the long term. We understand that financial and sustainability performance are interdependent and inextricably linked.



Our focus areas

Our three main focus areas – enabling carbon black, circular carbon black and bio-circular carbon black – will be essential for the net-zero transition and to create commercial longevity for our business.

- **Enabling carbon black** is our advanced range of furnace and acetylene-based conductive materials that support the move to electrification by improving the performance of batteries and distribution cables.
- **Circular carbon black** uses end-of-life tires as a primary raw material and is now the primary focus of our rubber carbon black business, matching the performance of traditional carbon blacks.
- **Bio-circular carbon black** is made from feedstocks derived from biological waste and residues from agriculture or forestry, removing the need for fossil-based raw materials.

Focus on bio-circular

We've shifted from the term 'renewable' to 'bio-circular' as it better captures the actual resources used to make sustainable carbon black at Orion. Renewable refers to natural resources which can be continuously replenished naturally or regenerated on a human timescale. In contrast, 'bio-circular', defined by the ISCC, refers to waste and residues of biological origin from e.g. agriculture and forestry, as well as the biodegradable fraction of industrial and municipal waste (e.g. used cooking oil, tall oil, food waste). This approach minimizes waste and ensures that resources are continually cycled back into the production process, reducing the strain on natural resources, and enhancing sustainability.

Our strategy *continued*

Our global frames of reference

Included in our foundation of our sustainability strategies and practices is our alignment to the United Nations Global Compact (UNGC). We support the 10 universal principles of the UNGC in the areas of human rights, labor, anti-corruption and the environment. These principles are embedded in our professional conduct guidelines for suppliers and employees and applied to our business operations. Our annual commitment to progress on the UNGC can be found online.

Orion also contributes to the UN Sustainable Development Goals (SDGs), which address key global challenges such as poverty, inequality, climate change, environmental degradation, peace and justice. As confirmed by our materiality assessment, Orion can directly contribute to three SDGs:

Industry, innovation and infrastructure

We are developing technologies that promote energy efficiency and sustainable transport.

Please refer to page 26 for more information on how we are driving innovation.

Responsible consumption and production

We are using circular and bio-circular materials to reduce the need for primary and fossil-based materials.

Please refer to page 25 for more information on the work we are doing to drive circularity.

Climate action

We are working to decarbonize our processes and are a partner in supporting the energy transition.

Please refer to page 14 for more information on how we are supporting the net zero transition.

> Sustainability is vital in identifying and minimizing risks for our company, and it is the key driver of our business development, innovation and investment activities aimed at maximizing our impact and business opportunities.

Jeffrey Glajch
Chief Financial Officer

Environment

MATERIAL TOPICS

- Climate change and net zero
- Emissions management
- Energy management
- Circularity
- Air pollution
- Resource management
- Waste management
- Water management
- Biodiversity

> Carbon black is an enabling ingredient that has many key attributes that support the strength and longevity of products and will be needed as part of the transition to net zero – for example, supporting the continued electrification of vehicles.

Carlos Quinones
Chief Operating Officer

Our approach

We see the risks associated with climate change and the need for decisive action to transition to a net zero future.

Our business can play an important part in the journey to net zero. Orion is an inherently circular business, converting waste from the hydrocarbon industry, which would otherwise be burned, into materials that enhance the performance of everyday products. This diverts carbon from the atmosphere while at the same time creating materials that make our customers' products more durable and higher performing. To minimize our environmental footprint and achieve our emissions reduction ambitions, we are developing new and more efficient technologies and processes, and developing products based on circular and bio-circular feedstocks.

Our environmental strategy covers the following areas:

- **Greenhouse gas (GHG) emissions and energy.** Reducing GHG emissions and energy use, and moving ahead on our journey to net zero (see page 20 for detail).
- **Pollution and resource management.** Minimizing our environmental impacts and use of resources (see pages 22–24 for detail).
- **Product stewardship and circularity.** Developing quality products that support our customers' sustainability ambitions (see pages 25 and 47 for detail).
- **Biodiversity.** Minimizing our impact on the natural world (see page 27 for detail).

We manage our environmental risks through our environmental management systems, which are in alignment with international standard ISO 14001 and describe our processes and procedures in relation to environmental protection. We use these in tandem with our Orion Integrated Global Management System (GMS), to ensure occupational and process safety, health protection and quality management including sustainable compliance, social accountability, and product stewardship.

2023 ACHIEVEMENTS

High-temperature combustors that reduce the amount of feedstock needed

We installed high-temperature combustors, which reduce the amount of carbon black oil required to make our products, at our U.S. plants in Ivanhoe, Lousiana, and Orange, Texas; and in Jaso, Poland. Five further high-temperature combustors are currently under construction or in planning.

Advanced air pollution controls at four U.S. sites

In 2023 we completed the pollution control upgrade at our final production site in the U.S. By completing the Belpre and Borger projects, we complied and met Environmental Protection Agency (EPA) Consent Decree requirements. We have seen a reduction from 2022 in NOx (reduced by 37%) and SO_2 (reduced by 49%) emission but not all directly proportional to control devices. We have also noted a reduction in production emissions as well.

37%
reduction from 2022 in NOx

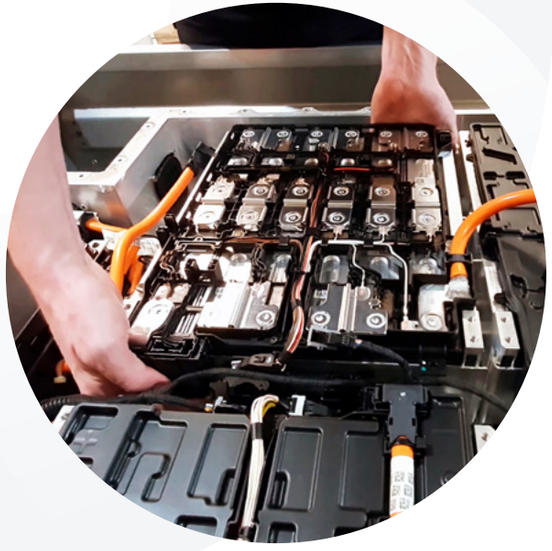
49%
reduction from 2022 in SO_2

Added cogeneration at a U.S. site

The cogeneration system enables excess steam to be used to generate electricity that can be used in the carbon black process or sold to the power grid, reducing the need for fossil fuels in the power generation industry.

Preparing for a net zero future

Orion recognizes the urgency to transition to a net-zero world and is aligned with the Paris Agreement on climate change, aspiring to reach net-zero emissions by 2050.



We know that to achieve this, we have to transition through innovation in our products while reducing our own impact from our operations. We have started on this journey, upgrading our plants and facilities to optimize energy; investing in R&D to shift to circular and renewable feedstocks that create sustainable products; and developing ultra-clean conductive carbon additives to support electrification. This makes both commercial and environmental sense.

We are leaders in specialty carbon blacks, which gives us an advantage as demand for these products continues to grow. The technologies we have at our disposal enable us to innovate to create sustainable grades of carbon black. As we develop new products and processes, our initial emissions may rise. But as we optimize our plants for scale and develop novel ways of producing carbon black, we will enhance efficiencies as we grow our business, continuously focusing on this improvement.

As part of our commitment to a low-carbon future, we have analyzed our impacts, set ambitious targets, established measures and launched activities to enable us to reach these targets.

TARGETS

BY 2029

Normalized Scope 1 GHG emissions intensity reduced by

8% *(base year 2014)*

CO_2 emissions from outbound freight reduced by

30% *(base year 2019)*

SO_2 emissions intensity reduced by

50% *(base year 2014)*

NOx emissions intensity reduced by

25% *(base year 2014)*

Particulate matter intensity reduced by

15% *(base year 2014)*

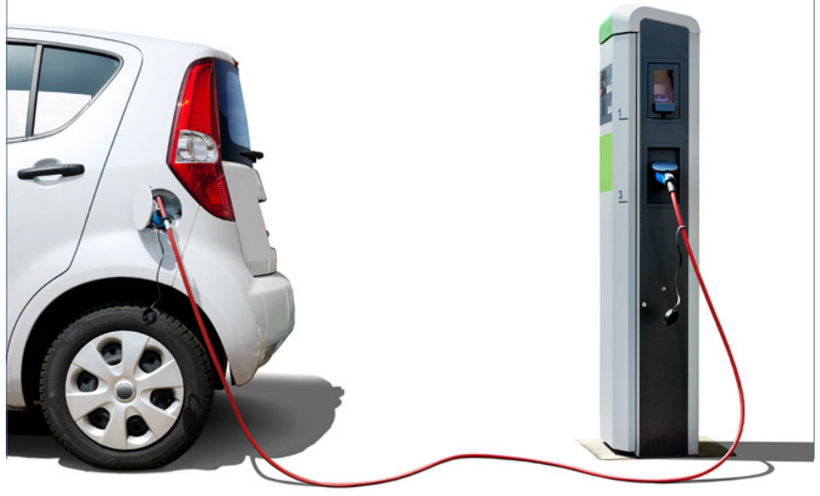
Tail gas utilization* rate increased to

79% *(base year 2014)*

* Usage of residual gas to produce energy for Orion or third parties

BY 2050

Net Zero GHG emissions



“We have analyzed our impacts, set ambitious targets, established measures and launched activities to enable us to reach these targets.

Morgan Enty
Director Global EHS and Product Stewardship

Preparing for a net zero future *continued*

MEASURES

Improving yields
We continue to improve the energy efficiency of converting hydrocarbon feedstock to carbon black, which means less carbon is converted to CO_2.

Air pollution control systems
Investments in these systems throughout our production sites ensure compliance with operating permits and licenses, and applicable environmental laws and regulations. We record and monitor data at each site to measure emission efficiencies with a focus on reduction. GHGs and other emissions are included and managed in our group-level enterprise risk management program.

Reductions in SO_2, NOx and particulate matter (PM) emissions intensity rates
These reductions are the result of additional emissions control systems, such as scrubbing systems or the use of lower-sulfur feedstocks to reduce SOx emissions. To improve PM emission intensity rates, we tightened operating procedures and installed additional PM detectors in our U.S. sites.

Energy efficiency and cogeneration
Where feasible, we use excess heat from our reactors in our production process to make it more efficient and reduce fuel consumption. When feasible, we also use the energy in our by-product tail gas to provide energy to our communities – for example, through district heat systems or by providing electricity to the grid. We also aim to improve the efficiency of our customers' products so that their products are more efficient in use, for example as lighter-weight materials in cars, or batteries with longer life cycles.

Continuous, coordinated energy management
Our global operations, regions, individual production sites, procurement and R&D functions work together to manage our energy use. We collect and analyze individual production site-level energy input and output data and keep track of key performance parameters.

What is cogeneration?
Cogeneration makes industrial processes more efficient. We use excess heat from our processes, in the form of hot gas, to generate usable energy. Examples include using the hot gas to heat water for communities or to generate electricity that feeds the grid. Many Orion plants worldwide use this technology.

ADDITIONAL MEASURES

Beyond our current reduction activities, we aim to support wider systemic change in the following ways.

Engagement with our employees
Minimize business travel, apply emissions limits to fleet vehicles, use video conferencing tools as much as possible, encourage public transport for commuting and support hybrid working.

Transparency and wider industry engagement
Maintain an open dialogue by reporting on environmental developments objectively, improving energy efficiency, and developing alternative solutions.

Product stewardship and innovation
Continue to reduce energy consumption by improving our production technology and enhancing the performance of our products.

Commitment to standards in sustainable operations
Ensure annual ISO 14001 re-certification for all sites.

ESG-incentivized financing strategies
Orion has secured financing through a sustainability-linked term loan and a sustainability-linked revolving credit facility (RCF). These financing approaches are aligned to key ESG targets that if met, reduce the overall financial costs through a reduction in the interest rate or other financial benefits (e.g., increased line of credit to enable growth). Orion achieved the emissions reduction targets for a term loan linked to the performance of our U.S. plants, saving the company approximately $650,000 in interest payments in 2023. If the targets continue to be met, Orion will reduce financing costs over the full term by a total of $2.6 million. We have renewed a €300 million RCF that will be linked to Orion's emissions intensity reduction targets and an improvement in its EcoVadis rating. If these are met, the company could also reduce the finance costs associated with the RCF.

Preparing for a net zero future *continued*

Orion's vision to net zero

The accelerating pace of climate change and its effect on our planet will require accelerated solutions and behavior change from governments, business and consumers.

This shift will undoubtedly present challenges, but leveraging strategies and technologies for climate change adaptation will present opportunities for us as a business, as well as the wider industry. Our vision and strategy to net zero provides innovative advantages for the future of our business and will be developed further in the coming years.

DRIVERS FOR CHANGE

Increased consumer demand for sustainable products

To reduce the impact of the carbon black industry, we will require innovation and a focus on the rapid development of the recycling market. Such innovative solutions are already evident in the evolving tire pyrolysis industry. This will not only increase the availability of alternative circular feedstocks but will also create a wider market for recovered carbon black (rCB).

More stringent governmental regulation

Governments are pursuing a variety of approaches to reduce CO_2 emissions. The European approach is to implement a carbon emission trading system. This has been enhanced by the introduction of a Carbon Border Adjustment Mechanism (CBAM), which is designed to impose charges on the carbon content of imported products and ensure they are subject to the same costs as those manufactured locally. While this approach could level the playing field inside the EU, it still leaves companies that export from the EU at a disadvantage.

In the United States, the Renewable Fuel Standard (RFS) imposes a mandate for the use of renewable fuels in the transportation sector, with the purpose of decarbonizing the industry. A variation of these regulations could motivate a more rapid shift to a circular economy. Governmental incentives could further create an environment whereby businesses are encouraged to make bolder and more drastic changes to achieve more positive environmental outcomes.

Our vision and strategy

Our strategy for product development aligns with the imperative of transitioning to a net zero future. Envisioning a paradigm where we use bio-circular and circular raw materials, our aim is to achieve carbon negativity through leveraging the natural carbon cycle framework. To realize this vision, we are committed to a dual-track approach to use biologically derived oils and contribute to the circularity of biogenic carbon. Through our new range of bio-circular and circular products, we have demonstrated that it is possible to produce high-performance carbon black grades from these alternative feedstocks.

To support this, we have invested in French tire recycling company Alpha Carbone, which will enable the company to scale up and produce commercial volumes of tire pyrolysis oil and recovered carbon black. Orion will use the oil to manufacture circular carbon black for tire and rubber goods customers.

Our main challenge will be to improve the competitiveness of these products and progress the implementation across the industry worldwide. We will continue to innovate and research new technologies to produce these products more efficiently and advance us towards our net zero goal. We envision that this strategy will allow us to gain independence from fossil-derived feedstocks while creating a more permanent solution for atmospheric CO_2.

We will continue to innovate and research new technologies to produce these products more efficiently and advance us towards our net zero goal.

Preparing for a net zero future | Orion's vision to net zero *continued*

How we will leverage the biological CO_2 cycle

By shifting our emissions to CO_2 from biological sources, we can achieve net-zero or even negative carbon dioxide emissions. The infographic illustrates the natural carbon cycle.

CO_2 is simultaneously removed from the air by the process of photosynthesis and released by the natural process of respiration and decay of biomass (such as leaves and trees). What we call biogenic carbon is the CO_2 captured and used by plants. At the end of their life, these organisms break down and release biogenic carbon as CO_2, completing the cycle.

