

METALLURGICAL TEST REPORT

Customer Address:	Material	Billet Route	Test Certificate No.
M/S UNIQUE FORGINGS (INDIA) PVT. LTD. 601/1, PHASE-IV, G.I.D.C, NEAR RAILWAY STATION VITTHAL UDYOGNAGAR-388121 GUJARAT, INDIA	Process Route Specification	EAF-EBT-LRF-VD-CCM-AMLC-EMS-RM DOC NO.RM/PUR/TDC/04/F REV,05 DATE-24/03/2017	95854
	Heat No.	A06930	Date 27-05-2018
	Grade	SAE8620	Invoice No. 1239
	Material	36 MM Ø	Weight (MT.) 14730 kg
	Supply Condition	AS HOT ROLLED	Input/Billet Size 130X130 MM
	Colour Code	PINK	Reduction Ratio 16.6:1 (Spec-6:1 min)
			No's of Pcs NA
			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%	Cr+Ni+Mo
Spec.	Min	0.180	0.700	0.150	-	-	0.400	0.400	0.150	-	0.020	-	-	-	-	-	-	-
	Max	0.230	0.900	0.300	0.040	0.035	0.600	0.700	0.250	-	0.060	-	-	-	-	-	-	-
Achieved		0.215	0.920	0.220	0.023	0.022	0.540	0.410	0.185	0.005	0.020	0.085	-	-	-	0.0005	-	-

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

Distance	4/16"																	
Spec.	Min	37																
	Max	41																
Achieved (HRC)		38.0																

Mechanical Properties (IS 1608 / ASTM A370)

Parameters	Tensile Strength Kg/mm2/(Mpa)	Yield Strength Kg/mm2/(Mpa)	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)									Grain Size IS 4748 / ASTM E112 (No.)	Depth of Decarburization		Micro Structure		
		WROST FIELD RATING										Complete	Partial	Uniform	Banding	Structure
		Type	A		B		C		D							
	Series	Thin	Thick	Thin	Thick	Thin	Thick	Thin	Thick	DS						
Spec	Min	-	-	-	-	-	-	-	-	-	-	0.5% of diameter max		-	-	-
	Max	2.0	1.5	2.0	1.5	2.0	1.5	2.0	1.5	-						
Achieved		1.5	0.5	0.5	0.0	0.0	0.0	1.0	0.0	-	6.5 to 7.0	-	0.16	-	15micron max	Pearlite+Ferrite+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	OK	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.	-	-	-	20 MAX	70-100	2 MAX
Achieved	As per IS 3739 Grade 1	100%	100%	8.0	20.0	0.65

Remarks :

Material is free from Radioactive Elements

Prepared By: Santosh Sharma	Approved By:
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