ArcelorMittal

Amstrong® Ultra

The smartest choice

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ArcelorMittal's **Amstrong® Ultra high-strength steels** combine **excellent formability** with **toughness at low temperature** and **fatigue resistance**. These ultra-high strength steel grades have minimum yield strengths ranging from 650 up to 1100 MPa. The Amstrong® Ultra series are available as thermomechanically rolled cut-to-length sheets or as quenched and tempered sheets and quarto plates.

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 enable manufacturers to **reduce steel thickness** and **weight** to **improve payload** and **reduce fuel consumption** in mobile equipment. Amstrong® Ultra grades also allow the development of **longer crane booms** and **enhance wear resistance**. Replacing traditional structural steels with Amstrong® Ultra grades provides **significant material cost savings** while maintaining good fabrication properties such as formability and weldability.

The weldability of Amstrong® Ultra grades is enhanced due to the reduction in carbon and other alloying elements.

A portfolio of ultra-high strength steel products

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

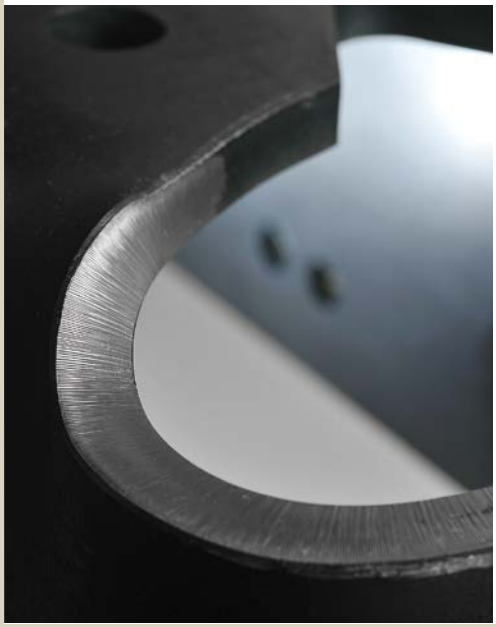
Thermo-mechanical grades	Standard
Amstrong® Ultra 650MC	EN 10149-2:2013 – meets all requirements of S650MC with tighter chemistry and better guarantees on mechanical properties in both the rolling and transverse directions. Toughness guarantee at -20 °C in the rolling direction.
Amstrong® Ultra 650MCT	EN 10149-2:2013 – meets all requirements of S650MC with tighter chemistry and better guarantees on mechanical properties in both the rolling and transverse directions. Toughness guarantee at -40 °C in the rolling direction.
Amstrong® Ultra 700MC	EN 10149-2:2013 – meets all requirements of S700MC with tighter chemistry and better guarantees on mechanical properties in both the rolling and transverse directions. Toughness guarantee at -20 °C in the rolling direction.
Amstrong® Ultra 700MCT	EN 10149-2:2013 – meets all requirements of S700MC with tighter chemistry and better guarantees on mechanical properties in both the rolling and transverse directions. Toughness guarantee at -40 °C in the rolling direction.
Amstrong® Ultra 700MCL	EN 10149-2:2013 – meets all requirements of S700MC with tighter chemistry and better guarantees on mechanical properties including toughness at -40 °C and bendability, all in both the rolling and transverse directions.
Amstrong® Ultra 900MCL	EN 10149-2:2013 – meets all requirements of S900MC with tighter chemistry and better guarantees on mechanical properties including toughness at -40 °C and bendability, all in both the rolling and transverse directions.
Amstrong® Ultra 960MCL	EN 10149-2:2013 – meets all requirements of S960MC with tighter chemistry and better guarantees on mechanical properties including toughness at -40 °C and bendability, all in both the rolling and transverse directions.

Quenched and tempered grades	Standard
Amstrong® Ultra 690	EN 10025-6 – S690Q, S690QL and S690QL1
Amstrong® Ultra 890	EN 10025-6 – S890Q, S890QL and S890QL1
Amstrong® Ultra 960	EN 10025-6 – S960Q and S960QL
Amstrong® Ultra 1100	Grade produced as per Industeel technical data sheet

Quenched and tempered grades (with similar properties) are available in thicknesses above the indicated standard limits. Unless otherwise agreed, the quenched and tempered plates are delivered as QL.

