JSW STEEL LTD.,

ORIGINAL

Vijayanagar Works, Vidyanagar 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/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								
								C	Mn	S	P	Si	Al	Cr	Ni	Nb	Mo	V	Ti	Cu	N	Si+2.5P	CEV	YS	UTS	EL	Impact @ -20°C			Bend test
(Reference: As per TDC no.: IM/JSW/2010-11/HRS/133 Dt. : 30-10-2010)								%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	MPa	MPa	%				0.5t, 180°
							Min:→	-	-	-	-	-	0.015	-	-	-	-	-	-	-	-	-	-	355	430	23	40J			-
							Max:→	0.12	1.50	0.020	0.025	0.030	-	-	-	0.090	-	0.20	0.15	-	-	0.090	0.400	-	550	-	-			-
Cast\ Heat No.	Coil No.	Nominal Size (mm) T	X	W	X	L	Weight(Net) Metric Tonnes	C %	Mn %	S %	P %	Si %	Al %	Cr %	Ni %	Nb %	Mo %	V %	Ti %	Cu %	N %	Si+2.5P %	C.E. %	YS Mpa	UTS Mpa	EL %	Impact(Joules) R1	R2	R3	Bend test 0.5t, 180°	Remarks
D705524	17536965	3.00	x	1,500	x	coil	28.270	0.076	0.590	0.005	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	0.005	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	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	0.049	0.178	414	462	30				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	0.010	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	0.010	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	0.010	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	28.350	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	0.059	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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Specification : EN 10149-2-2005, S355 MC

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Product: Hot Rolled Steel Coils

Specifications requirements:-								Chemical Composition														Mechanical properties								
								C	Mn	S	P	Si	Al	Cr	Ni	Nb	Mo	V	Ti	Cu	N	Si+2.5P	CEV	YS	UTS	EL	Impact @ -20°C			Bend test
(Reference: As per TDC no.: IM/JSW/2010-11/HRS/133 Dt. : 30-10-2010)								%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	MPa	MPa	%				0.5t, 180°
							Min:→	-	-	-	-	-	0.015	-	-	-	-	-	-	-	-	-	-	355	430	23	40J			-
							Max:→	0.12	1.50	0.020	0.025	0.030	-	-	-	0.090	-	0.20	0.15	-	-	0.090	0.400	-	550	-	-			-
Cast\ Heat No.	Coil No.	Nominal Size (mm) T	X	W	X	L	Weight(Net) Metric Tonnes	C %	Mn %	S %	P %	Si %	Al %	Cr %	Ni %	Nb %	Mo %	V %	Ti %	Cu %	N %	Si+2.5P %	C.E. %	YS Mpa	UTS Mpa	EL %	Impact(Joules) R1	R2	R3	Bend test 0.5t, 180°	Remarks
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	0.018	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	0.018	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	0.018	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	0.017	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	0.017	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	0.017	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	0.017	0.006	0.0048	0.045	0.232	445	507	34				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	0.022	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	0.015	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	200	Pass	
G705338	17535933	6.00	x	1,500	x	coil	26.950	0.083	1.040	0.007	0.015	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	200	Pass	
G705338	17535934	6.00	x	1,500	x	coil	27.130	0.083	1.040	0.007	0.015	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	200	Pass	
G705338	17535935	6.00	x	1,500	x	coil	27.020	0.083	1.040	0.007	0.015	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	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	0.020	0.006	0.0038	0.048	0.251	481	538	28	210	200	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	200	Pass	

