



STEEL LTD.,

ORIGINAL

Vijayanagar Works, Vijayanagar Post, Bellary Dist, Karnataka INDIA  
Regd. Office : JSW Centre, Bandra Kurla Complex, Bandra(East), Mumbai 400051

MILL TEST CERTIFICATE

TO.

SALZGITTER MANNESMANN INTERNATIONAL GMBH  
SCHWANNSTR 12  
40476 DUSSELDORF  
GERMANY

Date: 27-03-2017

Contract No. JSW/HR/2016-17/2761 DT. 23.02.2017

Specification : EN 10149-2-2005, S355 MC

TC No: Salzgitter/Exp16-17/Sap0001787A  
Product: Hot Rolled Steel Coils

Castl. Heat No.	Coil No.	Chemical Composition										Mechanical properties							Bend test 0.5t, 180°								
		C	Mn	S	P	Si	Al	Cr	Ni	Nb	Mo	V	Ti	Cu	N	Si+2.SP	CEV	YS MPa		UTS MPa	EL %	Impact -20°C	Bend test 0.5t, 180°				
																								%	%	%	%
		0.12	1.50	0.020	0.025	0.030	-	-	-	0.090	-	0.20	0.15	-	-	-	0.090	0.400	-	550	-	430	23	40J	-		
		Metric																									
		Tonnes																									
		Weight(Net)																									
		Nominal Size (mm)																									
		T	X	W	X	L																					
		Specifications requirements:-																									
		(Reference: As per TDC no.: IM/JSW/2010-11/HR/133 Dt.: 30-10-2010)																									
D705524	17536965	3.00	x	1.500	x	coil	28.270	0.076	0.590	0.012	0.027	0.034	0.012	0.011	0.025	0.001	0.001	0.004	0.006	0.0038	0.057	0.174	437	485	36	Pass	
E705525	17536956	4.00	x	1.500	x	coil	28.140	0.089	0.590	0.015	0.010	0.045	0.014	0.011	0.021	0.001	0.001	0.001	0.006	0.0033	0.048	0.187	414	489	38	Pass	
G705521	17536957	4.00	x	1.500	x	coil	28.420	0.070	0.650	0.005	0.015	0.011	0.031	0.011	0.012	0.021	0.001	0.001	0.001	0.006	0.0033	0.048	0.187	431	489	38	Pass
E705525	17536958	4.00	x	1.500	x	coil	28.330	0.089	0.590	0.005	0.015	0.010	0.045	0.014	0.011	0.021	0.001	0.001	0.001	0.005	0.0033	0.048	0.187	431	489	38	Pass
G705521	17536959	4.00	x	1.500	x	coil	28.255	0.070	0.650	0.005	0.015	0.011	0.031	0.011	0.012	0.021	0.001	0.001	0.001	0.006	0.0033	0.049	0.178	414	462	30	Pass
D705416	17536320	5.00	x	2.000	x	coil	28.300	0.074	1.040	0.010	0.010	0.026	0.014	0.012	0.026	0.001	0.002	0.012	0.007	0.0050	0.035	0.247	444	506	35	Pass	
F705399	17536321	5.00	x	2.000	x	coil	28.190	0.071	1.040	0.006	0.012	0.013	0.039	0.014	0.011	0.027	0.001	0.001	0.018	0.006	0.0048	0.043	0.244	476	530	32	Pass
F705399	17536322	5.00	x	2.000	x	coil	28.180	0.071	1.040	0.006	0.012	0.013	0.039	0.014	0.011	0.027	0.001	0.001	0.018	0.006	0.0048	0.043	0.244	476	530	32	Pass
D705409	17536323	5.00	x	2.000	x	coil	28.200	0.083	1.050	0.009	0.014	0.016	0.042	0.010	0.011	0.030	0.001	0.002	0.019	0.007	0.0049	0.051	0.258	492	544	31	Pass
D705416	17536324	5.00	x	2.000	x	coil	28.400	0.074	1.040	0.010	0.010	0.026	0.014	0.012	0.026	0.001	0.002	0.012	0.007	0.0050	0.035	0.247	444	506	35	Pass	
D705416	17536325	5.00	x	2.000	x	coil	28.260	0.074	1.040	0.010	0.010	0.026	0.014	0.012	0.026	0.001	0.002	0.012	0.007	0.0050	0.035	0.247	444	506	35	Pass	
F705384	17536326	5.00	x	2.000	x	coil	28.230	0.081	1.020	0.008	0.010	0.010	0.043	0.013	0.010	0.030	0.001	0.001	0.019	0.007	0.0034	0.035	0.251	499	548	37	Pass
F705384	17536327	5.00	x	2.000	x	coil	28.320	0.081	1.020	0.008	0.010	0.010	0.043	0.013	0.010	0.030	0.001	0.001	0.019	0.007	0.0034	0.035	0.251	499	548	37	Pass
F705384	17536328	5.00	x	2.000	x	coil	28.320	0.081	1.020	0.008	0.010	0.010	0.043	0.013	0.010	0.030	0.001	0.001	0.019	0.007	0.0034	0.035	0.251	499	548	37	Pass
G705379	17536329	5.00	x	2.000	x	coil	28.190	0.086	1.020	0.009	0.018	0.014	0.042	0.013	0.010	0.028	0.001	0.001	0.015	0.006	0.0045	0.039	0.256	471	529	26	Pass
F705384	17536330	5.00	x	2.000	x	coil	28.185	0.081	1.020	0.008	0.010	0.010	0.043	0.013	0.010	0.030	0.001	0.001	0.019	0.007	0.0034	0.035	0.251	499	548	37	Pass
E705388	17536331	5.00	x	2.000	x	coil	28.170	0.074	1.010	0.009	0.013	0.016	0.045	0.012	0.012	0.028	0.001	0.001	0.019	0.006	0.0042	0.049	0.242	479	532	32	Pass
E705395	17536332	5.00	x	2.000	x	coil	27.200	0.083	1.030	0.008	0.017	0.011	0.043	0.008	0.012	0.026	0.001	0.001	0.019	0.006	0.0046	0.054	0.255	462	523	30	Pass
G705517	17536887	5.00	x	1.500	x	coil	28.115	0.082	0.830	0.006	0.017	0.013	0.045	0.011	0.011	0.027	0.001	0.001	0.018	0.007	0.0043	0.056	0.220	418	490	37	Pass
G705517	17536888	5.00	x	1.500	x	coil	28.330	0.082	0.830	0.006	0.017	0.013	0.045	0.011	0.011	0.027	0.001	0.001	0.018	0.007	0.0043	0.056	0.220	418	490	37	Pass