Using plant-based materials as feedstocks to create carbon black therefore becomes a potentially regenerative material that will be more beneficial than fossil oil. By leveraging the natural CO_2 cycle at the point when carbon is temporarily removed, we can extract that biogenic carbon for use in our products and continue to work within the balance of the cycle of removal and release.

Today, about 70% of carbon black that is produced goes into tires, a large volume of which are burned at the end of their life. This releases all the carbon, both biogenic and non-biogenic, into the atmosphere and contributes to greenhouse gas emissions and environmental pollution. By using oil from the pyrolysis of used tires, we can recover their carbon and reduce the environmental impact compared to burning. Larger tires, such as those for trucks and buses, use exclusively natural rubber, while smaller passenger and light truck tires use a mix of approximately 50/50 natural and synthetic rubber. So, used tires have a high biogenic carbon content. By harnessing the pyrolysis process and natural carbon cycle, we can create a more permanent storage for this biogenic carbon. There could be significant opportunities to scale this solution, as with our investment in Alpha Carbone.

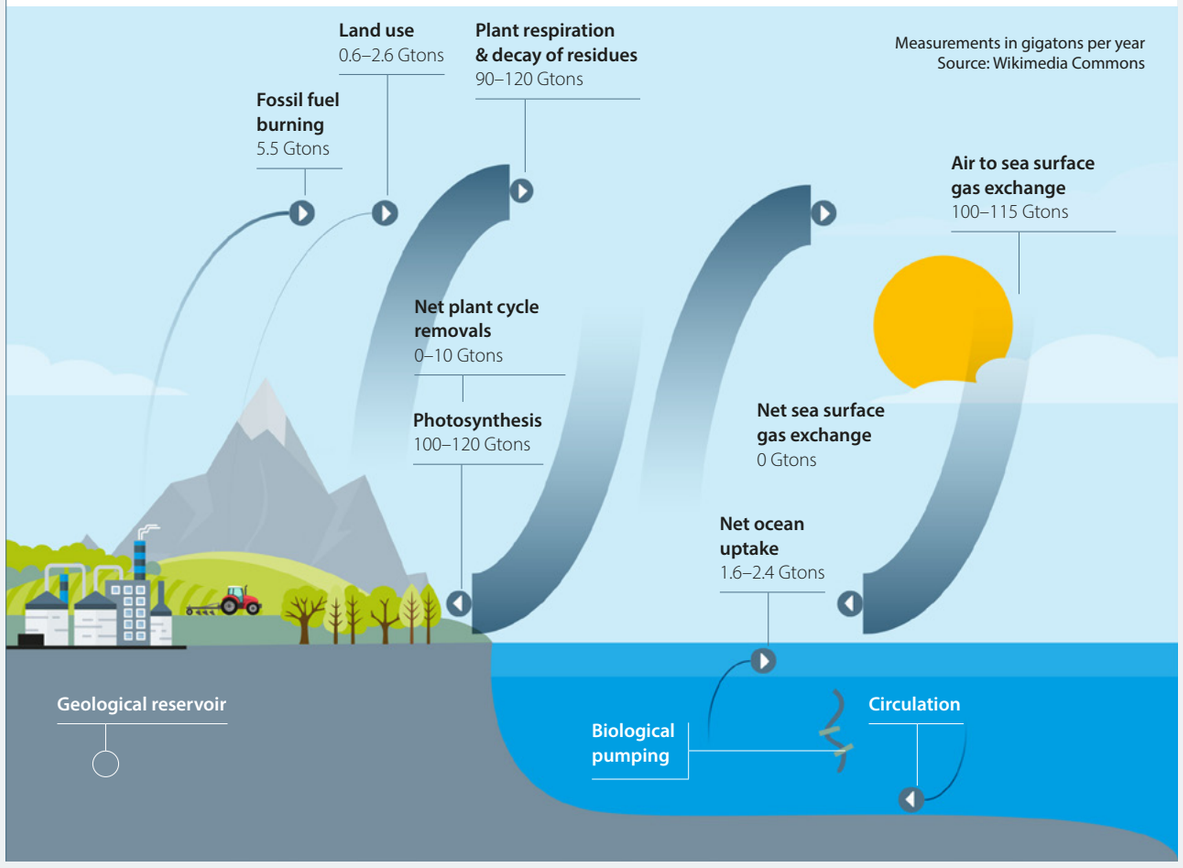
Learn more at orion.com/news

THE NATURAL CARBON CYCLE

This diagram illustrates a comparison of the different natural carbon cycles, including the ocean's role in the carbon cycle, alongside human impacts.

While emissions from human activities are relatively small compared to natural cycles, it's crucial to acknowledge that they disrupt the natural balance, resulting in no net equilibrium when added.

However, studying natural cycles reveals the potential to harness these processes and increase the utilization of biological materials as a means to address carbon imbalance.



Using plant-based materials as feedstocks to create carbon black therefore becomes a potentially regenerative material that will be more beneficial than fossil oil.

Preparing for a net zero future | Orion's vision to net zero *continued*

Bio-circular feedstocks

Plant-based feedstocks enable us to use up to 100% biogenic carbon replacement for our current fossil feedstocks and technologies, to create bio-circular carbon blacks. Today, we primarily use bio-circular feedstocks. These include waste and residues of biological origin from agriculture, forestry and related industries, including fisheries and aquaculture, and the biodegradable fraction of industrial and municipal waste such as used cooking oil, tall oil (from wood pulp manufacture) and food waste. Using bio-circular feedstocks allows us to temporarily remove carbon from the biological cycle, and using waste and residue-derived products means there is no need to grow feedstock crops that take up land which could be used for food crops. However, any carbon stored when we make carbon black from these materials will ultimately be released if the tire is burned at the end of its life. Our vision is that with the growth of tire recycling via pyrolysis, tires will not be burned, and the carbon can be used again and again.

Circular feedstocks from recycling

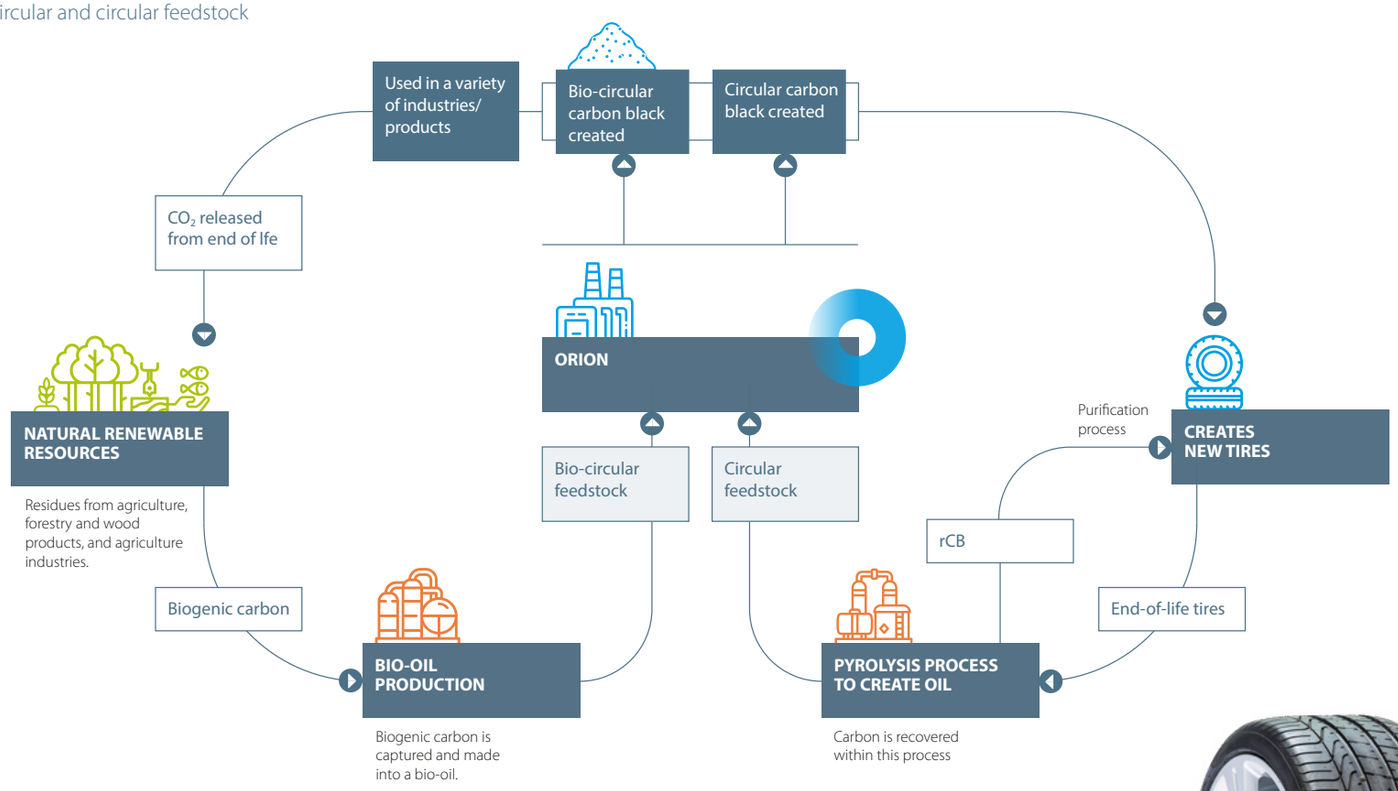
We aim to recycle tires at the end of their life through pyrolysis. This is the chemical decomposition of organic (carbon-based) materials using heat. Unlike burning or combustion, pyrolysis occurs in the absence or near absence of oxygen.

The pyrolysis process takes end-of-life tires, first removes the wire, mesh and other similar materials and then exposes the rubber to high temperatures. It reduces the tires to synthetic gas, recovered carbon black (rCB, the carbon black originally used to make the tire), and tire pyrolysis oil (TPO). Orion is the only company that has made circular carbon black from 100% tire pyrolysis oil as a feedstock. It has also demonstrated that its circular products can completely replace virgin carbon black in many applications.

Through this process, we can also then extend the temporary removal of CO_2 from the biogenic carbon cycle by creating circular carbon blacks from the TPO. As the usage of bio-circular and circular carbon blacks in conventional tires increases, both the rubber and the carbon black will contain biogenic carbon. This means that the total percent of biogenic carbon in recycled tires will increase over time. Taken to its limit, with enough tire recycling, we could replace fossil fuels as a carbon black feedstock.

KEEPING IT WITHIN THE CIRCLE

Bio-circular and circular feedstock



Our vision is that with the growth of tire recycling via pyrolysis, tires will not be burned, and the carbon can be used again and again.

Preparing for a net zero future | Orion's vision to net zero *continued*

The importance of Life Cycle Assessment

Life Cycle Assessment (LCA), governed by standards such as ISO 14040/14044, is indispensable for monitoring operations due to its comprehensive evaluation of environmental impacts throughout a product's life cycle. It meticulously considers factors such as ozone depletion, acidification, and global warming potential (GWP), providing crucial insights into a product's overall environmental footprint.

Within LCA, the Product Carbon Footprint (PCF) serves as a vital metric, specifically quantifying a product's GWP in CO_2 equivalents. This metric is particularly valuable in guiding sustainability efforts and informing decision-making processes across industries.

Adopting a "Cradle-to-Gate" approach, as defined by the Greenhouse Gas Protocol, allows for a thorough examination of emissions from all stages of production, from raw material extraction to the point of sale. This approach ensures that no aspect of the product's life cycle is overlooked, enabling organizations to identify areas for improvement and implement targeted strategies to mitigate environmental impacts.

Improving the efficiency of our plants alone will not get us to carbon neutrality. Building a circular economy with renewable and circular grades is the key.

In this regard, guidelines provided by organizations such as Together for Sustainability (TfS) play a crucial role. TfS offers tailored guidelines, especially applicable for the chemical industry, which facilitate accurate allocation of GWP across various processes, including co-products, by-products, and recycle streams that are common in chemical manufacturing.

By integrating LCA principles into our operations and using tools such as PCF, we have been able to compare the GWP of our current grades to equivalent bio-circular and circular carbon blacks using alternative feedstocks. To clarify, there will still be CO_2 emissions from our carbon black production process when using biogenic-based feedstocks. However, the biogenic carbon stored in the product can lead to a net reduction of atmospheric CO_2.

Accomplishments and ongoing work

As well as being the first major carbon black manufacturer to develop a sustainable carbon black, we have now successfully made a range of bio-circular and circular grades that are commercially available to our customers and suitable for a wide scope of applications.

We've noted that a key step in the permanent sequestering of CO_2 from the atmosphere will include recycling, of which tires is the largest consumer industry for carbon black. Therefore, to keep this circularity, it is important for us to develop a range of bio-circular and circular carbon blacks that are fundamental to making a modern tire. Available products from this range include ECORAX® Nature 200 and ECORAX® Circular 210, 215 and 220.

We already have ISCC PLUS certification at five* of our plants and are adding others worldwide. This allows us to certify the exact amount and type of sustainable content in our sustainable carbon black grades.

* Four are wholly owned by Orion, and one is a joint venture.

We have continued with our participation in the BlackCycle project (see page 26), working with several organizations to support the investment of tire circularity throughout the value chain. Beyond this work, Orion has begun its journey on a publicly funded project to develop a net zero from climate neutral process at a new pilot plant facility to be built at our site in Cologne, Germany, where we have our most advanced innovation center. The research is being supported by KEI (Klimaschutz in Energieintensiven Industrien) and is being partly funded with around €6.4 million from the German Federal Ministry for Economic Affairs and Climate Action Energy (BMWK), as part of the Decarbonization in Industry program, and the European Union.

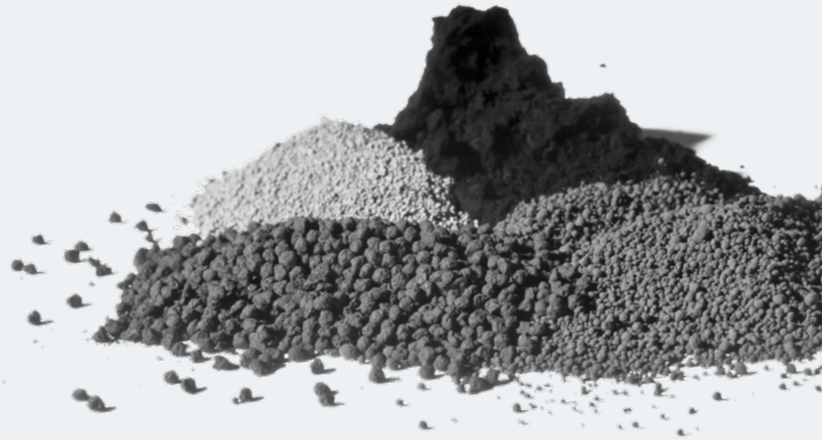
The path ahead

Improving the efficiency of our plants alone will not get us to carbon neutrality. Building a circular economy with renewable and circular grades is the key. To the extent that demand for tires and carbon black grows worldwide, CO_2 emissions will grow until the circular economy becomes more pronounced in the market. In addition, we will continue to monitor all upcoming technologies that have potential to assist in our drive towards net zero emissions.

We have already proven that we can make bio-circular grades. Moving forward, we will strive to improve the competitiveness of our circular and bio-circular grades by focusing on advancing yield and process efficiency while minimizing the costs of production. This will allow us to progress our manufacturing, further reduce CO_2 emissions and to grow our commercial sales in these products simultaneously.