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								C	Mn	S	P	Si	Al	Cr	Ni	Nb	Mo	V	Ti	Cu	N	Si+2.5P	CEV	YS	UTS	EL	Impact @ -20°C			Bend test
(Reference: As per TDC no.: IM/JSW/2010-11/HRS/133 Dt. : 30-10-2010)								%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	MPa	MPa	%				0.5t, 180°
							Min:→	-	-	-	-	-	0.015	-	-	-	-	-	-	-	-	-	-	355	430	23	40J			-
							Max:→	0.12	1.50	0.020	0.025	0.030	-	-	-	0.090	-	0.20	0.15	-	-	0.090	0.400	-	550	-	-			-
Cast\ Heat No.	Coil No.	Nominal Size (mm) T	X	W	X	L	Weight(Net) Metric Tonnes	C %	Mn %	S %	P %	Si %	Al %	Cr %	Ni %	Nb %	Mo %	V %	Ti %	Cu %	N %	Si+2.5P %	C.E. %	YS Mpa	UTS Mpa	EL %	Impact(Joules) R1	R2	R3	Bend test 0.5t, 180°	Remarks
G705334	17535938	6.00	x	1,500	x	coil	27.210	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	200	Pass	
G705334	17535939	6.00	x	1,500	x	coil	27.070	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	200	Pass	
E705329	17535940	6.00	x	1,500	x	coil	27.330	0.078	1.040	0.008	0.015	0.010	0.041	0.013	0.008	0.028	0.001	0.001	0.020	0.006	0.0038	0.048	0.251	481	538	28	210	200	200	Pass	
F705407	17536343	6.00	x	2,000	x	coil	28.340	0.077	1.040	0.009	0.013	0.011	0.045	0.014	0.009	0.030	0.001	0.002	0.017	0.006	0.0058	0.044	0.250	456	514	30	171	168	178	Pass	
E705395	17536344	6.00	x	2,000	x	coil	27.260	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	469	523	33	215	222	235	Pass	
F705407	17536345	6.00	x	2,000	x	coil	28.320	0.077	1.040	0.009	0.013	0.011	0.045	0.014	0.009	0.030	0.001	0.002	0.017	0.006	0.0058	0.044	0.250	456	514	30	171	168	178	Pass	
F705396	17536346	6.00	x	2,000	x	coil	28.240	0.075	1.020	0.006	0.014	0.011	0.041	0.010	0.011	0.030	0.001	0.001	0.019	0.006	0.0038	0.046	0.245	480	544	29	199	215	222	Pass	
F705407	17536347	6.00	x	2,000	x	coil	28.160	0.077	1.040	0.009	0.013	0.011	0.045	0.014	0.009	0.030	0.001	0.002	0.017	0.006	0.0058	0.044	0.250	456	514	30	171	168	178	Pass	
E705395	17536348	6.00	x	2,000	x	coil	27.370	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	469	523	33	215	222	235	Pass	
F705407	17536349	6.00	x	2,000	x	coil	28.380	0.077	1.040	0.009	0.013	0.011	0.045	0.014	0.009	0.030	0.001	0.002	0.017	0.006	0.0058	0.044	0.250	456	514	30	171	168	178	Pass	
F705407	17536350	6.00	x	2,000	x	coil	28.410	0.077	1.040	0.009	0.013	0.011	0.045	0.014	0.009	0.030	0.001	0.002	0.017	0.006	0.0058	0.044	0.250	456	514	30	171	168	178	Pass	
F705399	17536351	6.00	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	470	537	29	199	215	222	Pass	
D705419	17536352	6.00	x	2,000	x	coil	28.320	0.083	1.010	0.010	0.011	0.013	0.043	0.014	0.011	0.023	0.001	0.001	0.018	0.006	0.0036	0.041	0.251	436	501	31	199	215	222	Pass	
D705419	17536353	6.00	x	2,000	x	coil	28.420	0.083	1.010	0.010	0.011	0.013	0.043	0.014	0.011	0.023	0.001	0.001	0.018	0.006	0.0036	0.041	0.251	436	501	31	199	215	222	Pass	
G705422	17536374	6.00	x	2,000	x	coil	28.460	0.072	1.020	0.010	0.014	0.010	0.044	0.015	0.011	0.025	0.001	0.002	0.017	0.007	0.0044	0.045	0.242	446	504	32	215	235	252	Pass	
E705412	17536375	6.00	x	2,000	x	coil	28.360	0.086	1.070	0.010	0.013	0.008	0.037	0.012	0.011	0.025	0.001	0.003	0.018	0.007	0.0063	0.041	0.264	438	503	30	199	215	222	Pass	
G705422	17536376	6.00	x	2,000	x	coil	28.385	0.072	1.020	0.010	0.014	0.010	0.044	0.015	0.011	0.025	0.001	0.002	0.017	0.007	0.0044	0.045	0.242	446	504	32	215	235	252	Pass	
E705412	17536377	6.00	x	2,000	x	coil	28.440	0.086	1.070	0.010	0.013	0.008	0.037	0.012	0.011	0.025	0.001	0.003	0.018	0.007	0.0063	0.041	0.264	438	503	30	199	215	222	Pass	
E705412	17536378	6.00	x	2,000	x	coil	28.410	0.086	1.070	0.010	0.013	0.008	0.037	0.012	0.011	0.025	0.001	0.003	0.018	0.007	0.0063	0.041	0.264	438	503	30	199	215	222	Pass	
E705412	17536379	6.00	x	2,000	x	coil	28.200	0.086	1.070	0.010	0.013	0.008	0.037	0.012	0.011	0.025	0.001	0.003	0.018	0.007	0.0063	0.041	0.264	438	503	30	199	215	222	Pass	

