

# 3. ArcelorMittal Roman of Romania

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## 3.1 Mill Overview

The following is intended to be an overview only, details can be found in subsequent pages herein, based on quantity, grade and size. Final commitment shall be mutually discussed and agreed prior to order placement.

- Type : Integrated (group), raw material from
  - AM Hunedoara
  - AM Ostrava
  - AM Warsavia
- Manufacturing facilities :
  - 2 x plug Mills (6" & 16")
  - 1 x Pilger (20")
- Dimension : 88.9mm to 508.0mm
- Thickness range : 2.3mm to 50.0mm
- Capacity : 320,000mt per year
- Port of Export : Constanta Port, Romania
  - Container shipment @ South Port
  - Breakbulk shipment @ North port
- Distance to Port : approx. 450km from mill
- Cargo : Breakbulk or Container possibility
  - MOQ for Breakbulk 2,000mt
- Length (Min / Max) : 3.5 to 14.5m subjected to size of pipe
- Length Tolerance : Mill standard, see tables below
- Delivery Tolerance : -0 / +1 pc, per size (OD x WT)
- Minimum Order Quantity per size :
  - 5mt for 16"mill
  - 10mt for 20"mill
- Minimum Order Quantity per PO : 22mt (one container)
- Minimum Order Quantity per size : 5mt
- Bundling: Pipes are tied by wire or tape mill standard or by agreement with producer. Max 5mt per bundle
- Peripherals Facilities : Threading for Coupling & full body ultrasonic testing, 3<sup>rd</sup> party coating option

## 3.2 Grades

Grade	Standard	Size		Remarks
		OD (mm)	WT (mm)	
<b>Ordinary Pipes</b> Grade B Grade C	ASTM A53 / ASME SA53 ASTM A106 / ASME SA106	101.6 to 508.0	4.4 to 50.1	Ordinary steam, water, gas, and air lines
<b>Linepipe</b> X42-X65	API 5L PSL 1 & 2	168.3 to 508.0	4.4 to 50.1	linepipe
L245(B) up to L450(X65)	ISO 3183	168.3 to 508.0	4.4 to 50.1	linepipe
<b>Linepipe - Sour</b> B NS; X42 NS X52 NS X60 QS; X65 QS	API 5L, PSL 2	168.3 to 508.0	4.4 to 50.1	linepipe
<b>Linepipe - Offshore</b> B NO; X42 NO X52 NO X60 QO; X65 QO	API 5L, PSL 2	168.3 to 508.0	4.4 to 50.1	linepipe
<b>Casing,</b> J55, K55, N80Q, L80-1, R95, P110	API 5CT, Threads API SC, LC, BC	168.3 to 508.0	7.72 to 16.66	See API monogram for PSL no.
<b>Hollow Sections</b> S275JRH, J0H, J2H, NLH S355JRH, J0H, J2H S460JRH, J0H, J2H	EN10210-1	168.3 to 508.0	4.4 to 50.1	Structural
<b>Boiler Pipes</b> P235 P265 P265NL  P235GH, P265GH P275NL1, P275NL2, P355NH, P355NL1, P355NL2  16Mo3, 10CrMo5-5, 13CrMo4-5, 10CrMo9- 10	EN10216 TR1, TR2      TC1, TC2	168.3 to 508.0	4.4 to 50.1	Mechanical
E235, E275, E355, E460	EN10297-1	168.3 to 508.0	4.4 to 50.1	
<b>Offshore Structural</b> S355G1+N, G14+N, G15+N	EN10225	168.3 to 508.0	4.4 to 50.1	Structural
<b>Low Temp Pipes</b> Grade 6	ASTM A333 ASME A333	168.3 to 508.0	4.4 to 50.1	Process
<b>Boiler Pipes</b> P11, P12, P22	ASTM 335	168.3 to 508.0	4.4 to 50.1	Boiler PED 97 / 23 /EC certification

### 3.3 Size Range per Product

**Table 1**

Linepipe Application

- API 5L
- ISO 3183

Mechanical Piping

- ASTM A106 / A53
- ASTM A333

**Table 2**

Boiler Pipes

- ASTM A335 (P11 & P12)

