

Long Products

J STEEL
ENGINEERING OUTCOMES

XCarb[®]

Recycled and renewably
produced





"We have an important role to play in helping society deliver the objectives of the Paris agreement and are determined to lead our industry's transition to carbon neutral steel."

A. Mittal

Aditya Mittal,
CEO, ArcelorMittal



ArcelorMittal towards carbon neutral steel

Steel has the potential to be the backbone of the net-zero economy. To capture this opportunity steel must also decarbonise, achieving net zero by 2050 and offering low-carbon and ultimately near-zero products to its customers.

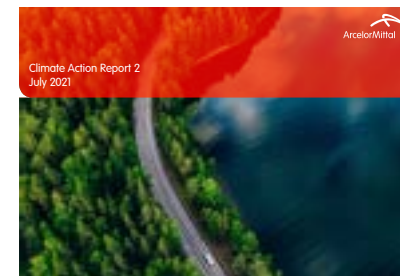
ArcelorMittal has adopted an ambitious set of **carbon emissions intensity targets*** that will lead the sector in reaching net-zero by 2050, targeting a 25% reduction in CO₂e emissions intensity (per tonne crude steel) by 2030. Our strategy is consistent with limiting global warming to 1.5°C above pre-industrial levels.

ArcelorMittal Europe's target is to reduce Scope 1 and 2 CO₂ emissions by 35% by 2030 (per tonne crude steel).

CO ₂ ↓ 35%	by 2030 as Europe target
CO ₂ ↓ 25%	by 2030 as Group target
Net-zero	by 2050

ArcelorMittal Climate Action Report

In 2021, ArcelorMittal published its second Climate Action Report. The Report elaborates on the ground-breaking work underway to achieve our carbon-neutral steelmaking objectives.



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* Targets refer to scopes 1+2 CO₂e emissions, steel + mining.

XCarb® initiative towards carbon-neutral steel

XCarb® is designed to bring together all of ArcelorMittal's reduced, low and zero-carbon products and steelmaking activities, as well as wider initiatives and green innovation projects, into a single effort focused on achieving demonstrable progress towards carbon neutral steel.

XCarb® serves as evidence of our determination and accelerating commitment to achieve carbon neutrality by 2050. We will continue to drive innovation to meet our decarbonisation goals and are committed to leading the industry transition towards carbon neutral steel. We have the scale, resources, technology prowess and ambition required to make a significant impact.

Alongside the new XCarb® brand, we have launched three XCarb® initiatives: the XCarb® innovation fund, XCarb® green steel certificates and XCarb® recycled and renewably produced for products made via the Electric Arc Furnace route using scrap.

The initiatives that are part of XCarb® aim to reduce the carbon footprint of ArcelorMittal and of our customers.



XCarb[®] recycled and renewably produced



100%
green
electricity

Up to
100%
recycled
scrap



One of the first decarbonisation initiatives from ArcelorMittal Europe – Long Products is XCarb[®] recycled and renewably produced. To produce XCarb[®] recycled and renewably produced steel, ArcelorMittal Europe – Long Products **uses up to 100-percent scrap.**

All of the electricity needed to transform the scrap into XCarb[®] recycled and renewably produced steels comes **from renewable sources such as solar and wind power.** The energy is provided by suppliers who are connected to the same grid as our production sites and whose projects are recent.

The combination of recycled content and renewable energy allows ArcelorMittal Europe – Long Products to offer steels **with very low levels of CO₂ emissions per tonne of finished steel.** ArcelorMittal Europe – Long Products estimates that XCarb[®] recycled and renewably produced steel can have a CO₂ footprint as low as 300kg per tonne of finished steel when the metallics are 100% scrap.

This is significantly lower than the average for the global steel industry which is around 2.3 tonnes of CO₂ emissions per tonne of steel products. ⁽¹⁾

Scan or click to
watch the animation



¹ <https://www.sustainablefinance.hsbc.com>



What guarantees do we offer to our customers?



Each tonne of XCarb® recycled and renewably produced steel is externally certified. The certificate guarantees that the electrical energy used to make the steel came from renewable sources, such as solar and wind power.



The certification process

Step 1

Purchase of renewable electricity via "Guarantee of Origin" European System

Step 2

Follow-up of the order system, audited by a third party

Step 3

Delivery of material documentation and certificate with XCarb® recycled and renewably produced

Step 4

Delivery of the final product to the customers

What are the advantages for ArcelorMittal's customers?

