


10" TRUE SCH 80 SEAMLESS LT CS  
PIPE A/SA333 GR 6 BE : DRL  
(.593"WT)

Devon PO# 4500092097 Item# 40  
Heat Number: 58651  
Trans Am Piping Products Ltd.  
3  
Rev'd By: VI  
Shipment/Seq #: S 17 - 1871

<b>Manufacturers:</b> ArcelorMittal Tubular Products Roman S.A. STEFAN CEL MARE ST. 15A/1 ROMAN, NEAMT COUNTY, ROMANIA		<b>MILL TEST CERTIFICATE</b> according to EN 10204/3.1/2004				Page 1/7 B 11757/1 31.03.2017		 <b>ArcelorMittal</b>	
<b>Buyer:</b> ARCELORMITTAL INTERNATIONAL AMERICA, LLC 1 SOUTH DEARBORN STREET, 13TH FLOOR CHICAGO, IL 60603-9888 USA		SEAMLESS STEEL PIPES				Total weight: 77.288 tons 170 391 lbs	Total Length: 805.26 meters 2 641.90 feet	Pieces 69	Bundles -
<b>Buyer's reference:</b> AMI ORDER: 10100966/ 176261-00 <b>Contract</b> 50003033		<b>Standard:</b> ASTM A 106/A 106M-2015; ASME SA 106/SA 106M-2015; ASTM A 333/A 333M-2016; ASME SA 333/SA 333M-2015; ASTM A 53/A 53M-2012; ASME SA 53/SA 53M-2015; NACE MR 0175/ISO 15156-1&2-2015; ANSI/ NACE MR 0103-ISO 17945-2015; ASME B36.10 M-2015				Dimensions: 273.00 x 15.09 mm 10.750 x 0.594 inch		Schedule: 80	
		Length: 11.27 - 12.20 m		36.98 - 40.03 feet					
		Steel Grade:		GrB/Gr6					
		Hydro Test:		Bar 159		PSI 2321		MPa 15.9	
		Time(sec) 5							
Item 1		Item Client -							


**Chemical Analysis(%)**

Heat	Bulletin No.	Product Req.	Max Min	C	Mn	Si	S	P	Cr	Ni	Cu	Mo	V	Nb
				0.30	1.06	-	0.025	0.025	0.30	0.40	0.40	0.12	0.080	0.020
58203		Heat analysis		0.14	0.87	0.18	0.005	0.007	0.10	0.07	0.17	0.01	0.009	0.003
58650		Heat analysis		0.15	0.88	0.20	0.002	0.010	0.11	0.08	0.16	0.02	0.005	0.002
58651		Heat analysis		0.14	0.86	0.21	0.002	0.013	0.12	0.07	0.14	0.01	0.005	0.001
58203	16-1867	Product analysis		0.14	0.85	0.18	0.005	0.008	0.10	0.06	0.16	0.00	0.004	0.001
58203	16-1867	Product analysis		0.14	0.85	0.17	0.005	0.008	0.10	0.06	0.17	0.00	0.004	0.001
58650	17-300	Product analysis		0.14	0.84	0.18	0.002	0.009	0.10	0.06	0.14	0.01	0.000	0.000
58650	17-300	Product analysis		0.14	0.84	0.18	0.002	0.010	0.10	0.06	0.14	0.01	0.000	0.000
58651	17-147	Product analysis		0.14	0.85	0.22	0.002	0.012	0.06	0.05	0.14	0.01	0.001	0.000
58651	17-147	Product analysis		0.14	0.85	0.22	0.002	0.011	0.06	0.05	0.15	0.01	0.001	0.000

We state on our sole responsibility that the delivered products are in conformity with the order requirements.

Formular 12A. rev.9

Quality Control  
 Eng. Damoc Ciprian  


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					B 11757/1														
	31.03.2017																		
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					77.288 tons 170 391 lbs	805.26 meters 2 641.90 feet	69	-											
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	Dimensions: 273.00 x 15.09 mm 10.750 x 0.594 inch		Schedule: 80		Steel Grade:		GrB/Gr6												
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Item	Item Client																		
1	-																		
Bar	PSI	MPa	Time(sec)																
159	2321	15.9	5																

### Chemical Analysis(%)

Heat	Bulletin No.	Product Req.	Max	Min	Cr + Mo + Ni + Cu + V	
					1.000	
58203		Heat analysis			0.359	
58650		Heat analysis			0.375	
58651		Heat analysis			0.345	
58203	16-1867	Product analysis			0.324	
58203	16-1867	Product analysis			0.334	
58650	17-300	Product analysis			0.310	
58650	17-300	Product analysis			0.310	
58651	17-147	Product analysis			0.261	
58651	17-147	Product analysis			0.271	


