

**UNIT-I**

**TEST CERTIFICATE**

**TEST CERTIFICATE ACCORDING TO EN10204 TYPE 3.1**

<b>Customer Address:</b>		<b>Material</b>	<b>Billet Route</b>	<b>Test Certificate No.</b>	
M/S- S.S.B. ENGINEERS PVT.LTD.		<b>Process Route</b>	EAF-LRF-VD CCM-AMLC-EMS-RM	<b>Date</b>	2024-25/0029774
133,MATSYA INDUSTRIAL AREA		<b>Specification</b>	S5B-MTS-01 REV 02, DATE:-28.6.2017	<b>Invoice No.</b>	18-03-2025
ALWAR - RAJASTHAN-(INDIA)			DANA Spec. Q.F. 1001 - R3, Dated:-	<b>Weight (MT.)</b>	
PIN CODE NO.301030		<b>Heat No.</b>	14.06.2024	<b>Input/Billet Size</b>	200X200 MM
		<b>Grade</b>	A34210	<b>Reduction Ratio</b>	16.25:1 (Spec: 7:1 min)
		<b>Supply Size</b>	C40 (Cr)	<b>No's of Pcs</b>	192
		<b>Supply Condition</b>	56 MMØ	<b>No's of Bundle</b>	9
		<b>Colour Code</b>	AS HOT ROLLED	<b>Length Size</b>	
			BLACK+WHITE LINE		

**TEST RESULT**

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

Element	C%	Mn%	Si%	S%	P%	Cr%	Ni%	Mo%	V%	Al%	Cu%	B%	Ca%	-	-	-	-	AL/NZ Ratio
Spec. Min	0.370	0.500	0.150	0.020	-	0.280	-	-	-	0.020	-	-	-	-	-	-	-	2.10
Spec. Max	0.440	0.800	0.400	0.040	0.035	0.320	0.120	0.060	-	0.050	0.250	0.0005	0.0010	-	-	-	-	
Achieved	0.435	0.740	0.250	0.026	0.017	0.280	0.120	0.040	0.002	0.025	0.125	0.0003	0.0009	-	-	-	-	3.25

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

<b>Distance</b>																		
Spec. (HRC)	Min																	
	Max																	
<b>Achieved (HRC)</b>																		

**Mechanical Properties**

Parameters		IS:1608/ASTM A370 Test Condition: Q & 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		Surface Hardness As Rolled (BHN)	
Spec.	Min	700	490	15	-	25 J min		(Inch)	(mm)		
	Max	840	-	-	-			-	-		
<b>Achieved</b>		773	540	16.8	-	37 J		-	-	260	
								-	-	187/207	

**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		
		Series	Thin	Thick	Thin	Thick	Thin	Thick	Thin	Thick				
Spec.	Min	-	-	-	-	-	-	-	-	-	5-8	Complete	Partial	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	-		Not Allowed	0.6% of the nominal diameter with maximum of 0.6 mm	
	Achieved	1.5	0.5	0.5	0.0	0.0	0.0	1.0	0.0	-		6.0 to 7.0	Nil	

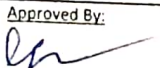
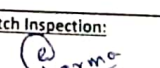
**Physical Properties, Non Destructive Test & Other Test**

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	OK	Satisfactory	100% Done ok	100% Done ok	

Parameters	Dimensional Tolerance	Spark Test	X-RF	Gas Analysis Report Test method-Leco		
				O <sub>2</sub> (ppm)	N <sub>2</sub> (ppm)	H <sub>2</sub> (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	11.00	77.0	0.79

Remarks : Material conforms to DANA Spec. Q.F. 1001 - R3, Dated-14.06.2024

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: <b>Vishwakarma Sharma</b>	Approved By: 	Pre Dispatch Inspection: 
---	---	--

In case of any Test certificate Issue, please inform Dinesh Singla at dsingla@arorairon.com, Mobile No.+919914538700