Purchasing our XCarb® recycled and renewably produced steel allows you to reduce the global CO₂ footprint of your projects, products, and finished goods.

To calculate the total CO₂e impact of their products, our customers can use the figures reported in the EPDs: they are independently certified by a third-party.

Environmental Product Declarations (EPDs) and similar national Product Declaration (such as FDES in France) are instruments used to communicate publicly about the key environmental impact of specific products. They are intended to inform prescribers and consumers and to ease the comparison between similar products based on environmental criteria.

All EPDs are based on a life cycle assessment (LCA) and follow the ISO 14025 and EN 15804 standards. They are independently verified.

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"XCarb® recycled and renewably produced initiative is a great way forward for the environment. Combining 100% recycled steel with 100% renewable electricity for the production of new steel products is clearly in line with the Cradle to Cradle-inspired goals for making a more sustainable world. It promotes recycling and the use of renewable electricity and furthermore will support long-term investments in this critical area of steel manufacturing."

William McDonough

Founder, William McDonough + Partners



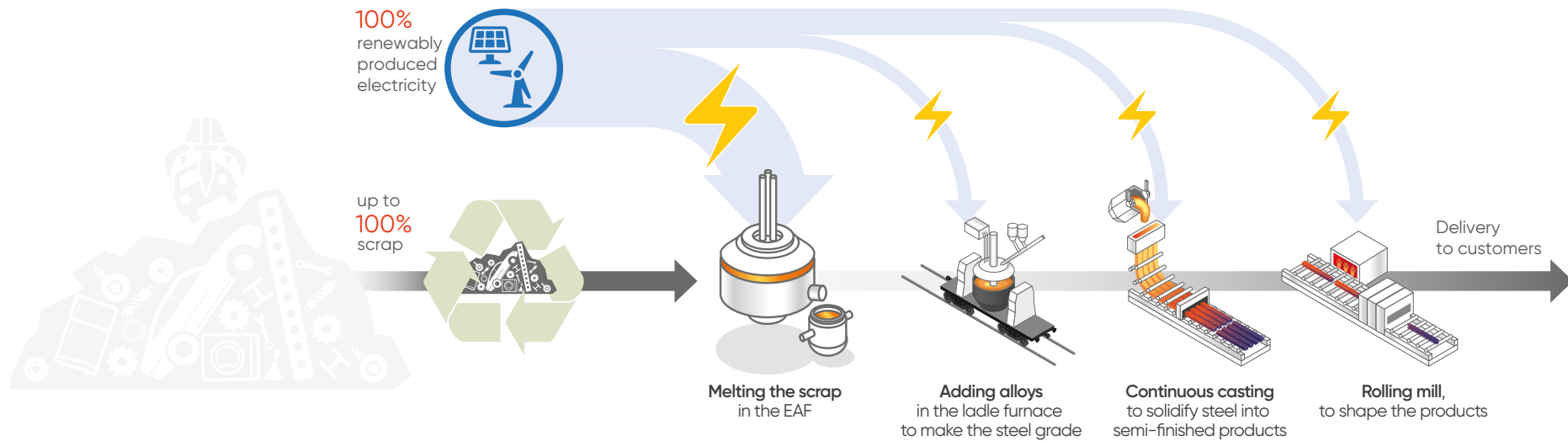
Why is renewable electricity so important?

The process of melting scrap into an **electric arc furnace (EAF)** consumes a **large quantity of electricity** to reach the high temperatures required. The manufacturing steps that follow the initial melting of the scrap, such as the addition of alloys to obtain the steel grade, the continuous casting where the steel solidifies into semi-products and finally the rolling mill where the steel takes its final shape, also consume electricity.

Using only **renewably produced electricity** is the **best solution** to reduce carbon emissions in the steel production made through the EAF route.