For further detailed information on our grades, please consult our online product data sheets at:

industry.arcelormittal.com for thermo-mechanical grades
industeel.arcelormittal.com for quenched and tempered grades



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

Mechanical properties

Amstrong® Ultra – thermomechanical grades

Designation	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]
Amstrong® Ultra 650MC	R	650	700 to 850	10	14	-	-	40	-
	T	670	710 to 880		12	0.9 x t	1.8 x t	-	-
Amstrong® Ultra 650MCT	R	650	700 to 850	10	14	-	-	40	27
	T	670	710 to 880		12	0.9 x t	1.8 x t	-	-
Amstrong® Ultra 700MC	R	700	750 to 930	10	14	-	-	40	-
	T	720	760 to 950		12	0.9 x t	1.8 x t	-	-
Amstrong® Ultra 700MCT	R	700	750 to 930	10	14	-	-	40	27
	T	720	760 to 950		12	0.9 x t	1.8 x t	-	-
Amstrong® Ultra 700MCL	R	700	750 to 930	-	14	0.9 x t	1.8 x t	40	30
	T	720	760 to 950	-	12				27
Amstrong® Ultra 900MCL	R	900	940 to 1100	-	11	3.0 x t	6.0 x t	40	30
	T			-	8				27
Amstrong® Ultra 960MCL	R	960	980 to 1150	-	10	3.0 x t	6.0 x t	40	30
	T			-	7				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.
[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

Amstrong® Ultra – quenched and tempered plates

Designation	Thickness range (mm)	Yield strength R_{eH} (MPa)	Tensile strength R_m (MPa)	Min. elongation A $l_0 = 5.65\sqrt{So}$ (%)	Min. inner radius for 90° bending ⊥ to rolling direction [1] (mm)	Min. die opening for 90° bending ⊥ to rolling direction [1] (mm)	Grade Q Min impact toughness KV-20 °C (J) R/T	Grade QL Min impact toughness KV-40 °C (J) R/T	Grade QL1 Min impact toughness KV-60 °C (J) R/T
Amstrong® Ultra 690	4 to 50	690	770 to 940	14	2 x t	8 x t	50/35	40/30	30/27
	51 to 100	650	760 to 930						
	101 to 250	630	710 to 900						
Amstrong® Ultra 890	6 to 50	890	940 to 1100	11	2.5 x t	8.5 x t	50/35	40/30	30/27
	51 to 100	830	880 to 1100						
	101 to 125	830	880 to 1100						
Amstrong® Ultra 960	6 to 50	960	980 to 1150	10	2.5 x t	10 x t	40/30	30/27	–
	51 to 105	900	940 to 1100						
Amstrong® Ultra 1100	8 to 15	1100	1250 to 1450		4 x t	10 x t			

[1] t = Nominal thickness
Supplementary technical information is available in our online data sheets at industeel.arcelormittal.com

Dimensional feasibility

Designation	Product	Min. width (mm)	Length (mm)	Max. width (mm) per thickness (mm)																
				2	3	4	5	6	7	8	9	10	11	12	13	15	25	50	105	150	250
Amstrong® Ultra 650MC	Coil or cut-to-length sheet	800	800 to 12000		1520	1700	2000	2000	2000	2050			2070	2080							
Amstrong® Ultra 650MCT		800			1520	1700	2000	2000	2000	2050			2070	2080							
Amstrong® Ultra 700MC		800		1250	1520	1700	2000	2000	2000	2050			2070	2080							
Amstrong® Ultra 700MCT		800				1700	2000	2000	2000	2050			2070	2080							
Amstrong® Ultra 700MCL	Cut-to-length sheet	800	15000 upon assessment				1600	1780	1850	2050											
Amstrong® Ultra 900MCL		800			1600	1770	1790	1810	1710												
Amstrong® Ultra 960MCL		800			1600	1770	1790	1810	1710												
Amstrong® Ultra 690	plate	1200	4000 to 10000			2000			2500		3100				3800						3500
Amstrong® Ultra 890	plate	1200					2000			2500			3000								
Amstrong® Ultra 960	plate	1200					2000			2500			3000								
Amstrong® Ultra 1100	plate	1200								2500											

Contact us for feasibility

Availability

Amstrong® Ultra products are manufactured in ArcelorMittal's European mills. Our strong distribution network across Europe and globally 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.

As ArcelorMittal operates a policy of continuous development, our product range is constantly changing. For the latest information on dimensional feasibility, we strongly advise you to check the latest version of our leaflet or the product data sheet, both of which are available from our website.
Your account manager also has the latest information.

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
- 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 significantly during use.

Mechanical engineering: Lighter, longer, and more powerful cranes

The **Amstrong® Ultra MCL** and **QL** 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** or **QL** will allow for longer booms or a higher loading capacity.

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