**Table 3**

OCTG Application

- API 5CT

**Table 4**

- EN10225
- EN10210

**Table 5**

Length of pipes

- Random Length Range
- Maximum Length

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Table 1: Linepipe Application & Mechanical Piping



Nom. Pipe size inches		OD mm	Sch 20		Sch 30		STD		Sch 40		Sch 60		XS		Sch 80		Sch 100		Sch 120		Sch 140		Sch 160		
API 5L	ASME		WT-mm	Length(m)	WT-mm	Length(m)	WT-mm	Length(m)	WT-mm	Length(m)	WT-mm	Length(m)	WT-mm	Length(m)	WT-mm	Length(m)	WT-mm	Length(m)	WT-mm	Length(m)	WT-mm	Length(m)	WT-mm	Length(m)	WT-mm
3 1/2	3	88.9			4.4	8 - 12	5.49	8 - 12	5.49	8 - 12			7.62	8 - 12	7.62	8 - 12							11.13	8 - 12	
4	3 1/2	101.6			4.4	8 - 12	5.74	8 - 12	5.74	8 - 12			8.08	8 - 12	8.08	8 - 12									
4 1/2	4	114.3			4.5	8 - 12	6.02	8 - 12	6.02	8 - 12			8.56	8 - 12	8.56	8 - 12			11.13	8 - 12			13.49	8 - 12	
5 9/16	5	141.3			5.6	8 - 12	6.55	8 - 12	6.55	8 - 12			9.53	8 - 12	9.53	8 - 12			12.70	8 - 12			15.88	8 - 12	
6 5/8	6	168.3			5.6	8 - 12	7.11	8 - 12	7.11	8 - 12			10.97	8 - 12	10.97	8 - 12			14.27	8 - 12			18.26	8 - 10	
8 5/8	8	219.1	6.35	8 - 12	7.04	8 - 12	8.18	8 - 12	8.18	8 - 12	10.31	8 - 12	12.70	8 - 12	12.70	8 - 12	15.09	8 - 12	18.26	8 - 10					
10 3/4	10	273.0			7.80	8 - 12	9.27	8 - 12	9.27	8 - 12	12.70	8 - 12	12.70	8 - 12	15.09	8 - 12	18.26	8 - 12	21.44	8 - 10					
12 3/4	12	323.9			8.38	8 - 12	9.53	8 - 12	10.31	8 - 12	14.27	8 - 12	12.70	8 - 12	17.48	8 - 12	21.44	8 - 12							
14	14	355.6			9.53	8 - 12	9.53	8 - 12	11.13	8 - 12	15.09	8 - 12	12.70	8 - 12	19.05	8 - 10									
16	16	406.4							12.70	8 - 12	16.66	8 - 12	12.70	8 - 12	21.44	8 - 12	26.19	7 - 10	30.96	6 - 9	36.53	5 - 8	40.49	5 - 8	
18	18	457.2							14.27	8 - 12	19.05	8 - 12	12.70	8 - 12	23.88	8 - 12	29.36	6 - 10	34.93	6 - 8	39.67	4 - 7	45.24	4 - 6	
20	20	508.0			12.70	8 - 12			15.09	8 - 12	20.62	10 - 12	12.70	8 - 12	26.19	8 - 10	32.54	7 - 9	38.10	6 - 8	44.45	5 - 7	50.01	4 - 6	

Category - A	Most Favourable
Category - B	Favourable
Category - C	Least Favourable

Line Pipes Grades at AMTPR
Grade B
X 42
X 46
X 52
X60, Normalised, check for special steel
X65,Q&T - to check steel chemistry
X60/65 - offshore, longer lead time

- Note**
- The lengths in 20"Mill is for info only. Final length for each pipe dimension will be established by Production department and 20"Mill shop, in concordance with the dimension of ingot used (polygon / length).
  - Items in red is feasible but not desirable

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Table 2: Boiler Pipes - ASTM A335, P-11 &amp; P-12

OD	Wall thickness (mm)																										
	10.31	10.97	11.13	12.70	14.27	15.09	16.66	17.48	18.26	19.05	20.62	21.44	23.01	23.88	25.40	26.19	27.79	28.58	29.36	30.96	32.54	34.93	39.67	44.45	45.24	50.01	
168.3	X	X	X	X	X	X	X	X	X	X	X	X	X														
219.1	X	X	X	X	X	X	X	X	X	X	X	X	X														
273.0				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
323.9				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
355.6				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
406.4				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
457.2				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
508.0				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

