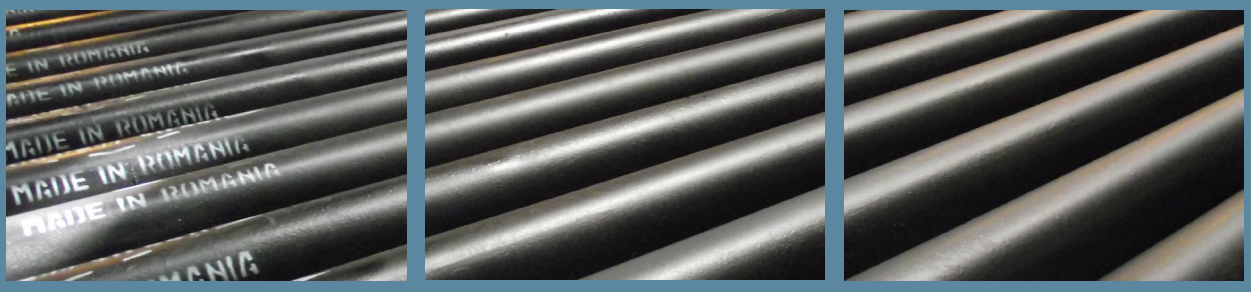
Projects Oil & Gas

ArcelorMittal

Europe Stock Program
Seamless Pipes



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Stock range

Nominal size/ inch	OD (mm)	WT (mm)	Weight (kg/m)
80 / 3"	88,9	5,49	11,29
80 / 3"	88,9	7,62	15,27
100 / 4"	114,3	6,02	16,08
100 / 4"	114,3	8,56	22,32
125 / 5"	141,3	6,3	20,97
125 / 5"	141,3	12,7	40,28
150 / 6"	168,3	7,11	28,26
150 / 6"	168,3	9,53	37,31
150 / 6"	168,3	10,97	42,56
150 / 6"	168,3	12,7	48,73
200 / 8"	219,1	8,18	42,55
200 / 8"	219,1	9,5	49,11
200 / 8"	219,1	10,31	53,09
200 / 8"	219,1	12,7	64,64
200 / 8"	219,1	15,9	79,68
200 / 8"	219,1	19,1	94,21
200 / 8"	219,1	25,4	121,33
250 / 10"	273,0	9,27	60,29
250 / 10"	273,0	12,7	81,53
250 / 10"	273,0	15,9	100,81
250 / 10"	273,0	19,1	119,60
250 / 10"	273,0	25,4	155,10

Nominal size/ inch	OD (mm)	WT (mm)	Weight (kg/m)
300 / 12"	323,9	9,52	73,81
300 / 12"	323,9	12,7	97,47
300 / 12"	323,9	15,9	120,77
300 / 12"	323,9	19,1	143,57
300 / 12"	323,9	21,44	159,92
300 / 12"	323,9	25,4	186,98
350 / 14"	355,6	9,5	81,09
350 / 14"	355,6	12,7	107,40
350 / 14"	355,6	15,9	133,20
350 / 14"	355,6	19,1	158,50
350 / 14"	355,6	25,4	206,84
400 / 16"	406,4	12,7	123,31
400 / 16"	406,4	15,9	153,12
400 / 16"	406,4	19,1	182,43
400 / 16"	406,4	21,44	203,54
400 / 16"	406,4	25,4	238,66
450 / 18"	457,0	12,7	139,16
450 / 18"	457,0	19,1	206,27
450 / 18"	457,0	25,4	270,36
500 / 20"	508,0	12,70	155,13
500 / 20"	508,0	25,4	302,30

Stock Specifications - Pipes

ArcelorMittal

High yield seamless Pipe API 5L grade L360N / X52N PSL 2

Suitable for weldable structural steels for fixed offshore structures

X52 (enhanced) high yield seamless pipes, modified to suit offshore structural purposes.
Intended for (but not limited to) use in fixed offshore structures, designed to operate in the offshore sector.