For optimum benefit, implementing a bio-circular process within a modernized and efficient plant is important. We therefore intend to continue to invest in our plants to focus on improvements to plant efficiency, as identified in our LCA. We will target potential savings through, for example, waste heat recovery and process yield improvement.

We have already proven that we can make bio-circular grades. Moving forward, we will strive to improve the competitiveness of our circular and bio-circular grades by focusing on advancing yield and process efficiency while minimizing the costs of production.



Operational emissions management

Driven by economic and societal imperatives, we are committed to emissions reduction, underscoring the importance of integrating sustainability considerations into our day-to-day operations.

The adoption of best practices across all production sites is essential to minimizing global emissions and achieving our targets. To this end, alongside ensuring compliance with operational permits and environmental regulations, we diligently monitor emissions data at individual production sites and continually invest in enhancing our air pollution control systems and operating know-how. We can continue to optimize our efficiency through maximizing carbon recovery processes and focusing on increased investment in acetylene-based technology, which supports significantly lower Scope 1 and 2 emissions. This will enable us to increase yield and productivity for the traditional carbon black process at the same time.

Our Scope 1 and Scope 2 emissions account for 63.4% of our GHG emissions with our Scope 3 emissions accounting for less than 40%. We are continuing to work with our value chain to capture and measure our Scope 3 emissions and aim to set targets in the future. In 2023, we saw continued intensity reduction in Scope 1, Scope 2 and Scope 3 emissions.

The top of a thermal oxidizer – part of an air emissions control system installed in 2023 at Orion's plant in Belpre, Ohio.

We diligently monitor emissions data at individual production sites and continually invest in enhancing our air pollution control systems and operating know-how.

Indicator	Unit	Target	2023	2022	2021
Production	MT	–	**878,396**	913,247	913,705
GHG Emissions					
Scope 1	MN MT GHG	–	**2.2**	2.3	2.2
Scope 1 Intensity	MT GHG / MT Production	–	**2.5**	2.5	2.4
Normalized Scope 1 Intensity	MT GHG / MT Production		**2.4**	2.4	2.4
Intensity Reduction	%	**-8%**	**-4%**	-3%	-4%
Scope 2 – Market Based	KMT GHG	**0***	**152**	166	159
Scope 2 – Location Based	KMT GHG	–	**123**	–	–
Scope 2 Intensity	MT GHG / MT Production	–	**0.1**	0.2	0.2
CO_2 Emissions Reduction from Outbound Freight	%	**-30%**	**-17%**	-4%	-%
Scope 3	MN MT GHG	–	**1.3**	1.4	1.4

* All targets are aligned to the 2029 deadline except for KPIs with an asterix denoting a 2030 deadline.

Operational emissions management *continued*

Emissions data reporting and collection

All our plants comply with the emissions and emissions reporting regulations of the jurisdiction in which they operate. Emissions calculations and assumptions are carried out at site level. The degree and complexity of the traceability of emissions data relating to each site varies according to regional requirements. We use the Benchmark Gensuite® and Workiva platforms to collect and analyze emissions data.

Jurisdictional differences relating to Scope 1 CO_2 emissions at Orion locations

- European Union – emissions data is checked and verified by licensed third parties and published annually by the European Commission.
- South Africa – emissions are calculated using GHG Protocol standards, applying GHG Protocol multiples to production figures.
- South Korea – emissions trading scheme (ETS) system used by the government to calculate and verify data.
- Brazil – emissions are calculated using GHG Protocol standards and confirmed by the government.
- China – emissions calculations and assumptions are carried out in using the internationally accepted mass balance method followed by the EU operations. No ETS guidance or calculations is currently provided locally.
- U.S. – we are aligned to the EPA rules on GHG reporting.

Energy intensity reduction

4.6%

Energy efficiency

We view energy from a dual perspective: as a vital input in our production processes and as a residual heat energy that can be harnessed. We are therefore committed to both minimizing input energy and maximizing the utilization of waste heat energy. Our primary focus is on reducing energy consumption through enhancements in productivity and yield, enabling us to increase the use of waste heat energy.

It's worth noting that specialized carbon black, tailored to meet specific customer needs, often exhibits higher energy intensity compared to standard products whose attributes are defined by the global body American Society For Testing And Materials (ASTM) International. Similarly, our technically advanced rubber grades, designed to enhance tire fuel mileage by improving rolling resistance, also require higher energy intensity. Despite this, we believe the overall societal impact is positive for specialized carbon blacks due to their contribution to improved tire fuel efficiency and longevity. Moreover, our portfolio's higher share of specialized products helps reduce the greenhouse gas footprint across our industry value chain.

We are committed to improving energy intensity while bolstering our role as a provider of advanced solutions that support industry-wide sustainability initiatives. Our secondary strategy involves recovering waste heat and using it to preheat the inputs to our reactors, thereby reducing the amount of energy we consume. We also use the energy in the by-product tail gas to generate steam for internal use, to provide district heating to several communities in Europe and Asia and to generate electricity.

We have already achieved group-level tail gas utilization of 84%, beating our 2029 target of 79% five years early. We will set further ambitious targets for tail gas utilization.

Energy	Unit	Target	2023	2022	2021
Total energy consumption	TWh	–	**20.00**	20.80	20.60
Tail gas utilization rate	%	**79%**	**84%**	73%	76%

Orion's plant in Berre-l'Étang, France, produces conductive additives for lithium-ion batteries.

Pollution and resource management

We recognize that manufacturing carbon black is a resource-intensive process that uses a range of raw material inputs. We have put strong protocols and procedures in place across our facilities to monitor and reduce the resource demands of carbon black processes, and to manage and mitigate pollution and waste.

Air, soil and water pollution

Carbon black is a generally non-hazardous product and is often bound into other materials, such as plastics or rubber, where it is essentially inert. Carbon black oil, the precursor material used in the manufacturing process, can pose a risk of water or soil pollution if spilled; however, spillages are rare. We also have policies and procedures in place to reduce the possibility of carbon black oil spillage. Spills of any magnitude are reported and promptly cleaned up, with investigations required for significant spills. All employees have completed training in environmental procedures and compliance.

Our carbon black manufacturing facilities emit greenhouse gases (GHGs), SOx, NOx, particulate matter (PM) and water from our processes. To manage our emissions to the atmosphere, we use technologies such as thermal oxidizers to destroy air pollutants, circulating dry scrubber (CDS) for SO_2 removal and selective catalytic reduction (SCR) for NOx removal. At one of our plants, we installed a combined catalyst to remove NOx and SO_2 and we manufacture sulfuric acid from the waste gas. Some facilities use low-sulfur feedstock to reduce SO_2 emissions. We use improved filter technology, early warning systems, and best practices within the process to reduce PM emissions in downstream air discharges. We monitor our emissions as required by local regulations, with most of our facilities using continuous emission monitoring systems for their thermal oxidizer and SCR systems.

We exceeded all our 2023 targets for SO_2, NOx and PM and will set further targets in the future.

For detail on how we manage GHG emissions, see page 20.

Other emissions

Intensity Emissions	Unit	Target	2023	2022	2021
SO_2	%	**-50**	**-60**	-42	-35
NOx	%	**-25**	**-31**	-24	-13
Particulate matter	%	**-15**	**-37**	-34	-29

All our emissions, including water discharged from our operations, are managed in compliance with applicable laws and regulations. We have built a rigorous process and look at waste efficiencies to reduce harmful effects on the environment and the communities where we operate, but we acknowledge that we are not immune to accidents. If any incident does occur, we have protocols that enable us to quickly mitigate damage and implement processes for remediation.

Raw materials management

Our raw materials purchasing strategy aims to maximize our yields while minimizing our emissions, using reputable suppliers to reduce the risk of spillage as much as possible. We store carbon black oil, our major raw material, in tanks that meet local safety standards and are maintained through the Orion Mechanical Reliability program. The natural gas used for heating in our processes is delivered by pipeline, which is the safest transport option for this raw material.

Water management

A consistent and uninterrupted supply of water is critical to our operations. We use water in the production of carbon black and to make steam which, in turn, is used in the carbon black process, sold to external customers and used to generate electricity. We also provide hot water in a continuous loop for district heating in Malmö, Sweden and Hürth, Germany. Water is drawn from surface water, wells, municipalities, and retention ponds and is discharged to sanitary sewers, municipalities, natural bodies of water, and collection ponds.

We continue to improve processes and technologies to keep water discharge and outflow to a minimum, and where possible, promote circularity by recycling rainwater and quench water (used for rapid cooling) as well as using gray water. Action in relation to water is taken in proportion to the different needs of each site and its specific production process. However, all sites collect rainwater in catch basins, which are also used to store steam condensate for reuse as process water.

We monitor water consumption levels through metering at the majority of plants, and closely check the quality of wastewater to ensure that it is properly treated in compliance with the applicable legal requirements before it is discharged.

Six of our plants operate in areas of high or extremely high water stress: Qindao and Huaibei, China; Ravenna, Italy; Port Elizabeth, South Africa; Yeosu, South Korea; and Berre l'Etang, France. We operate within local regulations and are working to better understand and address our impacts in water-stressed locations.

Pollution and resource management *continued*

Case study

Re-using gray water in Nelson Mandela Bay

In South Africa, Orion is building a reverse osmosis plant to treat gray water from a local water treatment works so it can be reused in carbon black production at our Nelson Mandela Bay plant. Currently in its pilot phase, this project aims to reduce the facility's demand for fresh water in a water-stressed area that has been subject to drought and water restrictions.

Waste management

Our production processes generate both hazardous and non-hazardous waste, such as bottom oil and sludge that accumulates in raw material tanks. We follow appropriate procedures that are in line with applicable laws and regulations for the handling and disposal of waste and to prevent potential spillage. Waste control and disposal is governed by local laws and regulations and Orion either meets or exceeds these requirements. To ensure compliance, we use our Global Management System (GMS) audits and policies, which are maintained by our global Environment, Heath & Safety (EHS) function working with regional professionals. The EHS team also provides training for employees and contractors.

We also aim to prevent any spillage of hazardous materials, with a target of zero. Our overall mechanical integrity program and specific standards for carbon black oil and tail gas are in place to prevent leakage. Each plant must report and correct any leaks, called "losses of primary containment" (LOPC) (which can be as small as drips) every month. All plants have emergency response plans for both small and large leaks, and Orion has a global response plan for large leaks.

To reduce leaks, we focus on improving mechanical integrity, assessing the success of efforts to prevent recurring incidents and improving root cause investigation.

We are working to expand our waste recycling, reuse and recovery capabilities, such as using residual tail gas from our production processes, as well as retrieving reusable flexible intermediate bulk containers (FIBCs) from our customers to be refilled with carbon black a maximum of five or six times.

Pollution and resource management *continued*

We did not have any major spills of oil or other toxic waste in 2023.

All spills

697

(None of them were major or toxic.)

LOPC

639

(LOPC are very small leaks. Numbers include all chemicals, water and steam.)

Production waste intensity

28.6 KG/MT

Waste

Waste	Unit	Target	2023	2022	2021
Total waste	K/MT	–	**25.12**	14.07	14.20
Total hazardous waste	K/MT	–	**2.38**	3.27	3.60

The increase in total waste from 2022–2023 can be attributed to lime generated by the new SO_2 control device installed at our Borger, Texas, US plant.

Case study

Site remediation, Ambes, France

In 2023 we completed the remediation of our site in Ambes, France. This multi-year, €6 million project involved cleaning the former plant and landfill area, disposing of contaminated materials offsite, and putting in place a rainwater collection and management system. The site is intended for use as a solar power generation facility.

Project length

12 months

Project expenditure

€6m

Circularity

As a technology leader in the carbon black industry, we are focused on developing products that support our customers on their sustainability journeys. Our circularity work is coordinated globally to ensure alignment across the business and is supported by partnerships with research institutes and universities. Our future as a business depends on innovation – in particular, the development of alternative raw materials and circular products, and specialty grades that support the carbon transition.

Circular products

We currently offer three circular products, ECORAX® Circular 210, 215 and 220. Manufactured at our North American plants in Belpre, Ohio, and Borger, Texas, these grades use end-of-life tires (ELTs) as a primary raw material. Tires are shredded so that steel and other materials can be separated and reused where possible, then the remaining rubber granulate is pyrolyzed to create tire pyrolysis oil (TPO). We use TPO as feedstock for carbon black, replacing traditional primary raw materials. Orion was the first manufacturer to develop products derived from 100% TPO. As TPO supply is still in the early stage, we use mass balance to track its use at our commercial plants. We are currently developing new grades of ECORAX® Circular and scaling up production at other sites in different regions.

Bio-circular products

Produced at our plant in Jaslo, Poland, ECORAX® Nature 200 and Nature 205 are our bio-circular carbon blacks. Sold to major tire manufacturers, they are made from second-generation, animal-free, bio-based feedstock that does not compete with the food chain.

All our circular and bio-circular grades are produced using the mass balance principle and are International Sustainability and Carbon Certification (ISCC) Plus certified. They have been tested and approved by customers as a replacement for standard carbon black grades. Circular products have two potential environmental advantages for our stakeholders: reducing the carbon footprint of products that include carbon black; and reducing waste.

Circular products have two potential environmental advantages for our stakeholders: reducing the carbon footprint of products that include carbon black; and reducing waste.

Products that support electrification

Carbon black has significant potential to support the transition to a low-carbon economy. Our advanced acetylene-based conductive additives help to improve the performance of lithium-ion batteries and high-voltage cables, supporting the electrification of mobility and energy systems. PUREX® LS 18 low-conductivity carbon blacks for rubber components further support this transition, by enabling automobiles to be constructed with more aluminum for lighter weight and better energy performance.

Partnerships

Carbon black supports sustainability by making products stronger and more durable. Many products, such as vehicle tires or rubber goods, would simply not be viable without it. In tires, for example, different grades of carbon black provide essential qualities such as wear resistance and stability, so they can last as long as possible. Elsewhere, among its many applications, carbon black enhances the performance of polymers, reinforces mechanical rubber goods and provides high-performance coatings for a wide range of products.

Our customer partnerships include:

- **BlackCycle**
  We are the technology partner in this EU-funded project to develop circular carbon black, which is led by Michelin. See page 26 for more detail.
- **Kumho Tire**
  Orion has signed a Memorandum of Understanding with this Korean manufacturer to co-develop sustainable tires and materials. The project's scope includes developing tires using bio-circular feedstocks as well as carbon black made from TPO.

Circularity *continued*

Feature

BlackCycle

Launched in May 2020, BlackCycle is a €16 million project, majority funded by the EU, to promote circularity in the tire industry. Its goal is to "design world-first processes to produce new tires from end-of-life tires" (ELTs), creating a full-value chain from ELTs to raw materials for new tires, removing waste and reducing environmental impact.

BlackCycle is coordinated by tire manufacturer Michelin and comprises several partners cooperating at all stages of the recycled tire value chain. As well as helping to define and establish the project alongside Michelin, Orion's role in the project has been to develop grades of sustainable carbon black.