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TO.  
 SALZGITTER MANNESMANN INTERNATIONAL GMBH  
 SCHWANNSTR 12  
 40476 DUSSELDORF  
 GERMANY

Date: 27-03-2017  
 Contract No. JSW/HRS/2016-17/2761 DT. 23.02.2017  
 Specification : EN 10149-2-2005. S355 MC

TC No: Salzgitter/Exp16-17/Sap0001787A  
 Product: Hot Rolled Steel Coils

Castl Heat No.	Coil No.	Nominal Size (mm)			Metric Tonnes	Chemical Composition														Mechanical properties										Bend test 0.5t, 180°
		T	X	L		C	Mn	S	P	Si	Al	Cr	Ni	Nb	Mo	V	Ti	Cu	N	Si+2.SP	CEV	YS MPa	UTS MPa	EL %	Impact -20°C	Bend test 0.5t, 180°				
																											R1	R2	R3	
G705517	17536889	5.00	x	1,500	x	coil	28.370	0.082	0.830	0.006	0.017	0.013	0.045	0.011	0.011	0.027	0.001	0.001	0.001	0.018	0.007	0.0043	0.056	0.220	418	490	37	Pass		
G705517	17536890	5.00	x	1,500	x	coil	28.420	0.082	0.830	0.006	0.017	0.013	0.045	0.011	0.011	0.027	0.001	0.001	0.001	0.018	0.007	0.0043	0.056	0.220	418	490	37	Pass		
G705513	17536891	5.00	x	1,500	x	coil	28.380	0.080	0.820	0.008	0.018	0.019	0.045	0.014	0.011	0.030	0.001	0.003	0.019	0.006	0.0045	0.064	0.217	453	514	30	Pass			
G705513	17536892	5.00	x	1,500	x	coil	28.410	0.080	0.820	0.008	0.018	0.019	0.045	0.014	0.011	0.030	0.001	0.003	0.019	0.006	0.0045	0.064	0.217	453	514	30	Pass			
G705513	17536893	5.00	x	1,500	x	coil	28.360	0.080	0.820	0.008	0.018	0.019	0.045	0.014	0.011	0.030	0.001	0.003	0.019	0.006	0.0045	0.064	0.217	453	514	30	Pass			
G705513	17536894	5.00	x	1,500	x	coil	28.250	0.080	0.820	0.008	0.018	0.019	0.045	0.014	0.011	0.030	0.001	0.003	0.019	0.006	0.0045	0.064	0.217	453	514	30	Pass			
G705513	17536895	5.00	x	1,500	x	coil	28.390	0.080	0.820	0.008	0.018	0.019	0.045	0.014	0.011	0.030	0.001	0.003	0.019	0.006	0.0045	0.064	0.217	453	514	30	Pass			
G705517	17536896	5.00	x	1,500	x	coil	28.430	0.082	0.830	0.006	0.017	0.013	0.045	0.011	0.011	0.027	0.001	0.001	0.001	0.018	0.007	0.0043	0.056	0.220	418	490	37	Pass		
G705509	17536952	5.00	x	1,500	x	coil	24.160	0.090	0.850	0.008	0.013	0.012	0.043	0.010	0.012	0.027	0.001	0.001	0.001	0.017	0.006	0.0048	0.045	0.232	454	510	29	Pass		
D705503	17536953	5.00	x	1,500	x	coil	27.140	0.081	0.860	0.008	0.017	0.015	0.042	0.012	0.011	0.030	0.001	0.003	0.016	0.006	0.0046	0.058	0.224	458	525	24	Pass			
G705509	17536954	5.00	x	1,500	x	coil	24.210	0.090	0.850	0.008	0.013	0.012	0.043	0.010	0.012	0.027	0.001	0.001	0.001	0.017	0.006	0.0048	0.045	0.232	454	510	29	Pass		
G705509	17536955	5.00	x	1,500	x	coil	24.260	0.090	0.850	0.008	0.013	0.012	0.043	0.010	0.012	0.027	0.001	0.001	0.001	0.017	0.006	0.0048	0.045	0.232	454	510	29	Pass		
G705509	17537531	5.00	x	1,500	x	coil	24.175	0.090	0.850	0.008	0.013	0.012	0.043	0.010	0.012	0.027	0.001	0.001	0.001	0.017	0.006	0.0048	0.045	0.232	454	510	29	Pass		
G703969	17538039	5.00	x	1,500	x	coil	27.950	0.084	0.800	0.008	0.010	0.015	0.045	0.013	0.010	0.022	0.001	0.001	0.001	0.022	0.006	0.0070	0.040	0.217	406	478	37	Pass		
G705338	17535932	6.00	x	1,500	x	coil	27.070	0.083	1.040	0.007	0.010	0.010	0.038	0.014	0.013	0.027	0.001	0.002	0.019	0.006	0.0039	0.048	0.256	484	538	31	210	200	Pass	
G705338	17535933	6.00	x	1,500	x	coil	26.950	0.083	1.040	0.007	0.010	0.010	0.038	0.014	0.013	0.027	0.001	0.002	0.019	0.006	0.0039	0.048	0.256	484	538	31	210	200	Pass	
G705338	17535934	6.00	x	1,500	x	coil	27.130	0.083	1.040	0.007	0.010	0.010	0.038	0.014	0.013	0.027	0.001	0.002	0.019	0.006	0.0039	0.048	0.256	484	538	31	210	200	Pass	
G705338	17535935	6.00	x	1,500	x	coil	27.020	0.083	1.040	0.007	0.010	0.010	0.038	0.014	0.013	0.027	0.001	0.002	0.019	0.006	0.0039	0.048	0.256	484	538	31	210	200	Pass	
E705329	17535936	6.00	x	1,500	x	coil	27.055	0.078	1.040	0.008	0.015	0.010	0.041	0.013	0.008	0.028	0.001	0.001	0.001	0.020	0.006	0.0038	0.048	0.251	481	538	28	210	200	Pass
G705334	17535937	6.00	x	1,500	x	coil	27.140	0.076	1.050	0.010	0.018	0.012	0.045	0.011	0.013	0.024	0.001	0.003	0.015	0.006	0.0040	0.057	0.251	459	522	34	210	200	Pass	