$CE_{pcm} = C+Si/30+Mn/20+Cu/20+Ni/60+Cr/20+Mo/15+V/10+5B$ 
 $CE_S = C+Mn/6$ 
 $CE_{rw} = C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15$

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Formular 12A. rev.9

Quality Control Representative  
 Eng. Damoc Ciprian




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<b>Buyer:</b> ARCELORMITTAL INTERNATIONAL AMERICA, LLC 1 SOUTH DEARBORN STREET, 13TH FLOOR CHICAGO, IL. 60603-9888 USA		SEAMLESS STEEL PIPES				Total weight: 77.288 tons 170 391 lbs	Total Length: 805.26 meters 2 641.90 feet	Pieces 69	Bundles -				
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		Length: 11.27 - 12.20 m		36.98 - 40.03 feet		<b>Steel Grade:</b> GrB/Gr6							
		<b>Hydro Test:</b>		Bar 159	PSI 2321	MPa 15.9	Time(sec) 5						
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1	-												


**Tensile Test**

Heat	Orientation	Length		Width/Diameter		Thickness		Section		Mechanical test Bulletin No.	YS MPa	YS (PSI:1000)	UTS MPa	UTS (PSI:1000)	E %	YS/UTS max: -
		mm	inch	mm	inch	mm	inch	mm²	inch²							
58203	Longitudinal Flat	50.8	2	40.00	1.575	16.30	0.642	652.0	25.669	17-255B	342.00	49.6	477.00	69.2	53.80	0.72
58203	Longitudinal Flat	50.8	2	40.00	1.575	16.20	0.638	648.0	25.512	17-255B	326.00	47.3	473.00	68.6	54.50	0.69
58203	Longitudinal Flat	50.8	2	40.00	1.575	16.00	0.630	640.0	25.197	17-313B	345.00	50.0	490.00	71.1	51.40	0.70
58203	Longitudinal Flat	50.8	2	40.00	1.575	16.50	0.650	660.0	25.984	17-313B	343.00	49.7	477.00	69.2	51.30	0.72
58650	Longitudinal Flat	50.8	2	40.00	1.575	16.50	0.650	660.0	25.984	17-255B	340.00	49.3	492.00	71.4	56.10	0.69
58650	Longitudinal Flat	50.8	2	40.00	1.575	16.30	0.642	652.0	25.669	17-255B	345.00	50.0	495.00	71.8	53.50	0.70
58650	Longitudinal Flat	50.8	2	40.00	1.575	16.30	0.642	652.0	25.669	17-306B	358.00	51.9	495.00	71.8	52.20	0.72
58650	Longitudinal Flat	50.8	2	40.00	1.575	16.00	0.630	640.0	25.197	17-306B	351.00	50.9	487.00	70.6	52.60	0.72
58650	Longitudinal Flat	50.8	2	40.00	1.575	16.50	0.650	660.0	25.984	17-313B	363.00	52.6	506.00	73.4	52.90	0.72
58650	Longitudinal Flat	50.8	2	40.00	1.575	16.30	0.642	652.0	25.669	17-313B	365.00	52.9	499.00	72.4	51.70	0.73
58651	Longitudinal Flat	50.8	2	40.00	1.575	16.30	0.642	652.0	25.669	17-272B	335.00	48.6	475.00	68.9	50.10	0.71
58651	Longitudinal Flat	50.8	2	40.00	1.575	16.40	0.646	656.0	25.827	17-255B	319.00	46.3	471.00	68.3	52.80	0.68
58651	Longitudinal Flat	50.8	2	40.00	1.575	16.50	0.650	660.0	25.984	17-255B	343.00	49.7	481.00	69.8	52.30	0.71
58651	Longitudinal Flat	50.8	2	40.00	1.575	16.60	0.654	664.0	26.142	17-306B	339.00	49.2	487.00	70.6	50.30	0.70
58651	Longitudinal Flat	50.8	2	40.00	1.575	17.00	0.669	680.0	26.772	17-306B	346.00	50.2	490.00	71.1	50.40	0.71
58651	Longitudinal Flat	50.8	2	40.00	1.575	16.30	0.642	652.0	25.669	17-313B	366.00	53.1	489.00	70.9	50.30	0.75
58651	Longitudinal Flat	50.8	2	40.00	1.575	16.40	0.646	656.0	25.827	17-313B	355.00	51.5	487.00	70.6	52.70	0.73

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Quality Control Representative  
 Eng. Damoc Ciprian



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						B 11757/1			
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		<b>Hydro Test:</b>		Bar	PSI	MPa	Time(sec)		
				159	2321	15.9	5		
Item	Item Client								
1	-								