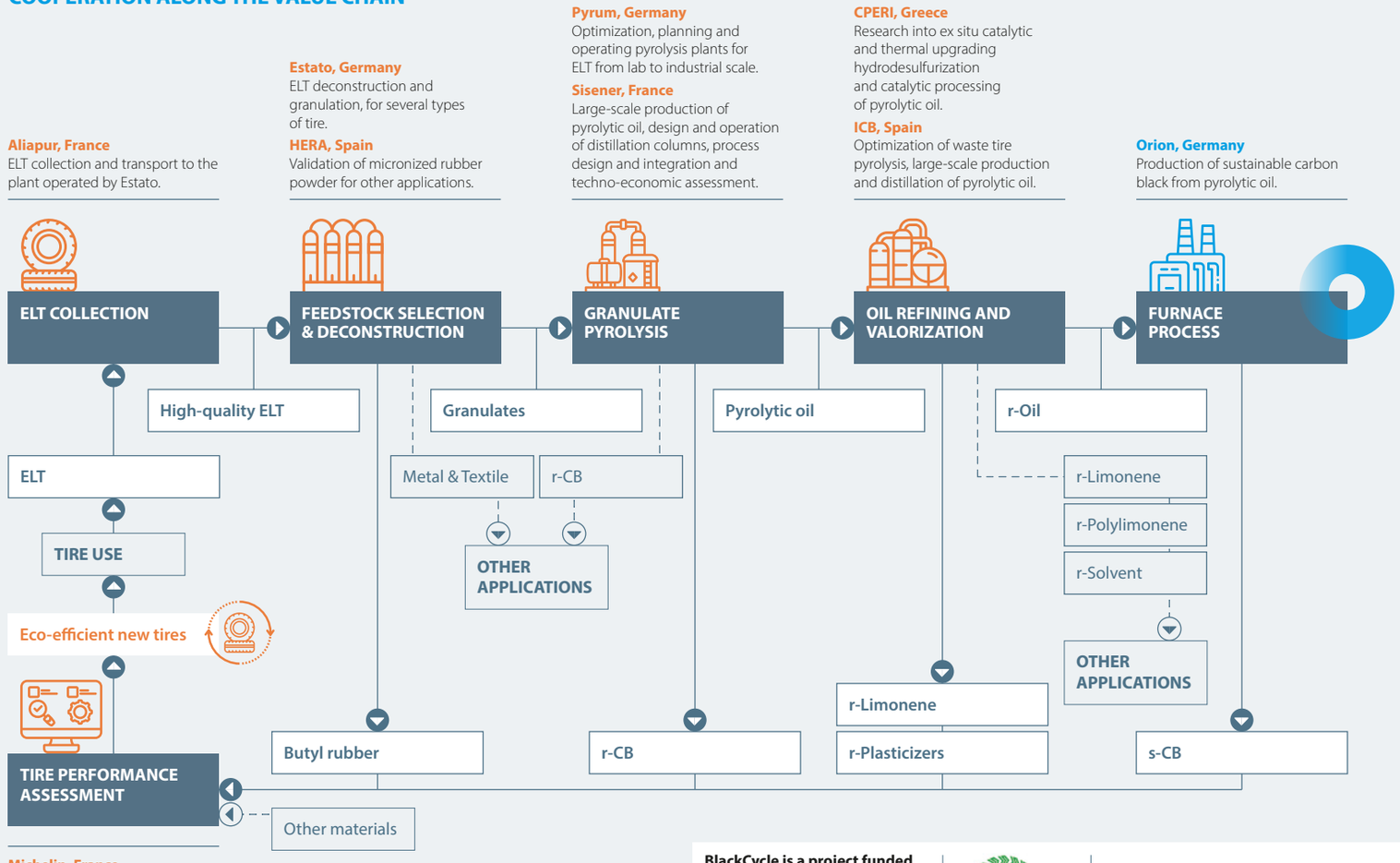
During 2023, we developed a third sustainable carbon black grade based on 100% tire pyrolysis oil from ELTs. This grade, sN550, was confirmed by both our own and Michelin's laboratories as being a one-for-one replacement for N550, a widely used grade in tires, which is made with conventional fossil-based raw material. Achievements by other BlackCycle partners include building tire deconstruction machines, creating demonstrator tires and enhancing the pyrolysis process.

The results of demonstrator tire examinations will be reviewed at the final BlackCycle workshop in May 2024, and a life cycle analysis is being developed to compare the linear and circular models for tire manufacturing.

The BlackCycle project, which concludes in 2024, represents an important step toward a circular model for the tire industry, reducing dependence on fossil resources such as heavy oil fractions. It closes the loop for secondary raw materials such as carbon black, enabling them to be created from ELTs with 100% comparability to fossil-derived inputs. And with most partners able to demonstrate a high level of technical readiness, the program is close to being ready for production-scale operation.

To learn more visit the blackcycle website

COOPERATION ALONG THE VALUE CHAIN



BlackCycle is a project funded by the European Commission
Project number: 869625
BLACK CYCLE
Horizon 2020 European Union Funding for Research & Innovation

Biodiversity

As a finished product, carbon black itself is not hazardous to the environment. However, we acknowledge that like all energy-intensive processes, the production of carbon black creates greenhouse gas (GHG) emissions that impact climate change and therefore biodiversity.

Our operations also create SOx, NOx and particulate matter (PM) emissions which affects air quality for people and animals. Carbon black oil (CBO), a raw material for our products, creates a risk to biodiversity if spilled into the environment during transportation or storage. Our facilities also use and discharge water in a way that meets or exceeds local environmental requirements.

Therefore, while carbon black itself may not be inherently hazardous to the environment, it is essential to consider the broader environmental implications associated with its production and use. Responsible manufacturing practices, emission controls, waste management strategies and adherence to regulatory standards are crucial in minimizing the potential environmental impacts of carbon black production and ensuring its sustainability.

The primary way in which we manage our impact on biodiversity is by reducing our environmental footprint. We do this by minimizing our use of energy and resources, reducing our GHG emissions and controlling other emissions such as SOx, NOx and PM.

See page 22 for details

To reduce the risk of leaks, in particular of CBO, we have programs in place to prevent Loss of Primary Containment (LOPC) events.

See page 24 for details

Orion continues to invest in maintenance and reliability at our sites. In the U.S., Environmental Protection Agency (EPA) Consent Decree projects carried out at our four carbon black plants were completed in 2023.

See pages 13 and 20 for details

To minimize environmental risk when raw materials are being transported, we use reputable contractors and suppliers.

See page 45 for details on how we engage suppliers

Two humpback whales swim off the coast near Orion's plant in Nelson Mandela Bay, South Africa.

The primary way in which we manage our impact on biodiversity is by reducing our environmental footprint. We do this by minimizing our use of energy and resources, reducing our GHG emissions.

Social

MATERIAL TOPICS

- Diversity, equity and inclusion
- Occupational health and safety
- Human rights
- Employee Recruitment & Retention
- Talent Management & Development
- Employee Engagement
- Local Community Engagement & Charitable Giving

“At Orion, our people are our greatest asset. Their dedication, creativity and collaboration drive the innovative solutions that share our sustainable future. We are committed to fostering a supportive and inclusive environment where every individual can thrive.

Pat Tuttle
SVP, Global Human Resources

Our approach

Our strong commitment to our people and to social responsibility are at the core of who we are as a company. People are the heart of our business, and our continued success depends on our ability to make everyone feel engaged, valued and empowered.

We therefore work to build a positive culture, foster a challenging, inclusive and diverse professional environment, and support employees' professional development and work/life balance. Beyond our organization, we strive to be a valued partner for the communities in which we operate, and to ensure safe and ethical working practices throughout our business and supply chain.

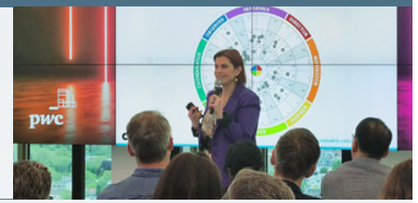
Our social strategy covers the following areas:

- **People**
  Striving to be an employer of choice that provides interesting and challenging work, competitive rewards and benefits, learning and development opportunities and work-life balance.
- **Diversity, equity and inclusion**
  Creating a welcoming and inclusive environment where everyone can belong, grow and thrive.
- **Occupational health and safety**
  Protecting our employees and contractors.
- **Human rights**
  Supporting and promoting human rights in a way that benefits all our stakeholders.
- **Communities**
  Enhancing knowledge, prosperity, health and quality of life in the communities where we live and work.

2023 ACHIEVEMENTS

Learning and development

New Emerging Leaders and Leaders of Leaders programs added to supplement the Orion Leadership Academy.



Career progression

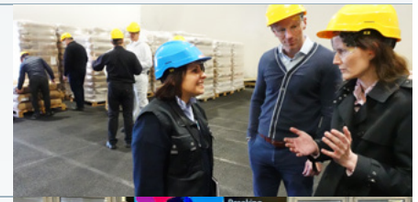
Plans developed on how employees can progress their careers and progress to new roles. These development and succession plans cover more than 75% of our knowledge workers.

75%

of knowledge workers have succession plans

Mentoring

Investment in a new platform to further enhance Orion's mentoring program.



Diversity, Equity and Inclusion

Establishment of a global women's affinity group, EmpowHER. While directed toward women, it also welcomes men to participate.

Employee engagement

Orion's 2023 employee engagement survey showed continued positive trends and marked improvement in a number of areas including training, employee recognition, employee communications and performance feedback. The percentage of employees falling into the "Most Effective" category rose to 55%, up from 45% in the previous year. This indicates both high engagement and enablement, meaning that our employees feel like they have a meaningful role at Orion and the training and tools to fulfil that role well.

55%

of employees feel they have a meaningful role

Our people

We aim to create a workplace of belonging where our employees are informed, engaged and enabled to do their best work and be their best selves. We provide opportunities for learning and personal growth in an environment where creativity and innovation are encouraged.

OUR PEOPLE STRATEGY, ORION & ME, HAS FIVE AREAS OF FOCUS:

TO ACHIEVE THIS, WE PLEDGE TO:

REWARDS
Competitive pay, bonuses and merit increases, performance recognition and pay equity

Create an enjoyable, spirited work environment that rewards innovation and collaboration at all levels

ENGAGEMENT
Communications and actions to ensure employees are motivated to work at Orion

Ensure that the voices of our employees help shape our priorities and actions

LEARNING
Structured skills and professional development training

Offer development planning to support learning and career growth

DEVELOPMENT
Mentoring and career planning and advancement

Ensure employees receive regular performance alignment and feedback

CULTURE
Creating an accountable, inclusive and respectful workplace

Conduct anonymous global employee engagement surveys on a regular basis with a third-party provider

Our people *continued*

Employee engagement

Measuring employee engagement is critical to our efforts to ensure employee satisfaction and retention. Alongside various suggestions systems, our centralized survey, which is carried out every 18 months by a specialist third party in local languages and on an anonymized basis, is our principal way of measuring employee engagement and enablement.

The 2023 employee engagement survey was completed by 76% of employees. It revealed impressive improvements on the 2021 results, with better-than-average levels of enablement, the "can do" element of work. The most significant improvement areas include training, trust in senior leadership, customer focus, and honest communications.

Employees ranked "collaboration and teamwork" and "freedom, trust and empowerment" as the most positive aspects of working at Orion. The key area of recommendation for further improvement is around improving learning and development opportunities. We will continue to build on opportunities identified in the survey and to focus our efforts on becoming an employer of choice.

Development

To develop leaders, we offer individual development plans, a mentoring program and succession planning, as well as three leadership programs: Emerging Leaders, Orion Leadership Academy and Leaders of Leaders Agile Management.

2023 engagement survey

76%

of employees completed the 2023 employee engagement survey

Average training hours per employee year

40hrs

>80%

of employees received 40 or more hours of training in 2023, double the average training hours in 2022

Performance reviews

94%

of eligible employees received an annual performance review vs. 96% in 2022

Upgraded Global HR management system

We've expanded our HR management system to enable us to deliver and capture global learning and support our employees on their development journey, including support with succession planning.

Case study

Orion Leadership Academy

The Orion Leadership Academy is one of a series of programs designed to equip leaders at all stages of their careers with valuable leadership skills. The Academy helps leaders to develop a toolkit around building and managing teams and cultures, as well as improving personal skills and decision-making.

This program took place over a four-month period, with the first and last modules conducted virtually, in half-day sessions. The central module was an onsite, two-day session in Frankfurt, Germany. More than 60 participants from the Americas, APAC and EMEA completed the program in 2023. The Orion Leadership Academy modules focused on three areas: 1) understanding your own style, drivers, preferences and blind spots; 2) building high-performing teams, handling conflicts and effectively communicating; and 3) developing a leadership presence.

"This was a very rewarding opportunity that has helped us grow in our Orion careers and also gave us many insights into how we interact with the people that we work and live with outside of the Orion environment.

Lauren Call
Marketing manager

"The exercise on "emergency handling" was extremely well staged and although I knew it was just a role-play, it was remarkably immersive.

Christophe Havenith
Controller

"The group activities were very informative and encouraging, pushing each of us out of our comfort zones and bringing out our authentic selves.

Trinh Nguyen
Technical marketing manager

Diversity, equity and inclusion

We are a global organization where regardless of their location, language, gender or orientation, our employees are empowered to feel like they have a seat at the table at Orion. Diversity, equity and inclusion (DE&I) are therefore keys to our success. Strong DE&I drives innovation, enhances decision-making and helps employees to feel valued and engaged.

This is reflected in our own leadership and Board where we recognize that a diverse Board enhances our ability to innovate, adapt and thrive in a rapidly changing global marketplace (see more information in our 2024 Proxy statement). Therefore, we embed this thinking at Orion and strive to create a welcoming environment where everyone can belong, grow, and thrive. We place a premium on the freedom for our employees to be their authentic selves, and we offer an equal chance to bring different skills, backgrounds and experiences to work.

To achieve this, we pledge to:

- Enable a trusting environment so employees can bring their authentic selves to work and have opportunities to provide feedback.
- Strive to provide career growth opportunities for all employees.
- Promote an environment where each Orion employee owns the responsibility for exemplifying inclusive behavior and treats others with respect, dignity and empathy.
- Ensure our leaders drive a higher social consciousness and champion accountability within the company.

DE&I initiatives

Initiatives to embed DE&I within Orion include training and awareness-raising programs, and the fostering of affinity groups with a DE&I focus.

Diversity training

The Orion Leadership training program includes DE&I training globally. In 2023, our Leaders of Leaders program, which included our most senior leaders, included onsite DE&I training. We have previously conducted DE&I e-learning for all our managers with people responsibilities.

Love HR, Hate Racism

Our HR team uses this platform to network with other companies and learn and share best practice to ensure there is no room for racism or exclusion in corporations.

Affinity groups

EmpowHER

This Orion Employee Resource Group advocates for women in the workplace, celebrates successes and equips colleagues to better support the women they work with. The group recently conducted one-day onsite training sessions in our Kalscheuren, Germany, and Houston, Texas, offices. The training, attended by our female and male colleagues alike, was titled "Breaking Barriers to Success" and focused on imposter syndrome, professional development and mindfulness.

Society of Women Engineers

Orion supports this advocacy group that aims to empower women to achieve their full potential in careers as engineers and leaders. We sponsor membership and send our female engineers to national delegations and conferences to represent Orion. In addition, we sponsor students to participate in the various Society programs.

Women in Science

Orion supports this advocacy group that aims to raise broad awareness and have the voice of women scientists widely heard.