Applicable codes and standards

API 5L, 45th Edition / ISO 3183
Specification for line pipe – technical delivery conditions

Grade

L 360 N PSL 2
X 52 N PSL 2

L or X

The L or X symbol followed by respective a two or three digit number equal to the specified minimum yield strength in 1000 psi rounded down to the nearest integer or MPa.

Minimum Yield

At pipe body 360 MPa (52,200 psi)

Delivery condition

+ N Normalizing rolling
+ Q Quenched and tempered

where Q refers to a heat treatment process consisting of quench hardening followed by tempering.

PSL

PSL refers to the product specification level where PSL2 provides a more extensive chemical composition complete with a mandatory minimum fracture toughness.

- *The steel pipe mentioned herein is substantially modified from the API 5L, X52 standard.*
- *Pipes are fully killed and fine grain steel material and supplied in normalized condition.*
- *Produced by hot plug rolling process.*
- *This steel offers enhanced yield tensile ratio of 0.88 (max) and impact values verified from as low as -50 °C.*

Chemical composition with thickness (t) ≤ 25mm

Product analysis in % (All values are max. unless otherwise stated; As, Sb, Sn, Pb, Bi, Ca and B as ladle analysis only.)

C	0,16	Cu	0,20	Cr+Mo+Ni+Cu	-
Si	0,25 - 0,55	N[1]	0,014	Nb+V	0,1
Mn	1,40	Nb	0,04	Nb+V+Ti	0,12
P	0,025	Ti	0,010	CEV (IIW) see formula below	0,43[2]
S	0,008	V	0,08	Pcm see formula below	0,23[2]
Cr	0,20	As	0,02		
Mo	0,08	Sb	0,01	Bi	0,010
Ni	0,01 - 0,20	Sn	0,02	Ca	0,005
Al	0,020 - 0,055	Pb	0,01	B	0,0005

$$CEV = C + \frac{Mn}{6} + \frac{Cr+Mo+V}{5} + \frac{Ni+Cu}{15}$$

$$Pcm = C + \frac{Si}{30} + \frac{Mn+Cu+Cr}{20} + \frac{Ni}{60} + \frac{Mo}{15} + \frac{V}{10} + 5B$$

[1] *All nitrogen shall be tied up as nitrides. Al (total) to N ratio shall be at least 2.2:1*
[2] *CEV & Pcm may vary as wall thickness of pipe increases. Pcm applies for C ≤0,12%*

Mechanical properties

API 5L, enhanced grade: L360N / X52N, PSL 2

Thickness t	Yield R_{eh}	Tensile R_m	R_{eh} / R_m	CVN	El
mm	MPa	MPa	-	-50 °C	%
≤ 25	min. 360	Min. 460 Max. 760	max. 0,88	≥ 27J transverse ≥ 50J long.	min. 22

Surface

(a) All surfaces have been 100% visually inspected.
(b) The surface condition complies with API 5L para 9.10.

NDT

All pipes will be ultrasonic tested on pipe body and pipe end as per API 5L Annex E, Table E.2 and para E.3.3.
Coverage:
(a) longitudinal: 100% of the pipe surface
(b) pipe ends not scanned by automatic ultrasonic system shall be inspected by manual UT or Magnetic Particle Examination.

Hydrostatic test

(a) Test pressure maximum 20,5 bar / 2970 psi in accordance to API 5L requirements
(b) Holding time: minimum 5 seconds

Certification and traceability

All dimensions will be supplied with a 3.2 certificate according to EN 10204, endorsed by recognized and independent inspection agency. Marking shall be in SI units (X52) accordance with API requirements & mill standard.

Dimensional control

All dimensions will be supplied according to API 5L clause 9.11;
(a) Diameter & out of roundness: Table 10
(b) Wall thickness W_t: Min W_t -0,125W_t / Max W_t + 0,150W_t
(c) Straightness: ≤ 0,002 x L

Pipe Ends

Pipe ends are plain square cut, without bevel and deburred.

Protection

Pipes are supplied with clear varnish on the outside and with protective end caps.