### Impact Test


Heat	Impact Test Bulletin No.	Orientation	Size (mm)	Temp. (°C)	Req.KV (min. J)	KV values (J)			Req.Avr. (min. J)	Avr. fracture energy (J)	KCU min:-J/cm² T:°C			Shear Area min. %			Lateral Expansion min. mm		
58203	17-1140	Longitudinal	10x10x55	-45	14.0	226	145	145	18.0	172	-	-	-	100	95	95	1.95	1.29	1.29
58203	17-1331	Longitudinal	10x10x55	-45	14.0	253	166	122	18.0	180	-	-	-	100	95	90	2.25	1.56	1.10
58650	17-1140	Longitudinal	10x10x55	-45	14.0	216	144	153	18.0	171	-	-	-	100	95	95	1.91	1.28	1.37
58650	17-1319	Longitudinal	10x10x55	-45	14.0	141	152	140	18.0	144	-	-	-	95	95	95	1.26	1.36	1.25
58650	17-1331	Longitudinal	10x10x55	-45	14.0	177	167	254	18.0	199	-	-	-	95	95	100	1.62	1.55	2.22
58651	17-1217	Longitudinal	10x10x55	-45	14.0	159	102	139	18.0	133	-	-	-	95	90	95	1.42	0.88	1.23
58651	17-1140	Longitudinal	10x10x55	-45	14.0	144	282	260	18.0	229	-	-	-	100	100	100	1.28	2.10	2.04
58651	17-1319	Longitudinal	10x10x55	-45	14.0	151	157	250	18.0	186	-	-	-	95	95	100	1.35	1.40	2.02
58651	17-1331	Longitudinal	10x10x55	-45	14.0	111	174	236	18.0	174	-	-	-	90	95	100	0.85	1.68	2.17

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Formular 12A, rev.9

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1		-				159	2321	15.9	5		

### Hardness Test

Heat	Hardness Test Bulletin No.	HB max.-	HV 10 max.-	HV 10 max.-					HRC max.22
				OD	Midwall	ID	End A	End B	
58203	17-597	-	-	-	-	-	-	-	22
58203	17-716	-	-	-	-	-	-	-	22
58650	17-884	-	-	-	-	-	-	-	22
58650	17-710	-	-	-	-	-	-	-	22
58650	17-884	-	-	-	-	-	-	-	22
58651	17-597	-	-	-	-	-	-	-	22
58651	17-658	-	-	-	-	-	-	-	22
58651	17-710	-	-	-	-	-	-	-	22
58651	17-716	-	-	-	-	-	-	-	22

### Technological/Microstructure Test


Heat	Flattening Test Bulletin No.	Flattening Test
58203	17-1030	OK
58203	17-1030	OK
58203	17-1251	OK
58203	17-1251	OK
58650	17-1030	OK

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Formular 12A rev 9

Quality Control Rep  
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<b>Item</b>		<b>Item Client</b>		<b>Hydro Test:</b>	<b>Bar</b>	<b>PSI</b>	<b>MPa</b>	<b>Time(sec)</b>	<b>Steel Grade:</b> GrB/Gr6		
1		-			159	2321	15.9	5			

Technological/Microstructure Test

58650	17-1030	OK
58650	17-1234	OK
58650	17-1234	OK
58650	17-1251	OK
58650	17-1251	OK
58651	17-1105	OK
58651	17-1030	OK
58651	17-1030	OK
58651	17-1234	OK
58651	17-1234	OK
58651	17-1251	OK
58651	17-1251	OK


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Formular 12A, rev.9

Quality Control Representative  
Eng. Damoc Ciprian

*1 am*



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<b>Item</b>	<b>Item Client</b>	<b>Hydro Test:</b>	<b>Bar</b>	<b>PSI</b>	<b>MPa</b>	<b>Time(sec)</b>	<b>Steel Grade:</b> GrB/Gr6				
1	-		159	2321	15.9	5					

### Heat

Heat	Pieces	Length (m)	Weight (kg)
58203	9	-	-
58650	12	-	-
58651	48	-	-

**Remarks** Manufacturing process – hot rolling.  
Hot finished, steel is fully killed and produced by electric furnace, ArcelorMittal Hunedoara S A – Piata Iancu de Hunedoara, nr.1 – Hunedoara-Romania .  
Heat treatment: normalizing at temperature 910°C - 920°C, time soaking 13-14 min.; 35 min.  
NDT full body:  
- 100% ultrasonic inspection for longitudinal defects, outside and inside with reference standard 12.5% –satisfactory.  
- ultrasonic thickness measurements, the coverage with 100% of the pipe surface.  
NDT on the pipe ends:  
- 100% ultrasonic inspection for longitudinal defects, outside and inside with reference standard 12.5% –satisfactory.  
Hydrostatic test hold for 5 sec. no leakage noticed.

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Formular 12A, rev.9