EAF-steelmaking process

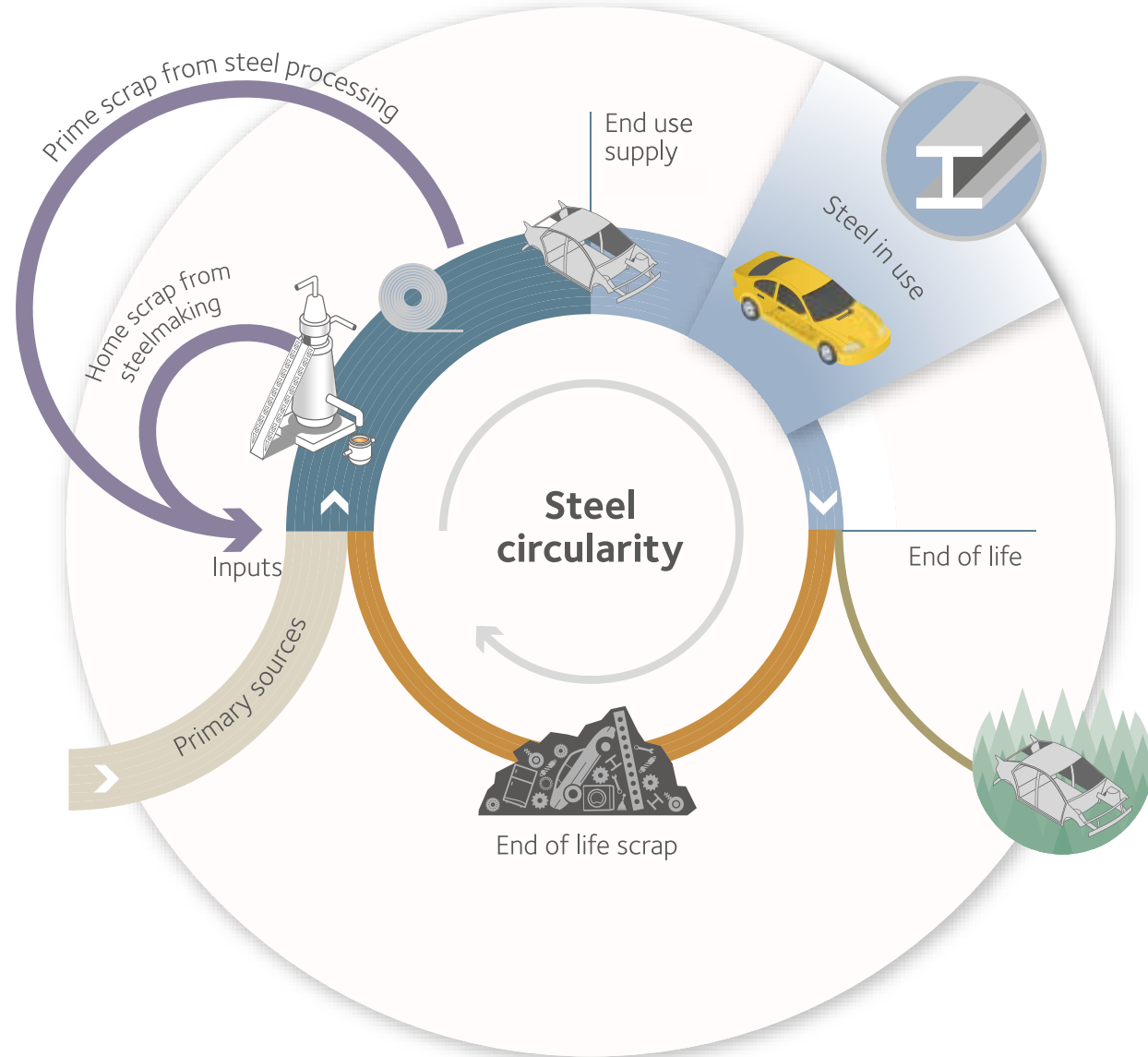


What is the circular advantage of steel?

Steel is infinitely and fully recyclable with no loss of quality in most cases.

85-95% of end-of-life steel is currently recycled back into new steel products and accounts for over 20% of today's steel production.

However, end-of-life steel is only the beginning for XCarb® recycled and renewably produced steel, which is made from up to 100% scrap.



Source : ArcelorMittal Corporate Strategy



Steligen[®]

The holistic Steligen[®] approach offers a broad range of thinner, lighter, and high-performance steel solutions for constructive creations ranging from outstanding bridges to the tallest living spaces.