> The training was very relevant and gave me the tools to change my own thought language. I encourage everyone to take this class.
>
> **Sumner Kai**
> Senior manager, SAP excellence center

> The workshop was a huge success. I gained insight into how to combat imposter syndrome and how to be more mindful in the workplace. I feel more connected to my female colleagues and hope to see more men join these events as they are available in the future.
>
> **Zachary Hostetter,**
> Process engineer

Female new hires in 2023

29%

vs. 22% ; in 2022

Females in manager roles in 2023

21%

vs. 19% in 2022

Voluntary attrition rate for females in 2023 which meets our new target of <4%

1.6%

Female participation rate in mentorship program (mentees or mentors)

20%

(vs. 36% in 2022)

Annual DE&I training completion rate for leaders

95%

(new programme in 2023)

Occupational health and safety

Occupational health and safety are material and essential to our core principles at Orion. Safety is part of our culture, and we embed proper protocols and training to eliminate or minimize risks to employees, communities and the environment where we operate.

We are committed to providing our employees and contractors with a safe and healthy working environment, aiming to achieve an annual target of zero recordable incidents, lost time rates and process safety incidents.

Our standards and procedures for operational safety are grounded in the principles of the ISO 45001 Safety Management System, American National Standards Institute/American Society of Safety Professionals (ANSI/ASSP) Z10.0 and Occupational Safety and Health Administration Voluntary Protection Programs (OSHA VPP). Risk assessments have been carried out for activities taking place at our operating sites and applicable rules and processes that reflect best practices have been codified in our operating manuals. As part of our continual efforts to raise our standards, we formally joined the American Chemistry Council (ACC) and will be implementing the Responsible Care Certification 14001 in our Americas plants.

Through our work permit process, a detailed safety analysis is completed before maintenance and other activities are undertaken at our operating sites. This aims to ensure that those involved in the activities are made aware of the risks and that sufficient actions are taken ahead of the work to establish a safe environment. Near misses are reported so we can learn from them and improve our safety procedures and rules. Our standards and procedures are updated to reflect best practices and changes in industry standards. Recognizing that safety requires the commitment and participation of all our employees, all our operating sites have joint management-labor safety committees where employees are represented.

Employees are encouraged and empowered to report concerns through our Gensuite® EHS platform, where they are monitored by the EHS manager and plant manager. This process is important to the way we operate to ensure the health and safety of our employees. We work to address all issues within a 30-day period and continue to monitor any that go beyond 30 days in our global monthly KPI report.

Service contractors are governed by our GMS standards and procurement procedures. We use the Avetta platform to support ensuring that service contractors are safe and environmentally sound. Contractors below our required safety levels require an action plan and approval from both EHS and operations managers. Procurement staff assess new suppliers with Avetta and an internal process to ensure they meet our standards.

We carry out periodic employee and contractor training for safety and run EHS compliance audits to prevent lapses in both procedural and substantive compliance. We continuously increase our GMS standards and improve process safety. This includes continuous sharing of learnings to ensure a more interdependent sustainable safety culture that engages and empowers our employees on workplace safety.

TRIR (per 200,000 hours)

0.34

(vs 0.41 in 2022)

DAFW case rate (per 200,000)

0.23

(vs 0.29 in 2022)

Total incidents that occurred in year

4

lost time injuries (vs. 5 in 2022)

6

OSHA recordable injuries (vs. 7 in 2022)

0

fatalities (vs. 0 in 2022)

The areas where we've engaged our employees are:

- Improving access to work permits.
- Transparent reporting of near miss, root cause elimination and small losses of primary containment (LOPC).
- More focused and effective action to eliminate incidents.
- Ensuring a timely response time to employee safety concerns.
- Improving mechanical integrity and accelerating access to equipment upgrades.
- Being comfortable confronting a colleague who you observe working unsafely, regardless of their level within the company, and seeing this as an act of caring.

Our people are critical to our success and sustainability as a business. We continue to uphold best-in-class standards that safeguard employees and communities.

To read more about EHS compliance and governance, please refer to page 41.

Human rights

We believe our long-term business success will only be achieved if human rights are acknowledged, respected and protected. We therefore work to ensure strong human rights practices, setting a high bar for ourselves and our value chain, and we monitor potential risks.

Our Human Rights Policy sets out the principles embedded in our business operations, values and culture to ensure Orion does not engage in activities that directly or indirectly violate human rights. We respect and support international standards of human rights, social, cultural and labor rights.

We aim for:

- Zero fair bargaining violation findings
- Biannual overtime audits
- Annual competitive pay practices benchmarking

Standards

The following global standards are embedded in our policy and practices:

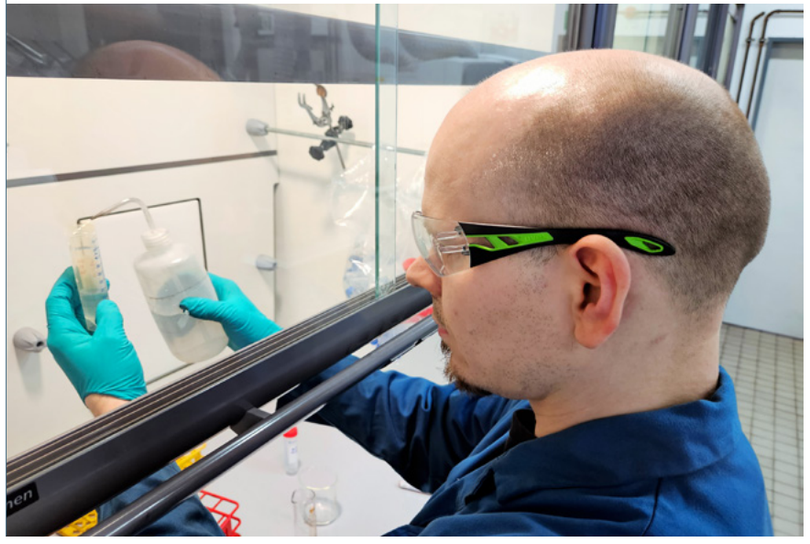
- The United Nations Guiding Principles on Business and Human Rights
- The United Nations Universal Declaration of Human Rights
- The International Labor Organization's Declaration on Fundamental Principles and Rights at Work
- The International Covenant on Civil and Political Rights
- The International Covenant on Economic, Social and Cultural Rights
- OECD Guidelines for Multinational Enterprises

Principles

We adhere to human rights principles in the following areas:

- Ethical business conduct
- Diversity and inclusion
- Safe and healthy workplace
- Forced labor and human trafficking
- Freedom of association and collective bargaining

See our Human Rights Policy for further detail. Employees, business partners, customers and other stakeholders are invited to report violations of our human rights policy via our Whistleblower Portal.



A lab technician at Orion's main innovation center in Cologne, Germany.

Community impact

Gaining and safeguarding the acceptance and trust of our local host communities is key for our business continuity and our license to operate. We therefore want to contribute to the development of these communities and engage and interact with our local neighbors and other stakeholders transparently and on a continuing basis.

Our charitable giving policy encourages our sites to create stronger ties with the communities in which they operate and helps to safeguard our license to operate. We also support groups, such as emergency responders, who are important to our operations but may not benefit directly from them. Our charitable giving budget is calculated as a fixed percentage of our budgeted adjusted EBITDA. Under our policy, each site defines its own local community engagement plan to tailor our activities to local needs.

We contribute to communities in three ways: through direct donations, by matching employee donations to approved beneficiaries and through employee volunteering. Beneficiaries are chosen by our individual sites and shared with regional and group controllers and our Chief Compliance Officer.

In 2023, 76% of our sites engaged in charitable giving vs. a target of 100%.

DISTRIBUTION OF CHARITABLE GIVING IN 2023

Community support

67%

First/emergency responders

20%

Charitable organizations

13%

Case study

Flood relief in Italy

Unprecedented flooding struck Italy's Emilia Romagna region and our host city of Ravenna in 2023, displacing over 23,000 people and causing 16 deaths. Our local operation supported the community with a €50,000 donation to the Ravenna municipality to support families and businesses, and a donation of €10,000 to the region's civil protection organization. At our Ravenna site, Orion matched funds raised by an internal campaign to support employees directly affected by the event. We also gave €75,000 to help local voluntary organization Pubblica Assistenza Città di Ravenna purchase a new ambulance.

Community impact *continued*

Case study

Help for students in Texas

Colleagues in Spring, Texas, supported a "backpack drive", collecting and supporting supplies for students at Bradley Elementary. This Tier 1 school is funded by federal programs that support students from low-income families who are considered at-risk for school development. The backpack drive helped to ensure every student has an equal opportunity of academic success regardless of their background.

Case study

Day of caring

In April (which is National Volunteer Month in the U.S.), 25 colleagues and their families in Spring, Texas, took part in a "Day of Caring" at the Houston food bank. The Orion team spent over 74 hours sorting, inspecting and repackaging donated food items, which will be provided to people in need.

Case study

Yeosu supports the disabled

Volunteers from our Yeosu operation in South Korea took part in a Christmas event organized by the local Association for the Disabled that focused on mental wellbeing and donated $1,500 to the charity.

Case study

Support for blood cancer research

Orion employees in Spring, Texas, participated in a "Light the Night" walk and fundraising campaign to support blood cancer research for the Leukemia and Lymphoma Society, raising more than $25,000.

Case study

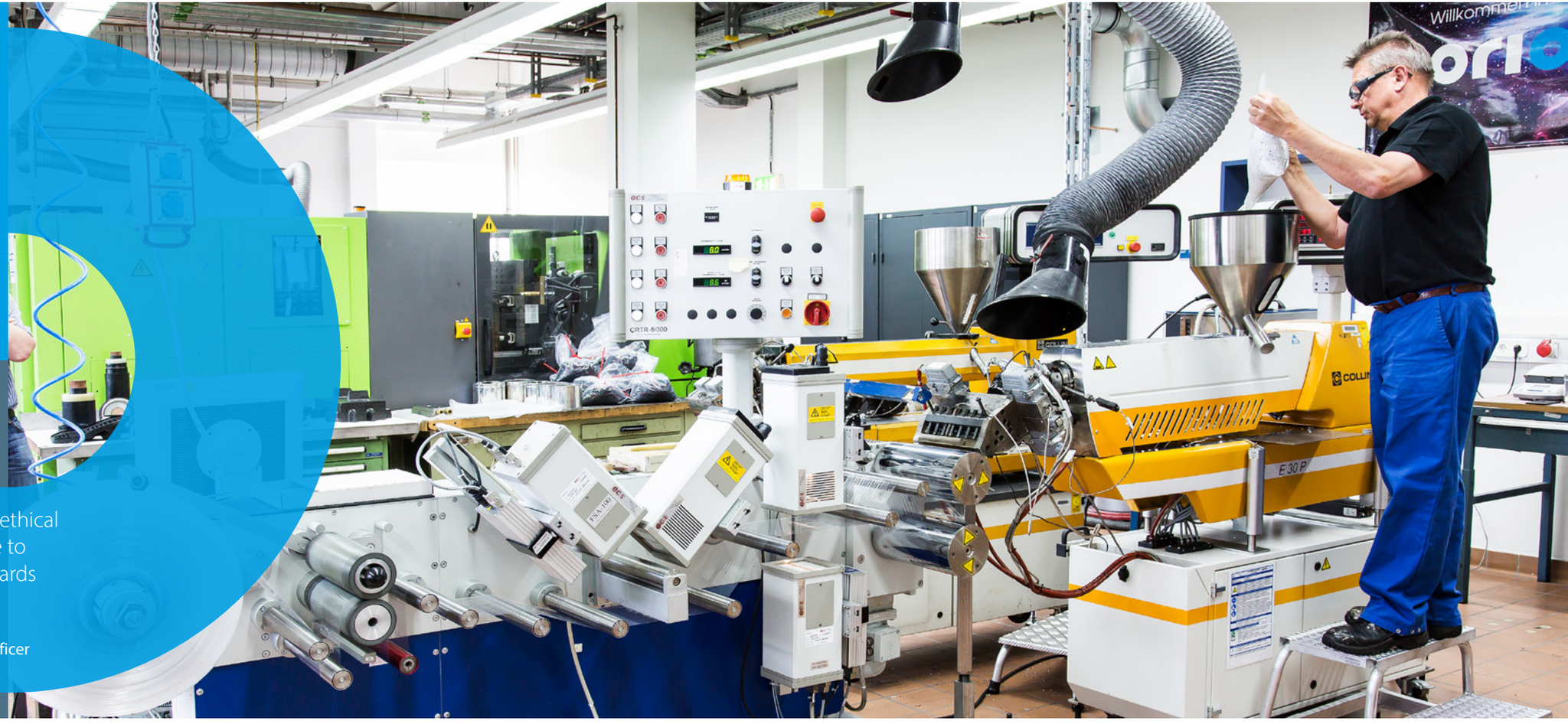
Scholarships for South African students, funding for Eco Schools

Orion donated 1.8 million rand ($97,000) to a scholarship program supporting 25 students during the 2023 academic year at Nelson Mandela University. The company also continued to provide funding to Eco Schools, an international program that supports environmental learning in the classroom. In 2023, Orion donated $21,500 to the Wildlife and Environment Society of South Africa, which implements Eco Schools in South Africa.

Governance

MATERIAL TOPICS

- Business ethics and compliance
- Environmental health and safety
- Cybersecurity
- IP Protection
- Risk management
- Supply chain management
- Product quality, safety and stewardship
- Public policy and engagement



“At Orion, we prioritize transparency, ethical practices and regulatory compliance to ensure we uphold the highest standards of integrity in everything we do.

Christian Eggert
SVP, General Counsel and Chief Compliance Officer

Our approach

We believe that integrity is the foundation for earning the trust of our stakeholders, which our business success depends on.

This integrity is expressed through our commitment to compliance in the way we conduct our business. We expect a high degree of social, legal and ethical compliance from all employees and those with whom we do business. Orion does not tolerate corruption, bribery, fraud, money laundering, anti-competitive practices, conflicts of interest, child labor or threats to information security.

Governance structure

The Board of Directors functions as the group's highest decision-making body and advises our senior executive management. Board members are elected by our shareholders at the Annual General Meeting. The Board performs its tasks partially through dedicated committees, including the Nominating, Sustainability and Governance Committee. This Committee oversees environmental, social and governance (ESG) matters and makes recommendations to the full Board.

Our CEO is accountable to the Board for sustainability and has the mandate for strategy, risk management, opportunity capture, the setting of targets, and the monitoring and reporting of our performance and progress, resource allocation and culture. The CEO is supported by direct reports who ensure that the Board-mandated responsibilities connected to sustainability are embedded in our wider global management framework as well as into our compensation approach.

Further information on the composition of the Board, its committees and responsibilities can be found on our website and within our Corporate Governance Guidelines.

OUR GOVERNANCE STRUCTURE

Board of Directors

Board of Directors' Nominating, Sustainability & Governance Committee

Chief Executive Officer

Sustainability Committee

Corning Painter, CEO (Chair)

Jeff Glajch, CFO

Carlos Quinones, COO

Pat Tuttle, SVP Global HR

Christian Eggert, SVP, General Counsel and Chief Compliance Officer

Jochen Rother, Head of Corporate Sustainability (Facilitates)

Integration of sustainability into Orion's management framework

The Head of Corporate Sustainability at Orion is responsible for the company's Sustainability strategy and for the monitoring, reporting and disclosure of group-wide sustainability activities. He liaises with functions across the business to ensure the ESG strategic framework is embedded.

