

**UNIT-I**  
**TEST CERTIFICATE**  
**TEST CERTIFICATE ACCORDING TO EN10204 TYPE 3.1**

Customer Address: M/S- S.S.B. ENGINEERS PVT.LTD. PLOT NO-C-158 A MATSYA INDUSTRIAL AREA  ALWAR -RAJASTHAN-(INDIA) PIN CODE NO.301030	Material Process Route Specification  Heat No. Grade Supply Size Supply Condition Colour Code	Billet Route EAF-LRF-VD-CCM-AMLC-EMS-RM TDC No:-MAT1052D Dated:-21.10.2021,Rev:-00 MFR No-1516 Date-08.09.2022 Revision No-1 Revision Date-07.11.2022	Test Certificate No. Date Invoice No.  Weight (MT.) Input/Billet Size Reduction Ratio No's of Pcs No's of Bundles Length Size	2024-25/0022114 26-12-2024 AI/24-25/0016580  11.015 320x250 MM 7.08:1(Spec-6:1 min) 26 5 NA

**TEST RESULT**

**CHEMICAL ANALYSIS (ASTM E 415 / IS 8811)**

Element	C%	Mn%	Si%	S%	P%	Cr%	Ni%	Mo%	V%	Al%	Cu%	Ca%	-	-	-	-	Al/N2 Ratio
Spec. Min	0.160	0.700	0.150	0.020	-	0.800	0.800	-	-	0.020	-	-	-	-	-	-	2.00
Spec. Max	0.210	1.100	0.350	0.040	0.020	1.200	1.200	0.100	-	0.050	0.300	0.0025	-	-	-	-	3.00
Achieved	0.185	0.905	0.220	0.028	0.016	1.145	1.030	0.075	0.003	0.026	0.130	0.0008	-	-	-	-	2.80

**JOMINY JOMINY HARDENABILITY TEST (IS:3848, ASTM A255, SAE J406)**

Distance (mm)	1.5	3	5	7	9	11	13	15	20	25							
Spec. Min	41.5	40	37	35	33	31	34	27	23.5	29							
Spec. Max	47	46.5	45.5	44	43.5	43	41.5	40	36.5	33.5							
Achieved (HRC)	45.5	45	44.5	42.5	38.5	36.5	34.5	31.5	30.0	29.0							

**Mechanical Properties**

Mechanical Properties									
Parameters		IS:1608/ASTM A370				IS:1757 Impact Strength Charpy U-notch (Joules)	ASTM A255		IS:1500 Surface Hardness As Rolled (BHN)
		Tensile Strength	Yield Strength	Elongation	Reduction Area		D.I. Value		
							(Inch)	(mm)	
Spec.	Min	-	-	-	-	-	-	-	
	Max	-	-	-	-	-	-	245	
Achieved		-	-	-	-	-	-	197/212	

**Metallurgical Results**

Metallurgical Results															
Parameters		Inclusion Rating (IS : 4163 / ASTM : E45A / JK Chart) WORST FIELD RATING									Grain Size IS 4748 / ASTM E112 (No.)	Depth of Decarburization IS 6396/ASTM E1077		Micro Structure	
		Type	A		B		C		D			DS	Complete		Partial
		Series	Thin	Thick	Thin	Thick	Thin	Thick	Thin	Thick				Thin	
Spec.	Min	-	-	-	-	-	-	-	-	-	6 or finer	-	1% of section/0.5 mm max.	Pearlite + ferrite	
	Max	2.0	2.0	1.0	1.0	0.5	0.5	1.5	1.5	-					
Achieved		1.5	0.5	0.5	0.0	0.0	0.0	1.0	0.0	-	6.0 to 6.5	-	0.41 MM		

**Physical Properties, Non Destructive Test & Other Test**

Parameters	Internal Soundness ASTM E381	Step Down Test IS 4075	Surface Inspection IS 13352	Magnetic Particle Inspection ASTM E1444	Ultrasonic Test ASTM A388	Upsetting Test IS 10167
Spec.	C2,R2,S2 MAX.	-	-	100% bars	100% bars	-
Achieved	Better than C2,R1,S1	Satisfactory	Satisfactory	Tested-Ok	100% bars Auto UT Tested-Ok	-

**Gas Analysis Report**

Parameters	Dimensional Tolerance	Spark Test	X-RF	Test method-Leco		
				O <sub>2</sub> (ppm)	N <sub>2</sub> (ppm)	H <sub>2</sub> (ppm)
				15 MAX.	90-110	2.0 MAX
Spec.	-	100% bars	100% bars	13.00	93.0	0.98
Achieved	As per IS 3739 Grade 1	Tested-Ok	Tested-Ok	13.00	93.0	0.98

Remarks :  
This material comply with RoHS (Pb, Cd, Hg, Cr6+) and REACH permissible limits. 3TG (Tantalum, Tin, Tungsten and Gold) not added intentionally in the product. Material is free from radioactive contamination.

Prepared By: VISHWAKARMA SHARMA	Approved By:	Pre Dispatch Inspection:
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