

# Manufactured capital





With a focus on operational excellence, our efforts have significantly improved operational efficiency, ensured a stable supply of raw materials and enhanced product quality across our facilities, driving growth and innovation.

### Focus areas

- ▶ Improving yield and efficiency
- ▶ Capacity utilisation and enhancement
- ▶ Supply chain security
- ▶ Enhancing product quality

### Stakeholders impacted

- ▶ Customers
- ▶ Employees
- ▶ Investors and shareholders

### UN SDGs impacted



### Improving yield and efficiency

We see tangible results from adopting new technologies to optimise our Carbon segment's calcination kilns, which significantly enhances operational efficiency. This initiative is our prime opportunity for efficiency improvement, focusing on maximising the conversion of GPC into CPC. Our primary goal is to increase the yield of CPC production from GPC conversion, driving operational efficiency and profitability. By optimising this process, we are reducing production costs and minimising carbon emissions, transforming a more significant portion of our solid-carbon raw material into a finished product.

Concurrently, efforts are underway to enhance capacity, lower costs and maximise the reliability of our Carbon segment's calcination, ensuring seamless operations and consistent output.

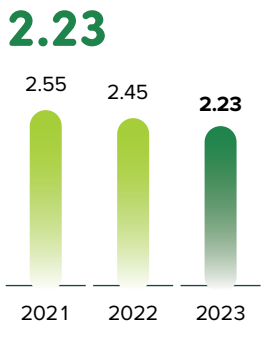
### Capacity utilisation and enhancement

In 2023, we improved capacity utilisation at our Carbon segment's newest shaft calciner plant in India. While we have no planned major capex projects for 2024, recent changes in import restrictions in India should enable higher capacity utilisation rates for our new shaft calciner and existing calcination plants in India and the USA. Despite operating at partial capacity in 2023, our new shaft calciner became a qualified CPC supplier at multiple world-class aluminium smelters. Thus, we anticipate increased CPC production from this new calciner to meet global market demand.

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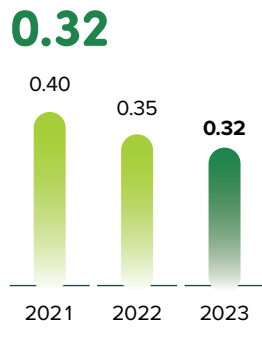
## Carbon

Production volume (in Mn MT)



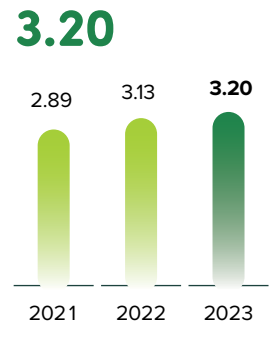
## Advanced Materials

Production volume (in Mn MT)



## Cement

Production volume (in Mn MT)



### Supply chain security

Refinery capacity worldwide has rebounded from the operational downturn during the COVID-19 pandemic, leading to an improvement in the GPC supply balance.

### Supplier relationships and dynamics

We maintain robust relationships with GPC suppliers globally, enabling our Carbon segment to access a diverse range of GPC qualities that are economically and logistically efficient for our global calcination locations. Our Carbon segment's facilities in the USA primarily rely on domestically sourced GPC, while its Indian facilities predominantly utilise imported GPC.

### Supply strategy and diversification

A blend of term GPC supply agreements and enduring partnerships with suppliers ensures consistent access to essential raw materials, fostering reliability in our operations. Integrating marginal-quality and

lower-cost GPC into our raw material supply portfolio enhances cost efficiency and expands our global basket of GPC sources, bolstering sustainability and resilience.





## Enhancing product quality

During 2023, we undertook significant efforts to enhance the quality of CPC within our Carbon segment's calcination process. Leveraging newly available technologies and techniques, we conducted various projects, trials, and studies to ensure optimal performance.

### Monitoring process stability

A notable development was the successful creation of online CO<sub>2</sub> emissions analysers, providing real-time emissions data. This tool not only aids in monitoring process stability but also allows us to correlate CO<sub>2</sub> emissions with the yields of our Carbon segment's calcination kilns.

### Raw material quality and process efficiency

Understanding the impact of various aspects of GPC raw material quality on process efficiency is vital. These insights significantly influence our plant maintenance needs, ensuring smooth operations and consistent output.

### Unique combination of capabilities

Our globally unique combination of Carbon segment's combination of calcination (CPC production) and distillation (CTP production) capabilities have allowed us to carve a niche in this segment. This unique synergy enables RAIN to offer comprehensive CPC and CTP solutions to our customers producing aluminium anodes for these essential raw materials.

### Research and development insights

Our in-house expertise, complemented by world-class laboratory and pilot facilities, provides our R&D team unparalleled technical insights. In 2023, we conducted in-house pilot anode studies on both shaft-calcined

CPC and our proprietary ACP product, quantifying their beneficial impacts on anode densities.

### Customer satisfaction and knowledge sharing

We shared the results and knowledge gained from these studies with our customers, who have expressed satisfaction with the improvements in anode density and performance, particularly those utilising our shaft CPC.