- **Managers**
  ESG aspects are incorporated into short- and long-term performance incentives. Our environmental health and safety (EHS) department reports to the Senior Vice President of Global Operations and is active at all Orion sites.
- **Employees**
  ESG targets are a factor in the group's annual bonus program, in which our employees can participate (except in South Korea, where the annual bonus program is governed by a collective bargaining agreement). ESG aspects of incentive plans are linked to our EcoVadis score so that they can be independently evaluated.
- **Operational and financial targets**
  Targets are oriented toward the reduction of CO_2 emissions. The more carbon black that can be produced from our feedstock, i.e., the higher the yield, the less carbon is emitted as CO_2 into the atmosphere.
- **Processes**
  ESG risks are systematically integrated into our existing risk management and undergo ongoing differentiation. This is done with extreme weather events, for example, but also with other climate risks that are critical to our business model. We also integrate social risks, e.g., the shortage of skilled labor, vocational training gaps and the management of health and safety.

Business ethics and compliance

The level of risk and legal compliance standards can vary from country to country. For matters such as the prevention of corruption, we believe that it is important to have an enhanced, strict common standard that uniformly applies to all of Orion and meets or exceeds local requirements.

In addition to general adherence to laws, we have codified best practices into a Code of Conduct. This applies to all Orion employees and associated individuals who provide services for or on behalf of Orion. In addition to our Code of Conduct, a Supplier Code of Conduct applies to most organizations that do business with us.

Compliance is assured through proactive engagement at all levels of the organization, starting with our CEO and Board of Directors, and the compliance controls in place, as well as verification processes, which include internal audits. We have a whistleblower program (managed by our General Counsel in his role as Chief Compliance Officer) that assures anonymity of whistleblowers for countries in which this is allowed. We also verify compliance with the Code of Conduct through a semi-annual certification process in which Regional Compliance Officers report on issues of concern. These matters are analyzed, and appropriate actions are taken where warranted, including investigations. Our compliance is regularly reviewed by management and, depending on the topic, reported to the Audit Committee or the Nominating, Sustainability and Governance Committee of the Board of Directors.

We conduct mandatory compliance training for all employees, including annual web-based training and (as far as feasible) classroom training. Compliance training is conducted by Orion's legal department, in some instances with the support of local legal counsel, under the supervision of the Chief Compliance Officer. It is designed to familiarize our employees with the Code of Conduct, our compliance management system and the most important policies accompanying it, such as the anti-bribery, anti-trust and insider trading policies. Our goal is to enhance the awareness of potential risks. We aspire for 100% of our workforce to attend compliance training each year but have set our target at 95% to account for computer access and employees in transition.

Our Board has adopted a Code of Ethics for Senior Financial Officers, applicable to the Chief Executive Officer, Chief Financial Officer and Chief Accounting Officer, in order to:

- Promote honest and ethical conduct including the ethical handling of conflicts of interest
- Promote full, fair, accurate, timely and transparent disclosure
- Promote compliance with applicable laws and governmental rules and regulations, NYSE Rules, accounting standards and Company policies
- Deter wrongdoing

The Code of Ethics for Senior Financial Officers is accompanied by the Company's Clawback Policy, which applies in the event of material misstatements in our financial reporting. In addition, our Board has adopted the Company's Corporate Governance Guidelines which describe the Board's view on several governance topics. The Corporate Governance Guidelines, along with the charters of the Board committees and the Company's Code of Conduct as well as the Company's Code of Ethics for Senior Financial Officers, provide the corporate governance framework of the Company. Our Corporate Governance Guidelines and the Company's Code of Ethics for Senior Financial Officers can be found under "Investors and Corporate Governance" on our website.

We conduct mandatory compliance training for all employees, including annual web-based training and (as far as feasible) classroom training.

100%

Total employees were trained on anti-bribery and anti-corruption policies in 2023

IMPLEMENTATION OF POLICIES

Our policies are aligned to meet international standards, regulation and frameworks. These are reviewed annually and updated as required.

List of policies

- Code of Conduct
- Supplier Code of Conduct
- Code of Ethics for Senior Financial Officers
- Insider trading policy
- Anti-corruption policy
- Anti-trust policy
- Human rights policy
- Whistleblower policy
- Conflict minerals policy
- Political contributions policy
- Regulation FD policy
- Clawback policy
- OEC Governance Documentation

Policies can be found online here

Business ethics and compliance *continued*

Environmental Health and Safety compliance

We maintain continued compliance with the Orion Global Management System (GMS) EHS standards, which are designed to maintain consistently high EHS performance globally in our plant operations, and to meet or exceed local standards and regulations. Each manufacturing site has an EHS Manager and additional EHS professional staff are available depending on the size and complexity of the site. Each area also has a Regional EHS Manager who is supplemented by the Global EHS organization.

To identify and assure compliance with applicable regulatory requirements, site EHS use a range of tools, including:

- Access to EHS regulatory websites, industry associations and internal subject-matter experts.
- Annual regulatory compliance self-assessments as required by the applicable GMS standard.
- Periodic compliance assessment conducted by the Regional EHS Manager and the Global EHS organization.
- Monthly Compliance checks regulated by our compliance calendar in Gensuite®.
- Frequent interaction between the site EHS team and global EHS organization.

Self-assessments and internal audits are supplemented by third-party audits, whose results are reported to the Orion executive leadership team, documented, and tracked to timely closure. Global EHS compliance audits typically focus on environmental, occupational and process safety systems. The frequency of these audits ranges from one to three years, depending on the size and complexity of the operation and the corresponding level of EHS risk. The audit protocols are periodically reviewed by Orion and external EHS experts and updated where necessary to incorporate changes.

All internal and third-party findings are classified as either regulatory or non-regulatory findings and tracked in a database. If issues are identified, there is a rigorous audit closure tracking process in place that involves assignment of individual accountability, a fixed period for closure and continual status tracking until the audit finding has been closed. All our manufacturing sites are certified to ISO 9001 and ISO 14001 and undergo the required internal and third-party audits.

Investigation and corrective measures

All EHS incidents within Orion are considered important and investigated as needed to prevent recurrence. Incidents are reported, evaluated according to severity to determine the appropriate classification, and investigated to determine the root causes. Incident learnings are summarized and communicated with the appropriate work group and the corrective actions are tracked to closure through Benchmark Gensuite®, an electronic database to facilitate an incident management system. This system is searchable by all employees so that they can learn from incidents at other sites.

The most significant incidents are discussed globally on a monthly basis to support the investigation process, share learnings and to get additional insight and suggestion from plants with similar experience. Investigation report information is automatically retained in the database and can be mined for trend analysis to be used for continual improvement in our facilities around the world.

EHS governance

The CEO sets the expectations for creating a healthy and safe working environment for everyone who works at any of our operating sites. The Head of Global Operations, supported by the EHS function, is responsible for establishing the standards, procedures and rules that must be observed at all Orion sites. Safety performance is monitored globally and locally, and corrective actions are taken where warranted. Site leaders are responsible for overseeing EHS performance at their respective sites, supported by EHS professionals and subject-matter experts. Safety performance forms a component of the executive team's performance reviews, which take place at regular intervals.

Safety incidents are reviewed by the operations function and the EHS function with a view to ensuring that corrective actions are taken not only at the site in question, but also at other sites where applicable. Significant safety issues are reported to and reviewed by the CEO and the Board of Directors.

Our long-term target is to maintain a sustainable culture that is characterized by strong teamwork and commitment to safety performance and supported by interdependent collaboration between employees and leadership.

Cybersecurity

Our approach to managing cybersecurity is designed to ensure oversight and strategic leadership. Leading the Company's cybersecurity risk management is our Chief Information Security Officer (CISO) who has more than 10 years' experience in the field of cybersecurity.

In the case of cybersecurity incidents, our CISO leads our Cyber Emergency Response Team and coordinates the respective disclosure process, which is a collaborative process by which our CISO is advised of cyber incidents and communicates and collaborates with relevant departments across the organization to develop and execute an appropriate response.

While our Board of Directors has delegated the continuous cybersecurity monitoring responsibility to the Board's Audit Committee, it remains apprised of relevant cybersecurity updates, risks and incidents. The regular updates on cybersecurity status, material cyber incidents and cyber risk management from either the Chief Information Officer (CIO) or CISO are provided to both our Board and Audit Committee. In addition, the Company's executive management, through its CIO, briefs the Audit Committee at each quarterly Audit Committee meeting on the Company's IT and cybersecurity status, including its Operational Technology systems.

Orion has implemented security systems designed to identify security risks to our business (including cybersecurity), protect our assets and be capable of responding effectively to security threats. A security hazard analysis and vulnerability assessment has been conducted at each facility and security standards have been met consistent with the specific risks identified. The site-specific security asset protection programs include perimeter protection, access control, security monitoring, incident reporting and emergency response planning.

IP Protection

Orion is aware that protection of intellectual property is extremely necessary. Orion holds and develops an intellectual property portfolio that aims at ensuring its freedom of operation and growth of its business.

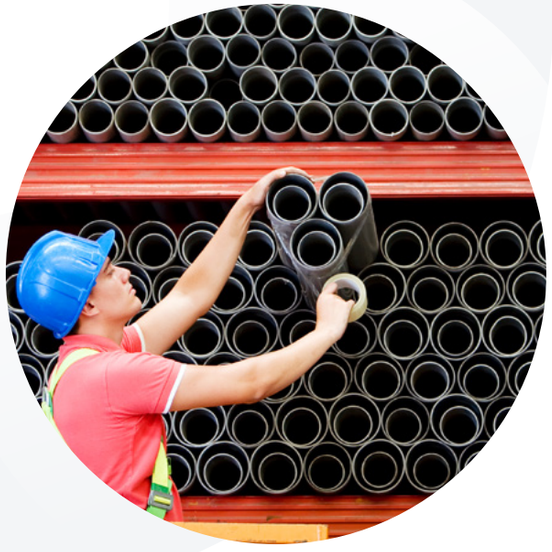
We protect intellectual property by registering for intellectual property rights such as trademarks, copyrights, and patents. Orion's domain name matches the name used by our company. Furthermore, Orion holds trade secrets and – if deemed necessary – establishes proof for being the legitimate owner in its research and development results.

Our Audit Committee reviews also cover current IT cybersecurity scorecards, which reflect amongst others the status of awareness training programs, phishing incidents, penetration tests, endpoint security findings and an overall cybersecurity vulnerability assessment score. The Audit Committee regularly discusses identified security risks with senior management and reviews management proposed mitigation measures, as well as key cybersecurity initiatives and programs.

We perform IT external network penetration testing and table-top exercises and regularly benchmark its measures to top marketplace security standards such as the U.S. National Institute of Standards and Technology's ("NIST") cybersecurity standards.

Risk management

The World Economic Forum (WEF) released its Global Risks Report 2024, which identified that in 10 years, 5 out of 10 risks will be environmental, with changes in our planet's life-support system and loss of biodiversity as the biggest global risks in near term.



This insight is important when reviewing our risk management strategy and approach for short- and long-term impacts. Risk management at Orion is a defined process of identifying, assessing and prioritizing potential risks, then working to mitigate those risks by actively monitoring, managing, controlling and reducing their probability. Our goal is to focus on negating the consequences of events that adversely impact the performance of Orion in terms of EBIT, cash and societal effects.

We assess the financial impact of operational risks within an 18-month time horizon and strategic risks over five years or longer. We operate a three lines of defense structure for risk:

- **First line**
  Business lines and corporate functions own and manage risks first-hand
- **Second line**
  Chief Risk Officer, Risk Committees and subject matter experts carry out continuing risk oversight
- **Third line**
  Board of Directors provides governance and periodic oversight of the second line

IN 10 YEARS' TIME, 5 OUT OF 10 RISKS WILL BE IDENTIFIED AS ENVIRONMENTAL
(The World Economic Forum Risk Report 2024)

1ST	Extreme weather events
2ND	Critical change to Earth systems
3RD	Biodiversity loss and ecosystem collapse
4TH	Natural resource shortages
5TH	Misinformation and disinformation
6TH	Adverse outcomes of AI technologies
7TH	Involuntary migration
8TH	Cyber insecurity
9TH	Societal polarization
10TH	Pollution

We monitor advances in production technologies and develop and use renewable and circular feedstocks. Expert consultants support us to quantify our full value-chain GHG footprint and to develop a high-level GHG abatement roadmap, as well as to evaluate U.S. and EU sustainability disclosure requirements and to assess our assurance readiness. All Orion production plants are in the process of identifying location-specific climate-related risks, both acute (i.e., flooding) and continuously growing (i.e., water stress), covering potential impacts with short-, mid- and long-term time horizons. This will further support us in defining and prioritizing mitigation actions.

Risk management *continued*

Sustainability risks and opportunities

RISK

CO_2 price mechanisms could lead to increased costs

Regulations such as the EU Emissions Trading System (ETS) will result in higher direct costs and pose a risk to our operations. Increases in the unit price of CO_2 certificates are expected and more severe curtailments of free credits are likely to be introduced. The EU ETS could influence us directly through the allocation of fewer free credits and higher offsetting hurdles via more expensive credit purchases. As a participant in an energy-intensive sector, Orion could also be indirectly impacted by our energy consumption from external sources.

If carbon black is added to the EU's Carbon Border Adjustment Mechanism (CBAM), there would be opportunities and risks. We would compete with imports on a more level playing field but free credits would also be phased out more quickly.

Mitigation

Energy is a critical input in the carbon black production process. We are naturally incentivized to consume less energy because of its direct relationship to our profitability and competitiveness, not only to reduce costs, but also to increase our output and earnings from the same cost base. The more efficient our production technology becomes, the fewer greenhouse gases we emit. Carbon black is produced through processing carbon-rich feedstocks, typically waste streams from refining or coal processing, which would otherwise be burned for their value as fuels. Consequently, the more carbon we can extract from the feedstock, the less carbon is converted to CO_2.

Further improvements in our efficiency will translate into higher yields, more products, fewer emissions and lower costs. It is worth noting that if we did not use these waste streams as feedstock material to make our product, solid carbon, they would largely be burned for fuel and emit roughly three times more CO_2.

We continuously monitor and seek to always comply with regulations and reduce costs over the long term. CO_2 management is critical and integrated into our strategy and processes. We set appropriate targets in our corporate strategy and carefully monitor them. We also set an example in product development. Each year, we invest a significant amount of money and time in developing more efficient and higher-yield technologies, and in the exploration of renewable feedstocks.

As the EU ETS will lead to higher operational costs and impact competitiveness of the European industry, the EU has introduced the Carbon Border Adjustment Mechanism (CBAM) that will introduce a levy on importers for the carbon embedded in their products. This levy should equal the price paid for carbon by domestic producers.

The CBAM will be introduced gradually and will mirror a gradual phasing out of the free allowances under the EU ETS. This means that sectors will either be covered by the CBAM or they will continue to be entitled to receive EU ETS allowances.

The CBAM entered into force for a first group of sectors in October 2023; carbon black is not included in this first group. The European Commission will evaluate in 2025 if other sectors should be brought under its scope. Orion is evaluating if the CBAM will be more beneficial than receiving free allowances under the EU ETS. On the positive side it would help to level the playing field with imported products, while on the negative side it would eliminate free credits and put exports from Europe at a disadvantage in the global economy.

Going forward, we expect that more jurisdictions will implement carbon border adjustment mechanisms to ensure that their domestic producers are not disadvantaged by imports from countries that do not impose similar costs. How best to address the issue of exports, where a producer would need to compete globally with competitors that have no CO_2 costs, remains a live issue.