**Note**

- 1 PED Certification for Italy market is available with us & AD 2000 W4 certification from TÜV
- 2 P91 under homologation
- 3 X denotes that size the defined within the respective cell is confirmed (i.e can be manufactured in Roman Mill)
- 4 

X
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 denotes manufactured in 16"mill - plug
- 5 

X
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 denotes manufactured in 20"mill - pilger

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Table 3: OCTG



Diameter																						
inches	mm	Wall			Wall			Wall			Wall			Wall			Wall			Wall		
		WT-mm	PPF	Kg/m	WT-mm	PPF	Kg/m	WT-mm	PPF	Kg/m	WT-mm	PPF	Kg/m	WT-mm	PPF	Kg/m	WT-mm	PPF	Kg/m	WT-mm	PPF	Kg/m
4 1/2	114.3	6.35	11.6	17.3	7.37	13.5	20.1	8.56	15.1	22.5												
5	127	6.43	13	19.4	7.52	15	22.3	9.19	18	26.8	11.10	21.4	31.9	12.14	23.2	34.6	12.70	24.1	35.9			
5 1/2	139.7	6.98	15.5	23.1	7.72	17	25.30	9.17	20	29.8	10.54	23	34.3	12.70	26.8	39.9	14.27	29.7	44.2			
6 5/8	168.3	7.32	20	29.8	8.94	24	35.7	10.59	28	41.7	12.06	32	47.7									
7	177.8	8.05	23	34.3	9.19	26	38.7	10.36	29	43.2	11.51	32	47.7	12.65	35	52.1	13.72	38	56.6			
7 5/8	193.7	8.33	26.4	39.3	9.52	29.7	44.2	10.92	33.7	50.2	12.70	39	58.1	14.27	42.8	63.8						
8 5/8	219.1	7.72	28	41.7	8.94	32	47.7	10.16	36	53.6	11.43	40	59.6	12.70	44	65.6	14.15	49	73			
9 5/8	244.5	8.94	36	53.6	10.03	40	59.6	11.05	43.5	64.8	11.99	47	70	13.84	53.5	79.7	15.11	58.4	87	15.47	59.4	88.5
10 3/4	273.1	8.89	40.5	60.3	10.16	45.5	67.8	11.43	51	76	12.57	55.5	82.7	13.84	60.7	90.4	15.11	65.7	97.9			
11 3/4	298.5	9.53	47	70	11.05	54	80.4	12.42	60	89.4	13.56	65	96.8	14.78	71	105.8						
13 3/8	339.7	9.65	54.5	81.2	10.92	61	90.9	12.19	68	101.3	13.06	72	107.2									
16	406.4	11.13	75	111.7	12.57	84	125.1	16.66	109	162.4												
18 5/8	473.1	12.70	96.8	144.1																		
20	508	12.70	106.5	158.6	16.13	133	198.1															

	Category - A	Most Favourable
	Category - B	Favourable
	Category - C	Least Favourable

Note

- For 6"Mill and 16"Mill, the range length for casing is R3 (10.36 - 12.8m) ;
- For 20"Mill the range length for casing is R2 (7.62 - 10.36 m) for 18<sup>5/8</sup> x 12.7 ; 20" x 12.7 and;
- R3 (10.36 - 12.8 m) for 20" x 16.13
- Items in red is feasible but not favourable

OCTG
Grades at AMTPR
J / K 55
N 80 Q
L 80 type1
P110
C 90 ; C 96

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Table 4: Structural pipes EN 10225



