ArcelorMittal Europe – Flat Products

ArcelorMittal

Amstrong® Ultra

The smartest choice

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ArcelorMittal's **Amstrong® Ultra High Strength Steels** combine **excellent formability and weldability** with **superior low-temperature toughness** and **fatigue resistance**. These ultra-high strength steel grades have minimum yield strengths ranging from 650 up to 960 MPa. The Amstrong® Ultra series are available as thermomechanically rolled coils, slit-coils and cut-to-length sheets.

Advantages of Amstrong® Ultra

Developed for structural applications, Amstrong® Ultra grades are an excellent alternative to conventional structural steels in the 350 MPa yield strength range.

They allow manufacturers to **decrease steel thickness and weight**, enhancing **payload capacity** and lowering **fuel consumption** in mobile equipment, which in turn reduces the **CO_2 footprint**. Amstrong® Ultra grades also allow the development of **longer crane booms, enhance wear resistance with extended lifespan of the equipment, and reduce the needs for repairs**. Replacing traditional structural steels by Amstrong® Ultra grades provides **significant material cost savings** while maintaining good fabrication properties such as formability and weldability.

Compared to structural grades, Amstrong® Ultra grades exhibit improved formability. In addition, its weldability is enhanced due to the reduction in carbon and other alloying elements when compared to structural steels.

Trailer part made of 12 mm Amstrong® Ultra 700MC, laser cut and bent

Mechanical properties

Amstrong® Ultra high strength steel grades meet or exceed the requirements of applicable European standards. Please contact us if different specifications are required.

Amstrong® Ultra – thermomechanical grades

Amstrong® Ultra	Testing direction	Min. yield strength R_{eH} (MPa) 1)	Tensile strength R_m (MPa)	Min. elongation A l_0 = 80 mm (%) (t < 3 mm) 3)	Min. elongation A $l_0 = 5.65\sqrt{So}$ (%) (t ≥ 3 mm)	Min. inner radius for 90° bending (mm) 3)	Min. mandrel diameter for 180° bending (mm) 3)	Min. impact toughness KV at -20°C (J) 2)	Min. impact toughness KV at -40°C (J) 2)
650MC	R	650	700 to 850	10	14	-	-	40	-
	T	670	710 to 880		12	0.9 x t	1.8 x t	-	-
650MCT	R	650	700 to 850	10	14	-	-	40	27
	T	670	710 to 880		12	0.9 x t	1.8 x t	-	-
700MC	R	700	750 to 930	10	14	-	-	40	-
	T	720	760 to 950		12	0.9 x t	1.8 x t	-	-
700MCT	R	700	750 to 930	10	14	-	-	40	27
	T	720	760 to 950		12	0.9 x t	1.8 x t	-	-
700MCL	R	700	750 to 930	-	14	0.9 x t	1.8 x t	40	30
	T	720	760 to 950	-	12				27
900MCL	R	900	940 to 1100	-	11	3.0 x t	6.0 x t	40	30
	T			-	8				27
960MCL	R	960	980 to 1150	-	10	3.0 x t	6.0 x t	40	30
	T			-	8				27

1) *For grades with minimum nominal yield strength 650 and 700 MPa and thicknesses > 8 mm, minimum yield strength can be 20 MPa lower (according to EN 10149-2:2013).*
2) *The impact energy is verified for products with a nominal thickness ≥ 6 mm as defined in the relevant EN standard. It is possible to have impact energy verified on request for a nominal thickness ≥ 5 mm.*
3) *t = Nominal thickness*

For further detailed information on our grades, please consult our online product data sheets at:
industry.arcelormittal.com for thermo-mechanical grades

Sustainability

With their high tensile strength, ArcelorMittal's high strength low alloy grades are an excellent choice when saving weight is a priority. The use of thinner high strength low alloy steels offers several advantages. It allows for faster cutting, forming, and welding due to less material and lower energy requirements, leading to increased productivity and reduced costs. Thinner sheets also improve precision, are easier to handle and transport, and support more complex designs. The reduced weight translates into fuel savings and overall CO_2 savings on lifetime basis.

As an example, a platform trailer built with Amstrong® 500MC and Amstrong® Ultra 700MC (vs reference structural grade) can be built with 29% lower material costs. ArcelorMittal estimates fuel savings of between 0.4 and 0.6 liters per 100 kilometers can be achieved. Assuming the trailer travels an average of 150,000 km each year, that equates to around 700 liters of fuel savings. Based on average use, CO_2-equivalent emissions are reduced by 900 kg each year.