JSW STEEL LTD.,

Vijayanagar Works, Vidyanagar 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/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								
								C	Mn	S	P	Si	Al	Cr	Ni	Nb	Mo	V	Ti	Cu	N	Si+2.5P	CEV	YS	UTS	EL	Impact @ -20°C			Bend test
(Reference: As per TDC no.: IM/JSW/2010-11/HRS/133 Dt. : 30-10-2010)								%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	MPa	MPa	%				0.5t, 180°
							Min:→	-	-	-	-	-	0.015	-	-	-	-	-	-	-	-	-	-	355	430	23	40J			-
							Max:→	0.12	1.50	0.020	0.025	0.030	-	-	-	0.090	-	0.20	0.15	-	-	0.090	0.400	-	550	-	-			-
Cast\ Heat No.	Coil No.	Nominal Size (mm) T	X	W	X	L	Weight(Net) Metric Tonnes	C %	Mn %	S %	P %	Si %	Al %	Cr %	Ni %	Nb %	Mo %	V %	Ti %	Cu %	N %	Si+2.5P %	C.E. %	YS Mpa	UTS Mpa	EL %	Impact(Joules) R1	R2	R3	Bend test 0.5t, 180°	Remarks
G705487	17536707	6.00	x	1,500	x	coil	28.230	0.079	1.050	0.008	0.016	0.009	0.037	0.015	0.011	0.029	0.001	0.002	0.014	0.006	0.0036	0.049	0.254	472	529	28	215	235	252	Pass	
G705487	17536708	6.00	x	1,500	x	coil	28.050	0.079	1.050	0.008	0.016	0.009	0.037	0.015	0.011	0.029	0.001	0.002	0.014	0.006	0.0036	0.049	0.254	472	529	28	215	235	252	Pass	
E705427	17536721	6.00	x	2,000	x	coil	27.340	0.073	1.000	0.010	0.014	0.009	0.045	0.015	0.011	0.025	0.001	0.002	0.016	0.006	0.0053	0.044	0.240	452	513	30	202	208	180	Pass	
D705492	17537090	6.00	x	1,500	x	coil	27.880	0.090	1.010	0.008	0.014	0.029	0.039	0.014	0.012	0.029	0.001	0.003	0.019	0.006	0.0053	0.064	0.258	458	520	28	178	185	185	Pass	
F705490	17537091	6.00	x	1,500	x	coil	27.730	0.084	1.070	0.007	0.013	0.009	0.038	0.011	0.011	0.026	0.001	0.001	0.017	0.007	0.0048	0.042	0.262	442	503	27	210	200	200	Pass	
E699969	17535784	8.00	x	1,500	x	coil	28.315	0.079	1.020	0.010	0.016	0.015	0.045	0.016	0.012	0.026	0.001	0.002	0.018	0.007	0.0047	0.055	0.249	402	524	32	210	200	200	Pass	
F704899	17535785	8.00	x	1,500	x	coil	27.265	0.078	1.020	0.007	0.013	0.008	0.045	0.011	0.010	0.025	0.001	0.002	0.016	0.007	0.0050	0.041	0.248	448	515	33	210	200	200	Pass	
D704895	17535786	8.00	x	1,500	x	coil	27.205	0.076	1.030	0.009	0.016	0.010	0.045	0.016	0.011	0.030	0.001	0.003	0.018	0.006	0.0052	0.050	0.248	469	542	33	189	194	199	Pass	
F705353	17536119	8.00	x	1,500	x	coil	27.250	0.083	1.020	0.007	0.010	0.008	0.045	0.015	0.009	0.028	0.001	0.002	0.014	0.006	0.0049	0.033	0.253	441	510	31	237	241	251	Pass	