O.D (mm)	Wall Thickness (mm)																				
	6.3	7.1	8	8.8	10	11	12	12.5	14.2	16	17.5	20	22.2	25	28	30	32	36	40	45	50
168.3			10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	8 - 10	8 - 10	6 - 8									
177.8			10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	9 - 11	8 - 10	7 - 9	7 - 9								
193.7	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12							
219.1	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12							
244.5	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12							
273			10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	9 - 11	8 - 10	8 - 10	7 - 9	6 - 8	5 - 7	5 - 7
299				10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	9 - 11	7 - 9	7 - 9	6 - 8	5 - 7	5 - 7	4 - 6
323.9				10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	9 - 11	8 - 10	8 - 10	7 - 9	6 - 8	5 - 7	5 - 7
340				10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	9 - 11	9 - 11	7 - 9	6 - 8	6 - 8	5 - 7	5 - 7
355.6					10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	8 - 10	7 - 9	7 - 9	6 - 8	5 - 7	5 - 7	4 - 6
368					10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	8 - 10	7 - 9	7 - 9	6 - 8	5 - 7	5 - 7	4 - 6
377					10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	7 - 9	7 - 9	6 - 8	6 - 8	5 - 7	4 - 6	4 - 6
406.4					10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	9 - 11	9 - 11	8 - 10	7 - 9	6 - 8	6 - 8
419					10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	9 - 11	8 - 10	8 - 10	7 - 9	6 - 8	5 - 7
457					10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	9 - 11	8 - 10	7 - 9	7 - 9	7 - 9	5 - 7
473					10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	9 - 11	8 - 10	8 - 10	8 - 10	6 - 8	5 - 7	5 - 7
508					10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	10 - 12	8 - 10	8 - 10	8 - 10	6 - 8	6 - 8	5 - 7	4 - 6

- Note
- 1 xx - xx Section, sizes manufactured in 16° Plug Mill
  - 2 xx - xx Section, sizes manufactured in 20° Pilger Mill

Table 5: Random length range and / max length

OD X WT , mm	8.8	9	9.5	10.0	11.0	12.5	14.2	16.0	17.5	19.5
273.1	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7
298.5	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7
323.9	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7
340.0			5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7
355.6			5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7
368.0			5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7
377.0			5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7
406.4			5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7
419.0			5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7
426.0			5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7
457.2			5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7
473.0			5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7
508.0			5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7

OD X WT , mm	20	22.2	25	28.0	30.0	32	36	40.0	45.0	50.0
273.1	5-7/max 12,7	5-7/max 12,7	10 -12	9 -11	8 - 10	8 -10	7 - 9	6 - 8	5 - 7	5 - 7
298.5	5-7/max 12,7	5-7/max 12,7	10 -12	9 -11	7 - 9	7 - 9	6 - 8	5-7	5 - 7	4 - 6
323.9	5-7/max 12,7	5-7/max 12,7	10 -12	9 -11	8 - 10	8 - 10	7 - 9	6 - 8	5 - 7	5 - 7
340.0	5-7/max 12,7	5-7/max 12,7	9 -11	9 -11	9 -11	7 - 9	6 - 8	6 - 8	5 - 7	5 - 7
355.6	5-7/max 12,7	5-7/max 12,7	9 -11	8 - 10	7 - 9	7 - 9	6 - 8	5 - 7	5 - 7	4 - 6
368.0	5-7/max 12,7	5-7/max 12,7	9 -11	8 - 10	7 - 9	7 - 9	6 - 8	5-7	5 - 7	4 - 6
377.0	5-7/max 12,7	5-7/max 12,7	8 - 10	7 - 9	7 - 9	6 - 8	6 - 8	5 - 7	4 - 6	4 - 6
406.4	5-7/max 12,7	5-7/max 12,7	5-7/max 12,7	10 -12	9 -11	9 -11	8 - 10	7 - 9	6 - 8	6 - 8
419.0	5-7/max 12,7	5-7/max 12,7	10 -12	10 -12	9 -11	8 - 10	8 - 10	7 - 9	6 - 8	5 - 7
426.0	5-7/max 12,7	5-7/max 12,7	10 -12	10 -12	9 -11	8 - 10	7 - 9	7 - 9	7 - 9	5 - 7
457.2	5-7/max 12,7	5-7/max 12,7	10 -12	9 -11	8 - 10	8 - 10	8 - 10	6 - 8	5 - 7	5 - 7
473.0	5-7/max 12,7	5-7/max 12,7	9 -11	8 - 10	8 - 10	8 - 10	6 - 8	6 - 8	5 - 7	5 - 7
508.0	5-7/max 12,7	5-7/max 12,7	9 -11	8 - 10	7 - 9	7 - 9	6 - 8	5 - 7	5 - 7	4 - 6

Note

- 1 16" mill
- 2 20" mill