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 steel grades have minimum yield strengths ranging from 650 up to 1100 MPa. The Amstrong® Ultra series are available as thermomechanically rolled coils, sheets/plates 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 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

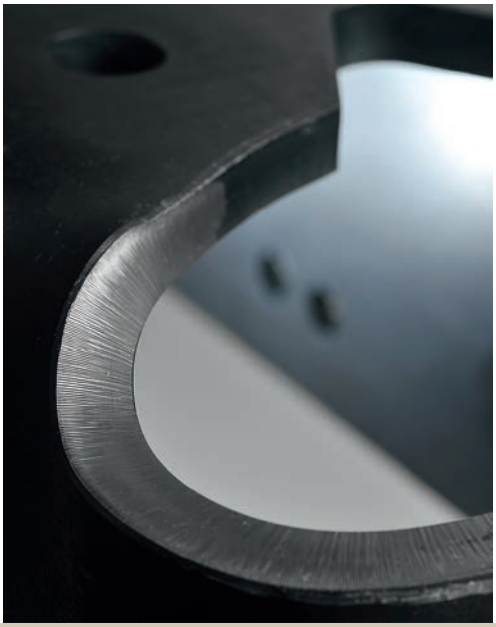
Amstrong® Ultra high strength steel grades meet or **exceed** the requirements of applicable **European standards**. Please contact us if different specifications are required.

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 longitudinal and transverse directions. Toughness guarantee at -20°C in the longitudinal 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 longitudinal and transverse directions. Toughness guarantee at -40°C in the longitudinal 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 longitudinal and transverse directions. Toughness guarantee at -20°C in the longitudinal 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 longitudinal and transverse directions. Toughness guarantee at -40°C in the longitudinal 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 longitudinal 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 longitudinal 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 longitudinal 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

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® 700MC, laser cut and bent

Mechanical properties

Amstrong® Ultra – Thermomechanical grades

	Thickness range (mm)	Testing direction	Yield strength R_{eH} (MPa) [1]	Tensile strength R_m (MPa)	Min. elongation A $l_0 = 80$ mm (%) ($t < 3$ mm) [2]	Min. elongation A $l_0 = 5.65\sqrt{So}$ (%) ($t \geq 3$ mm) [2]	Min. inner radius for 90° bending (mm) [2]	Min. mandrel diameter for 180° bending (mm) [2]	Min. impact toughness KV at -20°C (J) [3]	Min. impact toughness KV at -40°C (J) [3]
Amstrong® Ultra 650MC	2 – 12	L	650	700-850	10	14	-	-	40	-
		T	670	710-880		12	0.9 x t	1.8 x t	-	-
Amstrong® Ultra 650MCT	2 – 12	L	650	700-850	10	14	-	-	40	27
		T	670	710-880		12	0.9 x t	1.8 x t	-	-
Amstrong® Ultra 700MC	2 – 12	L	700	750-930	10	14	-	-	40	-
		T	720	760-950		12	0.9 x t	1.8 x t	-	-
Amstrong® Ultra 700MCT	2 –12	L	700	750-930	10	14	-	-	40	27
		T	720	760-950		12	0.9 x t	1.8 x t	-	-
Amstrong® Ultra 700MCL	6 – (12)	L	700	750-930	-	14	0.9 x t	1.8 x t	40	27
		T	720	760-950	-	12				
Amstrong® Ultra 900MCL	3 – 6	L	900	930-1200	-	8	3.0 x t	6.0 x t	40	27
		T			-	6				
Amstrong® Ultra 960MCL	3 – 6	L	960	980-1250	-	8	3.0 x t	6.0 x t	40	27
		T			-	6				

[1] *For grades with a minimum nominal yield strength of 650 and 700 MPa and thicknesses > 8 mm, minimum yield strength can be 20 MPa lower.*
[2] *t = Nominal thickness*
[3] *The impact energy is verified for products with a nominal thickness of ≥6 mm as defined in the relevant EN standard.*
■ *Grades under development*

Amstrong® Ultra – Quenched and tempered plates

	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]	Min. die opening for 90° bending ⊥ to rolling direction [1]	Grade Q Min impact toughness KV-20°C (J) L/T	Grade QL Min impact toughness KV-40°C (J) L/T	Grade QL1 Min impact toughness KV-60°C (J) L/T
Amstrong® Ultra 690	4-50	690	770-940	14	2 x t	8 x t	50/35	40/30	30/27
	51-100	650	760-930		–	–			
	101-250	630	710-900		–	–			
Amstrong® Ultra 890	5-50	890	940-1100	11	2.5 x t	8.5 x t	50/35	40/30	30/27
	51-100	830	880-1100		–	–			
	101-120	830	880-1100		–	–			
Amstrong® Ultra 960	5-50	960	980-1150	10	2.5 x t	10 x t	40/30	30/27	–
	51-105	900	940-1100		–	–			
Amstrong® Ultra 1100	8-15	1100	1250-1450	10	4 x t	10 x t	40/30	30/27	–

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

Dimensional feasibility

	Product	Min width (mm)	Length (mm)	Max width (mm) per thickness (mm)																
				2	3	4	5	6	7	8	9	10	11	12	15	25	50	105	150	250
Amstrong® Ultra 650MC/650MCT	Coil or cut to length sheet/ plate	800	For sheet 800 to 12000		1520	1620	1720	1780	1850	2020			2040	2050	■					
Amstrong® Ultra 700MC/700MCT				1250	1520	1620	1720	1780	1850	2020			2040	2050						
Amstrong® Ultra 700MCL								1500												
Amstrong® Ultra 900MCL*					■	■	■	■	■	■										
Amstrong® Ultra 960MCL*					■	■	■	■	■	■										
Amstrong® Ultra 690Q, QL, QL1	Cut to length sheet/ plate	1200	4000 to 13000			2000														
Amstrong® Ultra 890Q, QL, QL1							2000													
Amstrong® Ultra 960Q, QL							2000													
Amstrong® Ultra 690Q, QL, QL1	Quarto plate	1200	4000 to 13000			2000			2500		3100				3800		3680		3500	
Amstrong® Ultra 890Q, QL,QL1										2500			3000							
Amstrong® Ultra 960Q, QL										2500			3000							
Amstrong® Ultra 1100										2500										

■ *Contact us for feasibility*
* *Product in development*

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 booms, 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 700MC. Not only can you achieve a 35% weight reduction, the cutting head can be expanded from 8 to 12 rows. The lower weight and increased capacity reduces 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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