G705371	17536120	8.00	x	1,500	x	coil	23.090	0.072	1.000	0.009	0.010	0.007	0.045	0.013	0.005	0.026	0.001	0.001	0.014	0.006	0.0041	0.032	0.239	420	486	35	255	271	241	Pass	
E705345	17536121	8.00	x	1,500	x	coil	27.110	0.080	1.100	0.010	0.018	0.006	0.045	0.016	0.009	0.030	0.001	0.003	0.017	0.007	0.0046	0.051	0.263	463	533	34	219	190	212	Pass	
F705362	17536128	8.00	x	1,500	x	coil	27.220	0.072	1.000	0.010	0.013	0.011	0.045	0.016	0.008	0.030	0.001	0.001	0.020	0.006	0.0047	0.044	0.239	474	542	27	257	245	232	Pass	
F705362	17536129	8.00	x	1,500	x	coil	26.970	0.072	1.000	0.010	0.013	0.011	0.045	0.016	0.008	0.030	0.001	0.001	0.020	0.006	0.0047	0.044	0.239	474	542	27	257	245	232	Pass	
G705334	17536130	8.00	x	1,500	x	coil	26.295	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	431	503	32	201	221	201	Pass	
E705342	17536131	8.00	x	1,500	x	coil	27.090	0.075	1.010	0.009	0.013	0.009	0.045	0.014	0.013	0.029	0.001	0.002	0.018	0.005	0.0037	0.042	0.243	450	527	32	204	226	216	Pass	
F705362	17536110	10.00	x	1,500	x	coil	27.210	0.072	1.000	0.010	0.013	0.011	0.045	0.016	0.008	0.030	0.001	0.001	0.020	0.006	0.0047	0.044	0.239	462	536	27	257	245	232	Pass	
E705345	17536111	10.00	x	1,500	x	coil	27.000	0.080	1.100	0.010	0.018	0.006	0.045	0.016	0.009	0.030	0.001	0.003	0.017	0.007	0.0046	0.051	0.263	441	522	27	219	190	212	Pass	
F705362	17536112	10.00	x	1,500	x	coil	26.995	0.072	1.000	0.010	0.013	0.011	0.045	0.016	0.008	0.030	0.001	0.001	0.020	0.006	0.0047	0.044	0.239	462	536	27	257	245	232	Pass	
E705345	17536113	10.00	x	1,500	x	coil	27.180	0.080	1.100	0.010	0.018	0.006	0.045	0.016	0.009	0.030	0.001	0.003	0.017	0.007	0.0046	0.051	0.263	441	522	27	219	190	212	Pass	
G705371	17536114	10.00	x	1,500	x	coil	22.815	0.072	1.000	0.009	0.010	0.007	0.045	0.013	0.005	0.026	0.001	0.001	0.014	0.006	0.0041	0.032	0.239	419	492	28	255	271	241	Pass	

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SALZGITTER MANNESMANN INTERNATIONAL GMBH
SCHWANNSTR 12
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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:-
(Reference: As per TDC no.: IM/JSW/2010-11/HRS/133 Dt. : 30-10-2010)

	Chemical Composition															Mechanical properties							
	C	Mn	S	P	Si	Al	Cr	Ni	Nb	Mo	V	Ti	Cu	N	Si+2.5P	CEV	YS	UTS	EL	Impact @ -20°C			Bend test
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	MPa	MPa	%				0.5t, 180°
Min:→	-	-	-	-	-	0.015	-	-	-	-	-	-	-	-	-	-	355	430	23	40J			-
Max:→	0.12	1.50	0.020	0.025	0.030	-	-	-	0.090	-	0.20	0.15	-	-	0.090	0.400	-	550	-	-			-