Click or scan



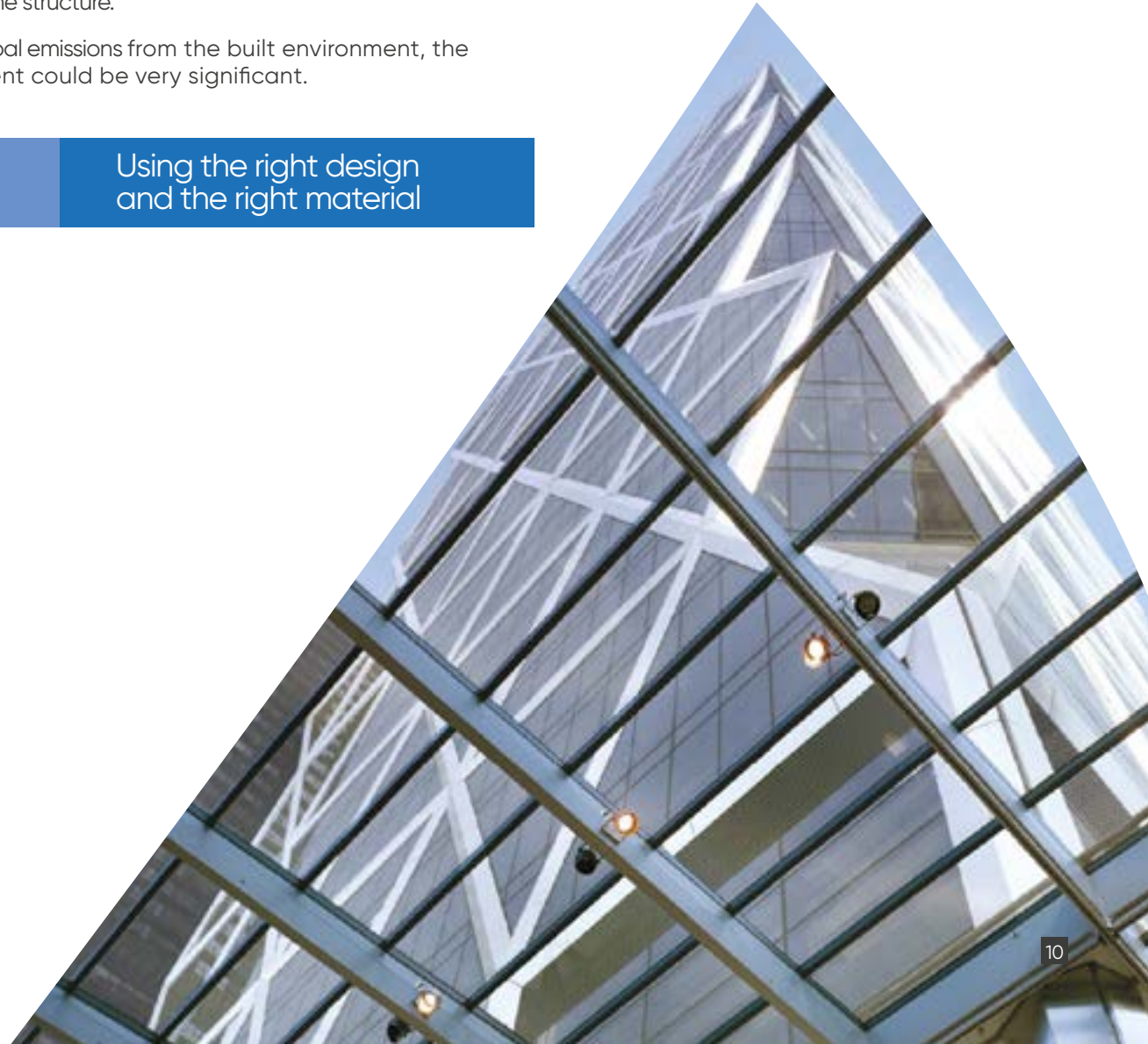
Material and mass optimisation: the Steligen[®] approach

Designing a building in the right way can already decrease its carbon content. The use of high strength steel sections combined with XCarb[®] recycled and renewably produced allows a complete building optimisation and has the potential to reduce the embedded carbon footprint of a building by 54 percent while enhancing the flexibility and economics of the structure.

Considering the share of global emissions from the built environment, the impact of such improvement could be very significant.

CO₂ ↓ 54%

Using the right design
and the right material



EcoSheetPile™ Plus

- part of the XCarb® recycled and renewably produced initiative
- based on the Electric Arc Furnace (EAF) route
- using 100% recycled material and 100% renewable electricity
- 30%* lower emissions than with the usual energy mix
- 80%* lower carbon footprint than competition (LCA available)

*Reference: published EPDs of steel sheet piles available in Europe, accessed online in April 2023.

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Reusing steel products: the example of the steel sheet piles

Sheet piles are sections of steel with interlocks that can be connected. They are used to form impervious retaining walls for infrastructure projects, ports and waterways, flood protection barriers, and urban transport. Sheet piles fit perfectly into the circular economy concept.

Around a quarter of the sheet piles produced are used in temporary applications. They can be reused up to five times before they are recycled.