RISK

Raw materials are becoming scarce or more costly

Irrevocably, the world is transitioning toward a less carbon-intensive economy; as a result, the demand for petroleum and coal will likely be reduced over the long term. By-products, residues and waste streams of the refining industry, such as slurry oil and coal tar, which are used as feedstock to produce carbon black, will be less readily available.

Mitigation

Our mitigation strategies include improving yields so that we need less of the traditional feedstocks; developing alternative sources such as renewable feedstocks or oil recovered from the end-of-life tire (ELT) pyrolysis process, as in the BlackCycle project; and gearing our production processes toward increased usage of raw material substitutes. Our investments in acetylene-based or other technologies, which do not use traditional feedstocks, strengthen the shift of our product mix away from fossil-based raw materials.

Risk management *continued*

OPPORTUNITY

Upcycling to conserve resources

We are striving to reduce our demand for fossil-based raw materials, to conserve natural resources and reduce our environmental impact. We are demonstrating how it can be done with the BlackCycle project (see page 26). Carbon black is an essential component of tires. Although the life cycle of a tire currently creates waste, recycling it into new high-value products could transform the entire industry in the future. The sustainable management of end-of-life tires through recycling is a big opportunity for us. Along with our research partners, we have identified circular solutions as an important strategic imperative. Our starting point is tire pyrolysis, which involves heating end-of-life tires in a reactor and extracting oil from them to be used as a feedstock for making carbon black. A circular business model in the tire industry would reduce waste and/or the incineration of used tires, potentially making us the industry leader in bringing sustainable solutions to our customers.

Our actions

We are investing in research and development with the goal of creating a circular product portfolio. With the BlackCycle project, we've worked with 13 partners from different EU countries as part of an EU-funded public-private partnership that gathers all the necessary competencies along the circular value chain to ensure its success. We have also invested in Alpha Carbone, a French tire recycling company, in a partnership that enables the company to produce commercial volumes of tire pyrolysis oil (TPO). Orion will be the exclusive customer for Alpha Carbone's TPO and will use it to manufacture circular carbon black for tire and rubber goods customers.

OPPORTUNITY

Developing "green" carbon black

The demand for "green" or bio-circular carbon black will continue to grow. Using oil made from renewable feedstocks is already technically feasible. This has been demonstrated by PRINTEX® Nature 11 and ECORAX® Nature 12, our first generation of renewable carbon blacks from vegetable oils. We believe that using renewable oil as a feedstock is one of the most capital-efficient means of decarbonizing the production process within the confines of currently visible technology trends. However, there are several challenges along the road to fully substituting renewable oil for fossil fuels in carbon black production.

Our actions

We are committed to meeting current challenges by continuing our research and exploring various types of renewable oil for our production process. We research internally and seek collaborations with alternative oil producers. Non-edible sources are especially important because they do not conflict with other important sustainability initiatives. For example, we are working with the RISE Research Institutes of Sweden – a state-run research institute collaborating with universities, industry and the public sector – to assess the feasibility of producing carbon black using renewable oil derived from forest products as feedstock.

Renewable oil under consideration includes among others non-edible industrial grade vegetable oils and oil derived from pine and spruce stem wood.

OPPORTUNITY

Global demand for electrification

The electrification of the economy, using renewable energy, is a common theme across many countries. We can contribute to this goal. Electric vehicles (EVs) are the most visible manifestation of this strategy and an important building block for the future of transportation. Lithium-ion batteries are at the heart of this technology and highly conductive additives play a critical role with EVs. Less visible but also essential is upgrading our electricity grids for offshore wind, distributed solar and widespread charging stations. Conductive carbons again have an important role to play in efficient high-voltage power distribution cables.

For lithium-ion EV batteries, conductive carbon additives such as carbon black, graphene and carbon nanotubes are used in cathodes. Our acetylene-based conductive products (PRINTEX® Kappa 100 and 400) provide high-purity additives at an attractive price relative to performance. Demand for conductive additives is expected to grow as the transition toward more electrification gains importance.

Our actions

We believe that as a supplier of conductive additives, we have an important role to play to support the transformation of the sector and grow with it. For example, we recently broke ground on a new plant in La Porte, Texas, which will quadruple our production of acetylene-based conductive additives. We are also offering enabling solutions to our tire customers with our family of technically advanced carbon black to address the requirements of EVs. Because EVs are significantly heavier than internal combustion engine vehicles and have higher engine torque, they need tires that can handle greater weight and be more durable.

Supply chain management

Our procurement strategy is founded on quality, cost, delivery and compliance. However, we believe decisive actions are also needed along the value chain to transition toward a sustainable future.

We therefore focus on sustainable procurement, striving to work with suppliers that are in line with our sustainability efforts. We work with suppliers and subcontractors to ensure their compliance with the applicable laws, regulations and our core values and standards as expressed in our Supplier Code of Conduct, which has a focus on suppliers' sustainability practices. The Supplier Code of Conduct is an integral part of our General Terms and Conditions for purchasing.

What we expect from our suppliers

We look at the entire value chain, which includes the suppliers that supply us with feedstocks, chemical additives, process equipment, packaging materials, maintenance and repair services, engineering services, logistics services and other professional services. We aim to have all our suppliers comply with our Supplier Code of Conduct and to act responsibly in the management of their ESG risks, particularly in the following areas:

- Environment
- Health
- Safety
- Labor (e.g., working conditions, the right to collective bargaining)
- Business ethics
- Human rights (e.g., prohibition against the use of underage workers and forced labor)
- Social policy matters (e.g., diversity and inclusion)
- Water consumption
- Sustainable procurement
- Disclosure requirements

We use the EcoVadis platform to ensure a high level of transparency along our global supply chain. At the end of 2023, 180 suppliers responsible for approximately 25% of our relevant spend (suppliers with whom we spend over $10,000 per annum) were assessed by EcoVadis. EcoVadis annual assessments and ongoing "360° Watch Findings" offer high visibility and tracking into any CSR-related impacts of suppliers. Our goal is for at least 60% of our spend (value based) to be generated with CSR-assessed suppliers by 2029. We monitor our progress toward this target on a quarterly basis.

In addition to the Sustainability assessment, we also use EcoVadis's Carbon Module to manage our supply chain's contribution to our Scope 3 emissions in the medium term. In partnership with a sustainability consultancy, we developed a model to estimate our Scope 3 emissions share (emissions per dollar of spend and volume of purchased carbon black oil) generated by the supply chain which consist of our Category 1 "Goods and Services" and Category 2 "Capital Goods" suppliers.

We look at the entire value chain, which includes the suppliers that supply us with feedstocks, chemical additives, process equipment, packaging materials, maintenance and repair services, engineering services, logistics services and other professional services.

Supply chain management *continued*

Bags of carbon black ready to be shipped at Orion's plant in Cologne, Germany.

Supplier selection procedure

Our suppliers are selected and managed through global and regional collaboration. Suppliers are typically first vetted for financial performance, quality aspects, warranties, pricing and payments terms. For CSR-related qualification, we use a risk-based approach that builds on a holistic CSR assessment conducted via third parties such as EcoVadis. Depending on the assessment results, we conduct follow-up inquiries and – where warranted – request affected suppliers to engage in corrective action.

In Q4 2023, approximately 80% of Orion procurement teams across all locations were trained in sustainable procurement. The main topic was the implementation of sustainable procurement criteria in our purchasing processes and utilization of suppliers' sustainability scores in the process of awarding business and evaluating supplier performance.

We aim to have all our suppliers meet our most critical standards. Part of the vetting process includes the assessment of a supplier's compliance assurance basis. We help suppliers with less robust foundations to establish a compliance assurance baseline at an acceptable level and monitor their performance periodically. This process enables us to work with suppliers from developing economies, where our engagement not only provides quality employment opportunities for local economies but also enables our suppliers to adopt and incorporate sustainable values into their business and management practices. To date, around 99% of our relevant suppliers (by value) have agreed to comply with our Supplier Code of Conduct or its equivalent. In addition, 95% (by value) of Orion's targeted supplier contracts in 2023 included clauses on environmental, labor and human rights requirements.

80%

of Orion procurement teams trained on sustainable procurement

95%

targeted supplier contracts (by value) of supplier contracts aligned to ESG

Maintaining global standards

Our global digital procurement tools provide data transparency and accuracy, enabling us to apply consistent standards worldwide. They ensure a consistent and integrated flow of supplier spend data and serve as a universal access point to review supplier information. Data includes supplier performance information and vetting data as well as the relevant supplier certifications and contracts that are in place.

In 2023, 85% of Orion's procurement team were trained by EcoVadis on social and environmental issues within the supply chain. Our efforts with respect to our environmental footprint include supporting our supply chain partners to minimize their own impact on the environment and to reduce CO_2 emissions from outbound freight.

We are striving for circularity in our value chain and have implemented packaging solutions to minimize waste and increase loading efficiency. We are also collaborating with our supply chain partners on the use of sustainable and recycled materials. In 2023, 100% of plastic pallets used at all sites were reusable and contained at least 60% recycled materials. We are working on solutions to meet our targets for paper bags and flexible intermediate bulk containers (FIBCs) (See page 54 for progress against these targets). At present, however, only a few of our paper bags meet the minimum recycling or reusability criteria set out in our targets.

Up to 2023, paper bags used for packaging our final products were made only of virgin materials. After an intensive period of development and testing, we certified our first recycled paper bags. Their implementation started in 2023 in EMEA and will be continued globally. For FIBCs, in 2022 we introduced new variants with a minimum of 30% recycled polypropylene and aim to achieve our target by 2029 at the latest. In 2023 we had achieved 14% recycled or reusable FIBCs. We encourage our customers to use recycled materials for packaging and to collect packaging waste for reuse.

14%

recycled of reusable FIBCs in 2023

Product quality, safety and stewardship

Orion takes a range of actions to ensure the manufacture, sale, transportation and use of our products comply with applicable legal requirements.

Orion carbon blacks are designed to be safe for handling and use, to comply with all applicable legal requirements, to not create a significant risk to human health and the environment and to deliver best performance in customer applications.

We ensure repetitive process control and shipment sample testing and have a change management process to ensure that changes such as new machines or process adjustments do not negatively modify our products or degrade their application performance. We understand customer requirements and carry out periodic reviews to ensure we fulfil all regulatory requirements. Periodical in-application testing is also used to ensure product consistency and performance. ISO 9001 compliance ensures we have site-specific, regionally or globally aligned processes to provide product consistency, improvements and responses to customer feedback.

We have implemented global management standards for testing and evaluation of our products, which are followed by all production sites. All processes are subject to periodic internal and external audits to confirm and improve our processes. We closely monitor the quality and safety of our products to ensure they meet requirements and to provide detailed information about our products. In addition, we work with research institutes and universities to further evaluate and monitor latest developments in product quality, safety and health matters. We provide detailed regulatory information on our products as well as further information for safe use, handling and storage.

Safety data sheets for all our products are available on the Orion website, covering all regions and countries that we supply and are available in multiple languages. Product Stewardship is managed via our Environment, Health and Safety team, with Quality overseen by our Quality team or site management, depending on the topic. Any negative feedback is investigated and resolved after root cause investigation. Confirmed complaints are communicated by a "quality alert", including documentation and communication to all sites.

Safety data sheets for all our products are available on the Orion website

PRODUCT QUALITY FRAMEWORK

Orion constantly checks and evaluates	Orion fufills international standards	Orion continuously controls and audits the carbon black quality
Registration status of carbon black	Global chemical legislation	Safety Data Sheets (SDS)
Nano status of carbon black	Food contact regulations	Product Safety Information (PSI) & Product Safety Statements (PSS)
Status on REACH and SVHC	PAHs (EU, FDA, GS mark, OEKO-TEX®, DHHS, etc.)	Trace substances/ impurities in carbon black

Public policy and engagement

Orion monitors policies and legislation that may impact our business, and if we deem it helpful or important, we provide information and views about issues.

In the EU, we interact with Members of the European Parliament, European Commission officials and industry representatives. We provide information on how new regulations will impact our operations and businesses. In 2023, Orion joined the European Chemical Industry Council (Cefic) and became involved in relevant working groups that are preparing advocacy positions towards EU institutions. Cefic provides information on new regulations and shares intelligence about regulatory processes. Orion also engages with national governments and industry associations in EU member states like Verband der Chemischen Industrie (VCI) in Germany and Federchimica in Italy. Engagements vary from dialogues on policy and regulation, receiving politicians at our plants to applying for government grants.

Outside Europe, Orion is a member of the International Carbon Black Association (ICBA), and in the USA, Orion is a member of the American Chemistry Council (ACC). Engagements vary from receiving politicians at our plants to applying for government grants.

The air emissions control system at Orion's plant in Ivanhoe, Louisiana.

Appendix

IN THIS SECTION

About this report
ESG Performance data
GRI/UNGC index
Abbreviations

About this report

Structure

This report is designed to introduce general information about Orion's sustainability status and endeavors, as well as to communicate the results of our materiality analysis, which acts as the basis for the chapters: Environmental, Social, and Governance. The appendix shows the Global Reporting Initiative Index, a glossary of abbreviations and contact information. In 2023 we restructured the Sustainability Report to be aligned with key European Sustainability Reporting Standards in preparation for our company being subject to the Corporate Sustainability Reporting Directive in 2025. To ensure data integrity, we implemented a comprehensive data collection platform that serves to consolidate the ESG data from several departments, drive alignment and ensure data reliability throughout the ESG data collection process.

Scope and reporting period

The information stated about Orion in this Sustainability Report concerns and covers all the consolidated company's business entities from January 1 to December 31, 2023.

Standards and compliance

This report is prepared in reference to the GRI standards 2021. Following GRI standards allows us to report in standardized form on the Sustainable Development Goals (SDGs) relevant to Orion and our progress to advance climate action and a respective just transition. Orion applies its Code of Conduct throughout all its activities, at the same time complying with local legislation at its respective locations.

Forward-looking statements and disclaimer

The content in this Sustainability Report and all statements made herein, as well as documents or reports incorporated herein by reference, should be read in conjunction with Orion's 2023 Annual Report on form 10-K, which contains additional information about our company and risk factors we have identified. However, this report is not incorporated into our 10-K filing by reference or otherwise and our 10-K filing is vice versa not incorporated into this report. This Sustainability Report may contain certain forward-looking statements within the meaning of the U.S. Private Securities Litigation Reform Act of 1995. Forward-looking statements are statements of future expectations that are based on 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. Statements on what "we will" do or comparable expression of intent, reflect only our current intent but should not be interpreted as a firm commitment irrespective of future developments and circumstances. You should not place undue reliance on forward-looking statements. Each forward-looking statement speaks only as of the date of the statement and is based only on the information available and known by Orion at the time the statement is made. New risk factors and uncertainties emerge from time to time, and it is not possible to predict all risk factors and uncertainties, nor can we assess 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. We undertake no obligation to publicly update or revise any forward-looking statement as a result of new information, future events or other information, other than as required by applicable law.