Cast\ Heat No.	Coil No.	Nominal Size (mm) T	X	W	X	L	Weight(Net) Metric Tonnes	C %	Mn %	S %	P %	Si %	Al %	Cr %	Ni %	Nb %	Mo %	V %	Ti %	Cu %	N %	Si+2.5P %	C.E. %	YS Mpa	UTS Mpa	EL %	Impact(Joules) R1	R2	R3	Bend test 0.5t, 180°	Remarks
F705353	17536115	10.00	x	1,500	x	coil	27.040	0.083	1.020	0.007	0.010	0.008	0.045	0.015	0.009	0.028	0.001	0.002	0.014	0.006	0.0049	0.033	0.253	440	507	28	237	251	241	Pass	
G705367	17536116	10.00	x	1,500	x	coil	27.120	0.072	1.030	0.008	0.015	0.010	0.044	0.010	0.012	0.030	0.001	0.001	0.020	0.006	0.0053	0.048	0.244	447	514	28	248	254	251	Pass	
G705367	17536117	10.00	x	1,500	x	coil	27.260	0.072	1.030	0.008	0.015	0.010	0.044	0.010	0.012	0.030	0.001	0.001	0.020	0.006	0.0053	0.048	0.244	447	514	28	248	254	251	Pass	
F705353	17536118	10.00	x	1,500	x	coil	27.200	0.083	1.020	0.007	0.010	0.008	0.045	0.015	0.009	0.028	0.001	0.002	0.014	0.006	0.0049	0.033	0.253	440	507	28	237	251	241	Pass	
G705371	17536105	12.00	x	1,500	x	coil	26.975	0.072	1.000	0.009	0.010	0.007	0.045	0.013	0.005	0.026	0.001	0.001	0.014	0.006	0.0041	0.032	0.239	412	497	29	255	271	241	Pass	
G705371	17536106	12.00	x	1,500	x	coil	27.240	0.072	1.000	0.009	0.010	0.007	0.045	0.013	0.005	0.026	0.001	0.001	0.014	0.006	0.0041	0.032	0.239	412	497	29	255	271	241	Pass	
E705345	17536107	12.00	x	1,500	x	coil	27.190	0.080	1.100	0.010	0.018	0.006	0.045	0.016	0.009	0.030	0.001	0.003	0.017	0.007	0.0046	0.051	0.263	429	513	26	219	190	212	Pass	
G705367	17536108	12.00	x	1,500	x	coil	27.090	0.072	1.030	0.008	0.015	0.010	0.044	0.010	0.012	0.030	0.001	0.001	0.020	0.006	0.0053	0.048	0.244	427	512	26	248	254	251	Pass	
G705483	17536850	12.00	x	1,500	x	coil	28.265	0.083	1.050	0.010	0.018	0.012	0.043	0.015	0.010	0.030	0.001	0.003	0.016	0.006	0.0042	0.057	0.258	418	512	29	210	200	200	Pass	
G705349	17538582	12.00	x	1,500	x	coil	23.610	0.074	1.020	0.009	0.016	0.009	0.045	0.014	0.006	0.029	0.001	0.002	0.018	0.006	0.0040	0.049	0.244	450	540	25	204	226	216	Pass	
G705316	17535888	15.00	x	1,500	x	coil	27.015	0.083	1.050	0.009	0.012	0.016	0.029	0.013	0.011	0.028	0.001	0.003	0.018	0.007	0.0044	0.046	0.258	400	509	29	210	200	200	Pass	
E705329	17535889	15.00	x	1,500	x	coil	27.410	0.078	1.040	0.008	0.015	0.010	0.041	0.013	0.008	0.028	0.001	0.001	0.020	0.006	0.0038	0.048	0.251	404	506	26	210	200	200	Pass	
E705329	17535890	15.00	x	1,500	x	coil	27.170	0.078	1.040	0.008	0.015	0.010	0.041	0.013	0.008	0.028	0.001	0.001	0.020	0.006	0.0038	0.048	0.251	404	506	26	210	200	200	Pass	
E705326	17535891	15.00	x	1,500	x	coil	26.905	0.077	1.040	0.008	0.016	0.007	0.041	0.013	0.011	0.027	0.001	0.001	0.019	0.007	0.0038	0.047	0.250	398	507	32	210	200	200	Pass	
E705497	17536838	15.00	x	1,500	x	coil	27.315	0.087	1.030	0.007	0.015	0.016	0.045	0.014	0.011	0.030	0.001	0.003	0.017	0.007	0.0039	0.054	0.259	402	508	29	210	200	200	Pass	
D705492	17536839	15.00	x	1,500	x	coil	27.270	0.090	1.010	0.008	0.014	0.029	0.039	0.014	0.012	0.029	0.001	0.003	0.019	0.006	0.0053	0.064	0.258	410	515	29	210	200	200	Pass	
E705322	17535884	16.00	x	1,500	x	coil	26.985	0.080	1.030	0.007	0.013	0.008	0.045	0.016	0.014	0.027	0.001	0.001	0.018	0.013	0.0036	0.041	0.252	414	525	29	210	200	200	Pass	
E705322	17535885	16.00	x	1,500	x	coil	27.220	0.080	1.030	0.007	0.013	0.008	0.045	0.016	0.014	0.027	0.001	0.001	0.018	0.013	0.0036	0.041	0.252	414	525	29	210	200	200	Pass	
G705316	17535886	16.00	x	1,500	x	coil	27.185	0.083	1.050	0.009	0.012	0.016	0.029	0.013	0.011	0.028	0.001	0.003	0.018	0.007	0.0044	0.046	0.258	395	507	26	210	200	200	Pass	
E705322	17535887	16.00	x	1,500	x	coil	27.280	0.080	1.030	0.007	0.013	0.008	0.045	0.016	0.014	0.027	0.001	0.001	0.018	0.013	0.0036	0.041	0.252	414	525	29	210	200	200	Pass	

