

Plates

for large diameter, longitudinally welded line pipes

Based on 30-years of experience in high-end hot rolled steels, ArcelorMittal is able to provide high quality steels for line pipe applications. To ensure our leadership in this sector continues, ArcelorMittal is undertaking an extensive research and development effort to enhance the quality and performance of our products and develop the next generation of line pipe plates.

The excellent and stable mechanical properties of ArcelorMittal's clean steels ensure reliable and high quality plate for use in non-sour onshore applications.



Experienced in TMCP

By mastering the thermo mechanical controlled rolling process (TMCP) ArcelorMittal can supply plates with substantial ferrite grain refinement. This creates high strength steels with superior toughness at low temperatures. The alloy designs ensure a low carbon equivalent which provides the steel with its excellent weldability properties.

Weldability

ArcelorMittal's micro-alloyed steels have a low carbon equivalent resulting in plates with excellent weldability. The steels offer:

- High HAZ toughness
- Resistance to cold cracking
- Suitability for submerged arc welding (SAW) and girth welding in the field. This includes manual shielded metal arc welding (SMAW), semi-automated processes (TIG), fully automated gas metal arc welding (GMAW) and flux cored arc welding (FCAW).

Our strengths

- Strength up to X70 (25 mm)
- Plates for pipe diameters up to 48"
- Plate lengths up to 16 metres and weight up to 15 tonnes
- Supply security for your projects in all conditions through our multiple mills.

Quality guarantees

All production processes are Level II automated which ensures stable mechanical and chemical properties.

In-line gauge sensors and ultrasonic testing provide accurate dimensional control and guarantee 'clean' steels.



Plate grades and dimensions

We supply line pipe grades which meet standards including API 5L, ISO 3183, EN 10208 and GOST (Russia).

API 5L/ISO 3183	Thickness (mm)	Width (mm)	Process*
Grade B X42M/L290M	6-40	1500-4000	TMCP
X52M/L360M	6-35	1500-4000	TMCP
X60M/L415M	6-30	1500-4000	TMCP
X65M/L450M	6-25	1500-4000	TMCP
X70M/L485M	6-25	1500-4000	TMCP
GOST Standards			
ST3sp – K46	6-40	1500-4000	NR
15GF – K50	6-25	1500-4000	NR
17G15 – K52	6-25	1500-4000	NR
15G2SF – K55	6-25	1500-4000	NR

* TMCP (Thermo mechanical controlled process), NR (Normalised rolled)

Mechanical properties

ISO/API Grade	YS (MPa)	TS (MPa)	Y/T (max)	CVN 0°C (J)	DWTT 0°C SA(%)
Grade B	245-450	415-760	0.93	≥ 27	≥ 85
X42M/L290M	290-495	415-760	0.93	≥ 27	≥ 85
X52M/L360M	360-530	460-760	0.93	≥ 27	≥ 85
X56M/L390M	390-545	490-760	0.93	≥ 27	≥ 85
X60M/L415M	415-565	520-760	0.93	≥ 27	≥ 85
X65M/L450M	450-600	535-760	0.93	≥ 27	≥ 85
X70M/L485M	485-635	570-760	0.93	≥ 27	≥ 85

The measured properties listed above are those in the pipe.

The measured difference in yield strength between the plate and the pipe is specific for each pipe mill and depends on several interrelated factors including:

- Bauschinger effect
- Chemical composition
- Type of manufacturing line
- Microstructure
- Diameter/thickness ratio (ratio of pipe diameter to pipe wall thickness)
- Post treatment

Therefore, an agreement between ArcelorMittal and the pipe producer on the guaranteed mechanical properties required must be reached prior to delivery of the plate.

Ultrasonic testing

Ultrasonic testing can be carried out using the following standards:

- ASTM A435
- ASTM A578 (Level A – max 100 mm; Level B – max 60 mm; Level C – 20 mm)
- BS 5996
- EN 10160
- ISO 12094

UT level/Thickness Plate

	E0	E1	E2	E3
S0	6-150 mm			
S1		6-100 mm	6-60 mm	
S2			6-40 mm*	6-40 mm*

* Between 40-60 mm with prior mill acceptance

ArcelorMittal has established a set of service supports to provide our customers with the necessary tools so they can be a leader within their business. This is achieved through:

- Adapted supply chain offer: reliable, short lead time offer, pro-active project follow-up.
- Customer partnerships: close collaboration with our customers from concept to delivery.
- R&D support: joint industry projects with our customers to develop innovative solutions and processes.

Credits

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