5X

used in temporary applications,
before being recycled



Bars and rods

- part of the XCarb® recycled and renewably produced initiative
- based on the Electric Arc Furnace (EAF) route
- using a high level of recycled material and 100% renewable electricity
- certificate giving the GWP with 30% - 40% less CO₂e by tonne of finished steel compared to standard product

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Partnering with our customers towards low CO₂ products

We comply with the most stringent requirements of our customers!

Hjulsbro Steel is a major customer of ArcelorMittal bars and rods, and for their new GreenStrand brand, they showed a great interest in our XCarb® recycled and renewably produced steel.

The PC-strands they produce are used for the pre-stressing of the railway sleepers in concrete. Homologation was needed to use our XCarb® recycled and renewably produced steel for concrete reinforcement.

Thanks to the efficient work between the teams of both ArcelorMittal and our customer, the homologation has been achieved for our WR HC PC from the Hamburg mill with a high level of scrap steel, and always the 100% of renewably produced electricity.

We have embarked on a long journey to reduce our CO₂ footprint.

Further updates on our progress and our XCarb® product range are made as that journey continues.



Crapal® Optimum solutions for vineyards

- part of the XCarb® recycled and renewably produced initiative
- based on the Electric Arc Furnace (EAF) route
- using a high level of recycled material and 100% renewable electricity
- with Crapal® Optimum in XCarb® recycled and renewably produced steel, 10 tonnes of CO₂ are saved per truck

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Decarbonising a whole market segment: the example of Crapal® Optimum wire

Crapal® Optimum is now fully available in low carbon-emission steel with XCarb® recycled and renewably produced, while the excellent quality of our wire remains unchanged, with Crapal® Optimum unique long life span and its strong Zn+Al+Mg coating.

CO₂ saving

10 tonnes per truck



Sections

- part of the XCarb® recycled and renewably produced initiative
- based on the Electric Arc Furnace (EAF) route
- using 100% recycled material and 100% renewable electricity
- 36% lower emissions than with the usual energy mix

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Minimising buildings' embodied carbon: the outstanding impact of low CO₂ steel frames

Sections are the most popular and versatile way to build steel frames all over the world. XCarb® recycled and renewably produced sections allow up to 83% CO₂e reduction compared to the world average sections or usual plate products.¹

CO₂ ↓ 83%

Compared to the world average for sections

¹ <https://worldsteel.org/steel-topics/life-cycle-thinking/lca-eco-profiles/>

Did you know?

The structure can account for more than 50% of the embodied carbon of a building.

Reducing the frame footprint is key to delivering a low carbon project.



Driving the climate transition for steel

ArcelorMittal is committed to playing a leading role in decarbonising the steel industry, but we cannot do this alone. We need a strongly collaborative approach based on cooperation and mutual commitment from companies at all levels of the steel supply chain, representatives of civil society, and other stakeholders.

We are a member of business and civil society organisations that impact on various levers in the market from the industrial processes to the behaviour of customers. With them, we are working to create the conditions needed to make carbon-neutral steel a reality. Our actions on climate change are externally recognised.



Steel has been recognised by the European Union as a permanent material. This designation recognises that steel can be infinitely recycled without loss of quality, no matter how many times it is recycled.



ArcelorMittal is a founding member of ResponsibleSteel™ – the steel industry's first global multi-stakeholder standard and certification initiative.

The initiative includes members from every stage of the steel supply chain. ResponsibleSteel™ has developed an independent certification standard and programme via a process that aims to align with the ISEAL codes of good practice.

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In 2020, ArcelorMittal was recognised by CDP for our strong performance on corporate transparency and action on climate change. Once again, we maintained our A- score in the CDP's climate change assessment. This puts ArcelorMittal in the top 10 percent of the steel industry and within the top quartile of all metal smelting, refining, and forming companies.

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ArcelorMittal is among the steel-producing companies recognised as the 2023 Steel Sustainability Champions.

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Cradle to Cradle Certified® Gold

XCarb® recycled and renewably produced sections and EcoSheetPile™ Plus produced in ArcelorMittal Differdange and Belval have been Cradle to Cradle Certified® Gold, which is the best achievement for our industry.

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How could I find out more about XCarb® recycled and renewably produced?

ArcelorMittal Europe – Long Products customers can contact their local support team for more information about XCarb® recycled and renewably produced steel.

Click or scan

XCarb® recycled and renewably produced – ArcelorMittal Europe



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