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Specification : EN 10149-2-2005, S355 MC

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

Specifications requirements:-			Chemical Composition															Mechanical properties							
			C	Mn	S	P	Si	Al	Cr	Ni	Nb	Mo	V	Ti	Cu	N	Si+2.5P	CEV	YS	UTS	EL	Impact @ -20°C			Bend test
(Reference: As per TDC no.: IM/JSW/2010-11/HRS/133 Dt. : 30-10-2010)			%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	MPa	MPa	%				0.5t, 180°
		Min:→	-	-	-	-	-	0.015	-	-	-	-	-	-	-	-	-	-	355	430	23	40J			-
		Max:→	0.12	1.50	0.020	0.025	0.030	-	-	-	0.090	-	0.20	0.15	-	-	0.090	0.400	-	550	-	-			-
Cast\ Heat No.	Coil No.	Nominal Size (mm) T X W X L	Weight(Net) Metric Tonnes	C %	Mn %	S %	P %	Si %	Al %	Cr %	Ni %	Nb %	Mo %	V %	Ti %	Cu %	N %	Si+2.5P %	C.E. %	YS Mpa	UTS Mpa	EL %	Impact(Joules) R1	R2	R3	Bend test 0.5t, 180°	Remarks
Total Weight in Metric Tonnes			2745.565	MT																							
Grand Total of coils			100																								
Grand Total of Weight			2745.565	MT																							

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
Product : Hot rolled Steel coils, Fully killed, mill edge, unpickeled. Unoiled and nonskinpassod
Process Route: BOF-LHF-CCM-HSM
Legend: BOF = Basic Oxygon Furnace, LHF = Laddle Heating Furnace
CCM = Continuous Casting Machine, HSM = Hot Strip Mill
T x W x L= Thickness X Width X Length

1Mpa=1N/mm2
YS= Yield Strength.
UTS = Ultimate Tensile Strength.
EL=%ge Elongation on standard gauge length 5.65√A0 for > 3.0mm and 80 mm GL for < 3.0 mm nominal thickness.
CE=[C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15]

chemistry = Laddle sample analysis.
Tensile Test Piece: Longitudinal
Test Temperature: Ambient (25°C ±2°)
Impact values are calculated to full size specimen

Certified By
Authorised signetory
(HSM Technology Excellence)
For JSW Steel Ltd.,