Stock Specifications - Pipes

ArcelorMittal

High yield seamless Pipe EN 10225 Grade 355G15+N

Suitable for weldable structural steels for fixed offshore structures

S355 (enhanced) high yield seamless pipes, modified to suit offshore structural purposes.
Intended for (but not limited to) use in fixed offshore structures, designed to operate in the offshore sector.

Applicable codes and standards

EN 10225: July 2009
Weldable structural steels for fixed offshore structures - technical delivery conditions.

Grade

S 355 G 15 +N

Structural	Minimum Yield	Letter G	Delivery condition
The S symbol followed by a three digit number equal to the specified minimum yield strength in MPa.	Minimum yield in MPa for lowest thickness range.	Followed by a maximum of two digits characterizing and indicating the steel grade within the groups 1, 2 or 3, as defined per table 4 of EN 10225.	+ N Normalizing rolling + Q Quenched and tempered where Q refers to a heat treatment process consisting of quench hardening followed by tempering.

- *The steel pipe mentioned herein is substantially modified from the EN 10225 standard.*
- *Pipes are fully killed and fine grain steel material and supplied in normalized condition.*
- *Produced by hot plug rolling process.*
- *This steel offers enhanced yield tensile ratio of 0.88 (max) and impact values verified from as low as -50 °C.*

Chemical composition with thickness (t) ≤ 25mm

Product analysis in % (All values are max. unless otherwise stated; As, Sb, Sn, Pb, Bi, Ca and B as ladle analysis only.)

C	0,16	Cu	0,20	Cr+Mo+Ni+Cu	-
Si	0,25-0,55	N[1]	0,014	Nb+V	0,1
Mn	1,40	Nb	0,04	Nb+V+Ti	0,12
P	0,025	Ti	0,010	CEV (IIW) see formula below	0,43[2]
S	0,008	V	0,08	Pcm see formula below	0,23[2]
Cr	0,20	As	0,02		
Mo	0,08	Sb	0,01	Bi	0,010
Ni	0,01 - 0,20	Sn	0,02	Ca	0,005
Al	0,020 - 0,055	Pb	0,01	B	0,0005

$$CEV = C + \frac{Mn}{6} + \frac{Cr+Mo+V}{5} + \frac{Ni+Cu}{15}$$

$$Pcm = C + \frac{Si}{30} + \frac{Mn+Cu+Cr}{20} + \frac{Ni}{60} + \frac{Mo}{15} + \frac{V}{10} + 5B$$

[1] *All nitrogen shall be tied up as nitrides. Al (total) to N ratio shall be at least 2.2:1*
[2] *CEV & Pcm may vary as wall thickness of pipe increases. Pcm applies for C ≤0,12%*

Mechanical properties

S355G15+N

Thickness t	Yield R_{eh}	Tensile R_m	R_{eh} / R_m	CVN	El
mm	MPa	MPa	-	-50 °C	%
≤ 25	min. 360	Min. 460 Max. 760	max. 0,88	≥ 27J transverse ≥ 50J long.	min. 22

Surface

(a) All surfaces have been 100% visually inspected.
(b) The surface condition complies with EN 10225 para 8.5.3.1.
(c) No weld repair

NDT

All pipes will be tested on pipe body and pipe ends.
(a) Ultrasonic testing as per EN 10246-7: u2/c 5% notch
(b) Option 22: Lamination check as per EN 10246-14: u3/c 100% pipe body
(c) MPI on pipe ends over the last 400mm

Hydrostatic test

(a) Test pressure: maximum 20,5 bar
(b) Holding time: minimum 5 seconds

Certification and traceability

All dimensions will be supplied with a 3.2 certificate according to EN 10204, endorsed by recognized and independent inspection agency. Marking shall be in SI units in accordance with EN requirements & mill standard.

Dimensional control

All dimensions will be supplied according to API 5L clause 9.11 in lieu of EN 10210-2;
(a) Diameter & out of roundness: Table 10
(b) Wall thickness W_t: Min W_t -0,125W_t / Max W_t + 0,150W_t
(c) Straightness: ≤ 0,002 x L

Pipe Ends

Pipe ends are plain square cut, without bevel and deburred.

Protection

Pipes are supplied with clear varnish on the outside and with protective end caps.

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