

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 -301030 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 DANA Spec. Q.F. 1001 - R3, Dated- 14/06/24	Test Certificate No. Date Invoice No. Weight (MT.) Input/Billet Size Reduction Ratio No's of Pcs No's of Bundle Length Size	2024-25/0025669 26-01-2025 18395 33.370 250X250 MM 22.12:1 (Spec-7:1 min) 247 13 NA

TEST RESULT

CHEMICAL ANALYSIS (ASTM E 415 / IS 8811)

Element	C%	Mn%	Si%	S%	P%	Cr%	Ni%	Mo%	V%	Al%	Cu%	-	-	B%	Ca%	-	-	Al/N2 Ratio
Spec. Min	0.130	1.000	0.150	0.015	-	0.800	-	-	-	0.020	-	-	-	-	-	-	-	2.10
Max	0.180	1.300	0.400	0.030	0.020	1.100	0.300	0.100	-	0.050	0.300	-	-	0.0005	0.0010	-	-	-
Achieved	0.160	1.275	0.250	0.023	0.018	1.080	0.145	0.037	0.004	0.025	0.120	-	-	0.0004	0.0005	-	-	2.87

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

Distance (MM)	1.5	5	10	15	20	25	30	-	-	-	-	-	-	-	-	-	-	-
Spec. Min	39	34.5	29	25	22.5	21	20	-	-	-	-	-	-	-	-	-	-	-
Max	44	40.5	35.5	31.5	29	27.5	26.5	-	-	-	-	-	-	-	-	-	-	-
Achieved (HRC)	43.0	39.0	33.5	29.0	25.5	23.5	22.5	-	-	-	-	-	-	-	-	-	-	-

Mechanical Properties

Parameters	IS:1608 / ASTM A370 Test Condition: H & T				IS:1757		ASTM A255		IS:1500	
	Tensile Strength (MPA)	Yield Strength (MPA)	Elongation (%)	Reduction Area (%)	Impact Strength Charpy U-notch (Joules)		D.I. Value (Inch) (mm)		Surface Hardness As Rolled (BHN)	
Spec. Min	1030	735	8	-	25 J		-	-	-	
Max	1370	-	-	-	-		-	-	260	
Achieved	1118	937	10.8	-	32.5 J		-	-	163/179	

Metallurgical Results

Parameters		Inclusion Rating (IS : 4163 / ASTM : E45A / JK Chart)									Grain Size IS 4748 / ASTM E112 (No.)	Depth of Decarburization IS 6396/ASTM E1077		Micro Structure	
		WORST FIELD RATING										DS	Complete		Partial
		Type	A		B		C		D						
	Series	Thin	Thick	Thin	Thick	Thin	Thick	Thin	Thick						
Spec.	Min	-	-	-	-	-	-	-	-	-	5-8	Not Allowed	0.6% of the nominal diameter with maximum of 0.6 mm	Banding OK as per UNI 8449 (A max of GR-4 is acceptable)	
	Max	2.0	1.5	2.0	1.0	0.5	0.5	1.0	1.0	-					
	Achieved	1.5	0.5	0.5	0.0	0.0	0.0	1.0	0.0	-					6.0 to 6.5

Physical Properties, Non Destructive Test & Other Test

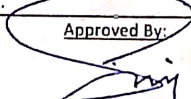

Parameters	Internal Soundness ASTM E381	Step Down Test IS 4075	Surface Inspection IS 13352	Magnetic Particle Inspection ASTM E1444	Ultrasonic Test ASTM A388	Upsetting Test IS 10167
Spec.	S3, C2, R3 MAX-	Free From Streaks	Free from surface defects	Free From Crack	Defect Echo max 20% of back wall Echo	-
Achieved	Better than S1,C2,R1	Satisfactory	Satisfactory	100% Done OK	100% Done OK	-

Parameters	Dimensional Tolerance	Spark Test	X-RF	Gas Analysis Report Test method-Leco		
				O ₂ (ppm)	N ₂ (ppm)	H ₂ (ppm)
Spec.	As per IS 3739 Grade 1	-	-	20 MAX	60-120	2.5 max
Achieved	As per IS 3739 Grade 1	100% Done OK	100% Done OK	10.00	87.00	1.05

Remarks :

Material conforms to DANA Spec. Q.F. 1001 - R3, Dated-14.06.24
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

MACHINE STRAIGHTENED MATERIAL

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

In case of any Test certificate Iss ie, please Inform Dinesh Singla at 'dsingla@arorairon.com' Mobile No.+919914538700