Dimensional feasibility

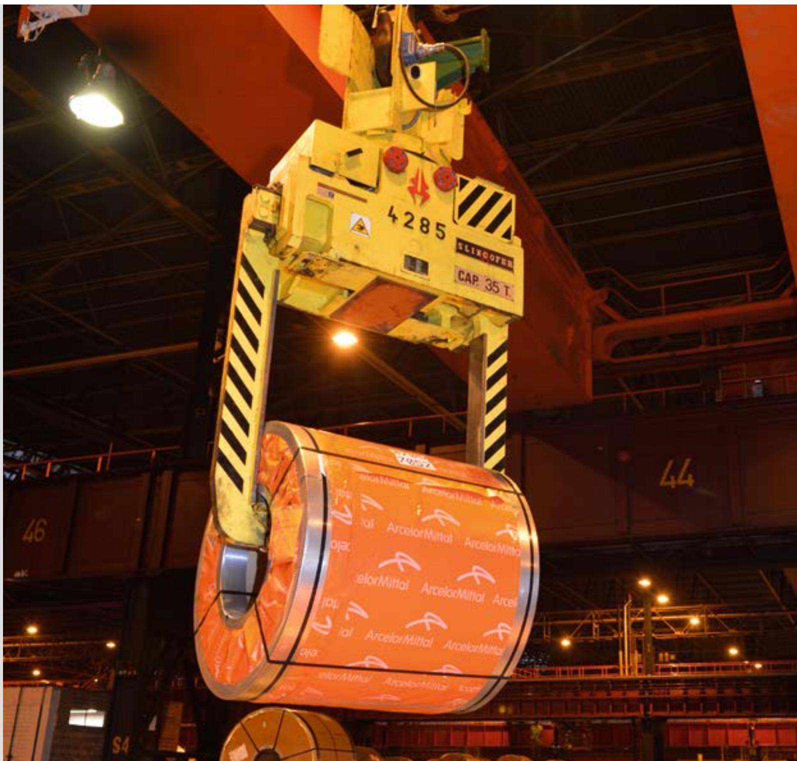
Amstrong® Ultra	Product	Min. width (mm)	Length (mm)	Max. width (mm) per thickness (mm): 2	3	4	5	6	7	8	9	10	11	12	13	14	15	20
650MC	Coil or cut-to-length sheet	800	800 to 12000 15000 upon assessment		1520	1700	2000	2000	2000	2050								
650MCT					1520	1700	2000	2000	2000	2050								
700MC				1250	1520	2000	2000	2000	2000	2050						2025		2000
700MCT					1520	1700	2000	2000	2000	2050								
700MCL								1780	1850	2050								
900MCL	Cut-to-length sheet				1600	1770	1790	1810	1710									
960MCL					1600	1770	1790	1810	1710									

Standard feasibility *Contact us for feasibility*

Availability

Amstrong® Ultra products are manufactured in ArcelorMittal's European mills. Our strong distribution network across Europe ensures products can be delivered to your doorstep with short lead times wherever your operations are located. The supply chain is complemented by our technical and commercial teams who are always available to answer any requests, and in your language.

At ArcelorMittal, we continuously update our product range and dimensions to align with new developments and meet your evolving needs. Since stock availability may vary, we strongly recommend checking the latest product specifications and stock sizes in our online catalogue at industry.arcelormittal.com/catalogue



Applications

Amstrong® Ultra High Strength Steels can be used in a wide range of applications for sectors including transport, yellow and green goods, and mechanical engineering. Typical applications include: trucks and tippers, mobile cranes, crawler cranes, crane and concrete pump booms, aerial platforms, work tools for demolition, livestock pens, machine frames, offshore cranes, heavy mechanical equipment and bucket parts.

Transport: Creating the lighter, durable, and fuel-efficient vehicles of tomorrow

Lighter design translates into lower costs for materials, easier fabrication, and better payload capacity. Simultaneously, it reduces fuel consumption and the CO_2 footprint of your products and operations. Use **Amstrong® Ultra** in the design of your vehicle trailer or tipper chassis and achieve:

- Significant weight reduction compared to structural steels resulting in increased payload
- Less welding passes, saving on time and consumables
- Innovative design.

Switch to **Amstrong® Ultra 700MC** for your towbar fabrication and achieve a 40% weight reduction compared to structural steels. Moving from a welded to a bent structure reduces costs by more than 25%.

Yellow and green goods: Smarter design improves performance

Increase the threshing capacity of your corn harvester with **Amstrong® Ultra** grades. You can at least achieve a 35% weight reduction and the cutting head can be expanded from e.g. 8 to 12 rows. The lower weight and increased capacity reduce fuel consumption and CO_2 footprint significantly during use.

Mechanical engineering: Lighter, longer, and more powerful cranes

The **Amstrong® Ultra MCL** series have been designed to meet the stringent toughness and fatigue resistance requirements of telescopic crane booms and chassis. Reducing the weight of the application with **Amstrong® Ultra MCL** will allow for longer booms or a higher loading capacity.

XCarb®

Towards net zero steel

Commitment to carbon-neutral steelmaking

XCarb® brings together ArcelorMittal's reduced and low carbon-emissions products and steelmaking activities, as well as wider initiatives and green innovation projects, into a single effort focused on achieving demonstrable progress towards net-zero steel.

XCarb® recycled and renewably produced steel is applied to steels produced in an electric arc furnace (EAF) using high levels of scrap and 100-percent renewable electricity.

Our XCarb® steel certificates allow customers to reduce their or their customers's scope 3 emissions. These can be purchased directly from ArcelorMittal Europe – Flat Products in conjunction with a corresponding steel order.

More about XCarb®:
europe.arcelormittal.com/xcarb

Steel Advisor
Find the right steel products

ArcelorMittal Europe – Flat Products
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Credits

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