Vijayanagar Works, Vijayanagar Post, Bellary Dist, Karnataka INDIA  
 Regd. Office : JSW Centre, Bandra Kurla Complex, Bandra(East), Mumbai 400051

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SALZGITTER MANNESMANN INTERNATIONAL GMBH  
 SCHWANNSTR 12  
 40476 DUSSELDORF  
 GERMANY

Date: 27-03-2017

Contract No. JSW/HRS/2016-17/2761 DT. 23.02.2017

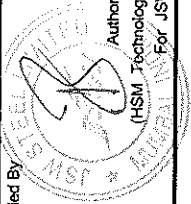
Specification : EN 10149-2-2005, S355 MC

TC No: Salzgitter/Exp16-17/Sap0001787A

Product: Hot Rolled Steel Coils

Specifications requirements:-		Chemical Composition														Mechanical properties											
Cast/Heat No.	Coil No.	Nominal Size (mm)				C	Mn	S	P	Si	Al	Cr	Ni	Nb	Mo	V	Ti	Cu	N	SI+2.SF		YS	UTS	EL	Impact @ -20°C	Bend test	
		T	X	W	L															CEV	%						MPa
						0.12	1.50	0.020	0.025	0.030	0.015	-	-	0.090	-	0.20	0.15	-	-	-	0.090	0.400	355	430	23	40J	-
		Weight(Net)																									
		Metric Tonnes																									
		2745.565																									
		100																									
		Grand Total of Weight																									
		2745.565																									

We hereby certify that the material (Hot Rolled Steel Coils) described herein have been tested and inspected with satisfactory results in accordance with the requirements of the above specification.

Grade code: JVHTR02BES	1Mpa=1N/mm <sup>2</sup>
Product: Hot rolled Steel coils, Fully killed, mill edge, unpickled. Unrolled and nonskinpassod	Chemistry = Laddle sample analysis. Tensile Test Piece: Longitudinal Test Temperature: Ambient (25°C ±2°)
Process Route: BOF-LHF-CCM-HSM	Certified By  Authorised signatory (HSM Technology Excellence) For JSW Steel Ltd.
Legend: BOF = Basic Oxygen Furnace, LHF = Laddle Heating Furnace CCM = Continuous Casting Machine, HSM = Hot Strip Mill T x W x L = Thickness X Width X Length	
Impact values are calculated to full size specimen	