

METALLURGICAL TEST REPORT

Customer Address: M/S -FORGE (INDIA) PVT . LTD #60 , SECTOR-5 , PARWANOO-H.P.	Material	Billet Route	Test Certificate No.	92530
	Process Route	EAF-LRF-VD-CCM-AMLC-EMS-RM	Date	18-03-2018
	Specification	Standard	Invoice No.	11614
	Heat No.	A05361	Weight (MT.)	3.485
	Grade	SAE8620	Input/Billet Size	130x130 mm
	Supply Size	32 MM Ø	Reduction Ratio	21:1
	Supply Condition	AS HOT ROLLED	No's of Pcs	NA
	Colour Code	PINK	No's of Bundle	NA
			Multiple	NA

TEST RESULT

CHEMICAL ANALYSIS (ASTM E 415-14 / IS 8811-1998)

Element	C%	Mn%	Si%	S%	P%	Cr%	Ni%	Mo%	V%	Al%	Cu%	Ti%	Sn%	B%	Ca%	Co%	CE%	S+P (%)
Spec.	Min	0.180	0.700	0.200	-	-	0.400	0.400	0.150	-	-	-	-	-	-	-	-	-
	Max	0.230	0.900	0.350	0.040	0.040	0.600	0.700	0.250	-	-	-	-	-	-	-	-	-
Achieved		0.190	0.840	0.260	0.026	0.015	0.570	0.425	0.205	0.006	0.020	0.170	-	-	-	-	-	-

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

Distance	4/16"																	
Spec. (HRC)	Min	35																
	Max	39																
Achieved (HRC)		36.5																

Mechanical Properties (IS 1608 / ASTM A370)

Parameters	Tensile Strength (Kg/mm ²)	Yield Strength (Kg/mm ²)	Elongation (%)	Reduction Area (%)	Impact Strength IZOD/Charpy V-notch/U-notch (Joules)	D.I. Value ASTM A255		Surface Hardness As Rolled (BHN)
						(Inch)	(mm)	
Spec.	Min	-	-	-	-	-	-	-
	Max	-	-	-	-	-	-	-
Achieved	-	-	-	-	-	-	-	183/187

Metallographic Properties

Parameters		Inclusion Rating (IS : 4163 / ASTM : E45A / JK Chart) WROST 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	Uniform	Banding	Structure
		Series	Thin	Thick	Thin	Thick	Thin	Thick	Thin	Thick							
Spec.	Min	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Max	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Achieved		1.0	0.5	0.5	0.0	0.0	0.0	1.0	0.0	-	6.0 to 6.5	-	-	-	15 micron max	Pearlite+Ferri te+Bainite	

Physical Properties, Non Destructive Test & Other Test

Parameters	Internal Soundness ASTM E381	Step Down Test IS 4075	Surface Inspection IS 13352	Magnetic Particle Inspection IS 10138	Ultrasonic Test ASTM A388 / IS 2417	Upsetting Test IS 11169
Spec.	-	-	-	-	-	-
Achieved	Better than C2,R1,S1	Satisfactory	Satisfactory	100%	100%	-

Parameters	Dimensional Tolerance IS 3739	Spark Test	X-RF	Gas Analysis Report Test method-Leco		
				O ₂ (ppm)	N ₂ (ppm)	H ₂ (ppm)
Spec.	-	-	-	-	-	-
Achieved	As per IS 3739 Grade 1	100%	100%	13.0	75.2	1.28

Remarks :

Prepared By: Vishwakarma Sharma	Approved By:
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