All information and statements contained herein are believed to be accurate; however, Orion Engineered Carbons GMBH (as well as all other Orion engineered carbons group companies including Orion Engineered Carbons SA), its agents and/or affiliates ("OEC") give no warranty or guarantee (express or implied) with respect to the content of this publication or any product described herein, including but not limited to any properties, the suitability of a product to a specific purpose or use, results to be obtained or the existence or non-infringement of any proprietary right. Use or application of information, statements, the material or systems described herein is at user's sole discretion and risk, and consequently user acknowledges that OEC shall bear no responsibility or liability for same. Nothing herein shall be construed as a license of or recommendation for use. All information disclosed by OEC herein shall remain the property of OEC. All information and statements contained herein may change at any time without prior information and do not constitute the agreed contractual quality of a product.

ESG Performance

ENVIRONMENT

Indicator	Unit	Target*	2023	2022	2021
Production					
Production	MT	–	**878,396**	913,247	913,705
GHG emissions					
Scope 1	MN MT GHG	–	**2.2**	2.3	2.2
Scope 1 Intensity	MT GHG / MT Production	–	**2.5**	2.5	2.4
Normalized Scope 1 Intensity [1]	MT GHG / MT Production		**2.4**	2.4	2.4
Intensity Reduction	%	**-8%**	**-4%**	-3%	-4%
Scope 2 – Market Based [2]	KMT GHG	**0****	**152**	166	159
Scope 2 – Location Based	KMT GHG	–	**123**	–	–
Scope 2 Intensity	MT GHG / MT Production	–	**0.1**	0.2	0.2
CO_2 Emissions Reduction from Outbound Freight [3]	%	**-30%**	**-17%**	-4%	–%
Scope 3	MN MT GHG	–	**1.3**	1.4	1.4
Other emissions					
SO_2					
Emissions	KMT SO_2	–	**6.76**	10.00	11.3
Intensity	KG SO_2 / MT Production		**7.68**	10.97	12.39
Intensity Reduction	%	**-50%**	**-60%**	-42%	-35%
NO_2					
Emissions	KMT NOx	–	**3.21**	3.6	4.2
Intensity	KG NOx / MT Production	–	**3.65**	4.03	4.6
Intensity reduction	%	**-25%**	**-31%**	-24%	-13%
Particulate matter [4]					
Emissions	KMT PM		**0.37**	0.38	0.41
Intensity	KG PM / MT Production	–	**0.42**	0.42	0.47
Intensity reduction	%	**-15%**	**-37%**	-34%	-29%
Energy					
Energy consumption [5]	TWh	–	**20.00**	20.8	20.6
Intensity [6]	cf. footnote (6)	–	**2.13**	2.14	2.07
Tail gas utilization rate [7]	%	**79%**	**84%**	73%	76%
Water					
Water Intensity [8]	m^3/MT Production	–	**10.41**	9.30	8.90
Water inflow:		–			
Inflow	million m^3	–	**13.62**	12.00	12.50
Surface water	%	–	**27%**	29%	32%
Well Water	%	–	**22%**	18%	16%
Municipality	%	–	**48%**	48%	50%
Retention Pond	%	–	**3%**	5%	2%
Water outflow:		–			
Outflow	million m^3	–	**4.47**	3.54	4.40
Sanitary Sewer	%	–	**1%**	1%	2%
Municipality	%	–	**30%**	24%	22%
Natural Body of Water / Collection Pond	%	–	**69%**	75%	76%

ESG performance *continued*

Indicator	Unit	Target*	2023	2022	2021
Waste					
Waste Intensity	KG / MT Production	–	**28.60**	15.40	15.50
Total Waste Generation	KMT	–	**25.12**	14.07	14.20
General & Non-hazardous waste	KMT	–	**22.75**	10.85	10.60
Hazardous waste	KMT	–	**2.38**	3.27	3.60
Waste Disposal method:					
Hazardous Waste		–			
Landfilled	KMT	–	**1.30**	1.82	3.40
Recycled, Reused & Recovered	KMT	–	**0.31**	0.44	0.20
Incinerated	KMT	–	**0.77**	1.01	0.00
General and Non-Hazardous Waste		–			
Landfilled	KMT	–	**15.96**	6.34	6.60
Recycled, Reused & Recovered	KMT	–	**6.47**	4.31	4.00
Incinerated	KMT	–	**0.31**	0.24	0.00
Incidents of significant spills [9]	number	–	**–**	–	–

* Baseline year of 2014 (unless specifically stated otherwise), and all targets set for delivery by 2029.

** Target set for delivery by 2030.

(1) Normalized for product mix and feedstock mix in furnace black production.

(2) Baseline year of 2022.

(3) Measured vs. 2019 base value on a normalized unit cost base.

(4) PM emissions based on the local authorities' requirements, which can differ across the different legislations.

(5) Energy consumption includes fuel oil, make oil and other energy (e.g. electric power consumed at the operating sites under our management control and ownership.

(6) Total energy consumed in TWhs divided by total useful energy TWhs (including carbon black and energy produced.

(7) Tail gas usage in the production of energy for internal or third-party consumption.

(8) Calculated as net water usage (inflow less outflow) per million metric tons of carbon black produced.

(9) Significant spill defined as a reportable release of a substance that is large enough to be included in our financial statements and is recorded as such in our EHS registry.

SOCIAL

Indicator	Unit	Target*	2023	2022	2021
Employees by gender [1]					
Total	number	–	**1,652**	1,605	1,475
Male	%	–	**81%**	82%	82%
Female	%	–	**19%**	18%	18%
Females in management roles	%	–	**21%**	19%	19%
Employees by contract [2]					
Permanent	number	–	**1,634**	1,584	1,451
Temporary	number	–	**18**	21	24
Full-Time	number	–	**1,606**	1,573	1,436
Part-Time	number	–	**46**	32	39
U.S. employees by ethnicity [3]					
Total U.S. Employees	number	–	**353**	355	322
White	%	–	**72%**	72%	75%
African American	%	–	**12%**	13%	10%
Hispanic	%	–	**11%**	9%	10%
Asian	%	–	**4%**	4%	4%
Others/Undisclosed	%	–	**1%**	2%	1%

(1) Gender dispersion – Orion operates in the Chemical manufacturing industry which is predominantly a male workforce, and our gender dispersion is consistent with the industry. Approximately 2/3 of our workforce are in blue collar roles.

(2) Part-time/Temporary Employees – Approximately 2/3 of our workforce are in blue collar roles and the nature of this work in the chemical industry lends itself to regular full-time roles so that employees are properly trained. Our unions and works councils generally prefer for employees to have the security of regular full-time employment.

(3) Ethnicity – Orion strives to have a workforce representative of the communities in which we operate. It is not possible to provide figures on a global basis as ethnicity definitions are not consistent from country to country. In several countries, Orion is not permitted to request this information. Orion U.S. represents ~ 22% of the overall Orion population and is not representative of OEC on a global basis.

ESG performance *continued*

Indicator	Unit	Target*	2023	2022	2021
Employees by Region					
Americas	number	–	**418**	419	385
APAC	number	–	**383**	362	313
EMEA	number	–	**851**	824	777
Employee by Age group					
<30	number	–	**186**	175	137
30–50	number	–	**757**	735	721
>50	number	–	**709**	695	617
Employees in bargaining unit [4]					
Number of employees	number	–	**808**	762	738
As a percentage of total	%	–	**49%**	48%	50%
Voluntary Turnover rate					
Voluntary Turnover rate	%	–	**3%**	4%	4%
Employees receiving performance review					
As a percentage of total	%		**68%**	65%	58%
As a percentage of employees eligible employment contract [5]	%	**95%**	**94%**	96%	95%
Workforce receiving training					
As a percentage of total	%	**100%**	**100%**	100%	97%

Indicator	Unit	Target*	2023	2022	2021
Average training hours					
Average training hours	hrs	**40**	**69**	27	23
Non-discrimination					
Claims alleged	number	–	**0**	0	0
Substantiated	number	–	**0**	0	0
Unsubstantiated	number	–	**0**	0	0
Claims closed	number	–	**0**	0	0
Corrective Actions [6]	number	–	**0**	0	0
Occupational health and safety					
DAFW case rate	number per 200,000 worked hours	–	**0.23**	0.29	0.18
TRIR	number per 200,000 worked hours	–	**0.34**	0.41	0.35
PSE [7]	number	–	**0**	18	9
Employee Fatalities	number	–	**0**	0	0
Contractor Fatalities	number	–	**0**	1	0

* All targets set for delivery by 2029 unless explicitly noted otherwise.

(4) Collective Bargaining – Orion recognizes and respects our employees' right to be represented under a collective bargaining agreement; however, we strive to provide a safe working environment and competitive wages and benefits for all employees regardless of representation.

(5) Employees are defined to include only those whose contracts (including collective bargaining agreements) do not restrict the company from conducting individual performance reviews.

(6) Options include no action, policy review, training, discipline and termination.

(7) Following CCPS guidelines, a process safety event is defined as an event involving the release or loss of containments collecting and reviewing the underlying data; we started categorizing the relevant data under this classification in 2022.

ESG performance *continued*

GOVERNANCE

Indicator	Unit	Target*	2023	2022	2021
Environmental non-compliance incidents					
Number of incidents	number	–	**0**	0	1
Compliance Training [1]					
Employees receiving compliance training	%	95%	**100%**	100%	95%
Procurement					
Suppliers signing up to Code of Conduct [2]	%	100%	**99%**	99%	98%
Use of Plastic Pallets made of Recycled Material [3]	%	100%	**100%**	95%	97%
Use of Reusable Pallets at all Sites [4]	%	90%	**95%**	72%	73%
Paper bags from Recycled Paper [5]	%	95%	**2%**	–%	–%
Use of Reusable FIBCS or Recycled FIBC [6]	%	100%	**14%**	–%	–%
Share of spend from targeted suppliers having our CSR assessments or other recognized third-party assessments (EcoVadis, etc.)	%	60%	**25%**	15%	–%

* All targets set for delivery by 2029 unless explicitly noted otherwise

(1) This was formerly called "Code of Conduct Training". However, the Code Of Conduct is only one of several elements of our comprehensive compliance training.

(2) Measured in terms of value. Excludes suppliers with whom we transact on an ad hoc basis without a formal contract for a monetary value of less than $10,000 per annum.

(3) Applies to sites using plastic pallets. Minimum recycled material content set at 60%.

(4) Applies to pallets used in outbound logistics as we have no control over inbound pallets. Target has been increased from 75% to 90%.

(5) Minimum recycled paper content set at 50%.

(6) Given the separate target for paper bags, this target has been reset for FIBCs. Reusability has been set at six, and minimum recycling content at 20%.

GRI/UNGC index

GRI 1: FOUNDATION 2021

Statement of use Orion Engineered Carbon has reported the information cited in this GRI content index for the period of January 1 to December 31, 2023 with reference to the GRI Standards.

GRI 2: GENERAL DISCLOSURES 2021

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	2-6 Activities, value chain and other business relationships	4, 45, 46
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	2-10 Nomination and selection of the highest governance body	39
	2-11 Chair of the highest governance body	39
1, 2, 4, 5, 6, 10	2-12 Role of the highest governance body in overseeing the management of impacts	39
8	2-13 Delegation of responsibility for managing impacts	39
	2-14 Role of the highest governance body in sustainability reporting	39
	2-16 Communication of critical concerns	40
7,8,9	2-22 Statement on sustainable development strategy	10
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	2-28 Membership associations	48
	2-29 Approach to stakeholder engagement	5, 9
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GRI 3: MATERIAL TOPICS 2021

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	3-2 List of material topics	9
1, 3, 5, 6, 7, 8, 9, 10	3-3 Management of material topics	13, 29, 39
7, 8	101-2 Management of biodiversity impacts	27

GRI 201: ECONOMIC PERFORMANCE 2016

7, 8, 9	201-1 Direct economic value generated and distributed	4, 5
	201-2 Financial implications and other risks and opportunities due to climate change	43, 44
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GRI 302: ENERGY 2016

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GRI 303: WATER AND EFFLUENTS 2018

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	303-3 Water withdrawal	51
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GRI 305: EMISSIONS 2016

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	305-2 Energy indirect (Scope 2) GHG emissions	20, 21, 51
	305-3 Other indirect (Scope 3) GHG emissions	20, 21, 51
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8	305-5 Reduction of GHG emissions	20, 51
	305-7 Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions	22, 51

GRI 306: EFFLUENTS AND WASTE 2016

	306-3 Significant spills	23, 24, 52

GRI 306: EFFLUENTS AND WASTE 2016

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	306-2 Management of significant waste-related impacts	23, 24, 52
	306-3 Waste generated	23, 24, 52
8	306-4 Waste diverted from disposal	52
	306-5 Waste directed to disposal	52

GRI 401: EMPLOYMENT 2016

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GRI 403: OCCUPATIONAL HEALTH AND SAFETY 2018

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	403-4 Worker participation, consultation, and communication on occupational health and safety	33
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GRI 405: DIVERSITY AND EQUAL OPPORTUNITY 2016

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GRI 417: MARKETING AND LABELING 2016

8	417-1 Requirements for product and service information and labeling	47

Abbreviations

Abbreviations

American Chemistry Council	ACC
American Society For Testing And Materials	ASTM
Carbon Black Oil	CBO
Carbon Border Adjustment Mechanism	CBAM
Carbon Dioxide	CO_2
Carbon Disclosure Project	CDP
Corporate Social Responsibility	CSR
Corporate Social Responsibility Directive	CSRD
Days Away From Work	DAFW
Diversity, equity and inclusion	DE&I
Earnings Before Interest, Taxes, Depreciation And Amortization	EBITDA
Electric Vehicles	EVs
Emissions Trading System	ETS
End-Of-Life Tires	ELT
Environment, Health & Safety	EHS
Environment, Social and Governance	ESG
Environmental Protection Agency (U.S.)	EPA
Europe, Middle East And Africa	EMEA
Flexible Intermediate Bulk Container	FIBC
Internal Combustion Engine	ICE
Global Management System	GMS
Global Reporting Initiative	GRI
Global Warming Potential	GWP
Greenhouse Gas Emissions	GHG
International Organization For Standardization	ISO
International Sustainability & Carbon Certification	ISCC
Kilo Metric Tons	KMT
Life Cycle Assessment	LCA
Losses Of Primary Containment	LOPC
Metric Tonnes	MT
Nitrogen Oxide	NOx
Occupational Health And Safety Assessment Series	OHSAS 18001
Occupational Safety And Health Administration Voluntary Protection Program	OSHA VPP
Particulate Matter	PM
Process Safety Event	PSE
Product Carbon Footprint	PCF
Recovered Carbon Black	RCB
Revolving Credit Facility	RCF
Selective Catalytic Reduction	SCR
Sustainable Development Goals	SDGs
Sulfur Dioxide	SO_2
Sulfur Oxide	SOx
Tire Pyrolysis Oil	TPO
Total Recordable Injuries	TRI
United Nations Global Compact	UNGC

We welcome your feedback on this report and our sustainability progress, as well as any other comments or questions you may have. You may contact us at:

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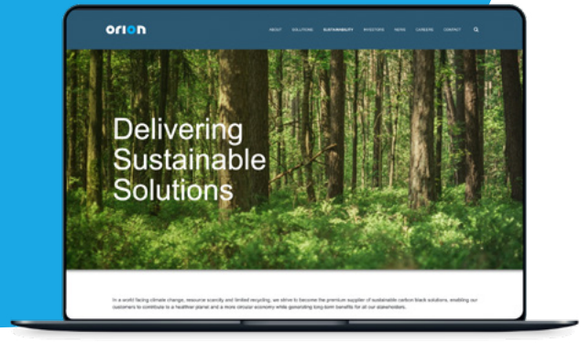

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