

ARDHMAN SPECIAL STEELS LTD.

C-58, FOCAL POINT, PHASE V, LUDHIANA (PB.) INDIA

Ph. No.: 0161-2670707-09

TEST CERTIFICATE

VEST CERTIFICATE NO. ___2018/02/488

DATE. 24/02/2018

HAPPY FORGINGS LTD (UNIT-II)

IS: 7283

QF MSD 4.12.06 ISO/TS 16949: 2009 Certificate: 37659-2008

ISO 14001: 2004

Certificate: 177315-2015 OHSAS 18001: 2007 Certificate: 177314-2015

We certify that the material described below fully conforms to IS:7283-1992. Chemical Composition and Mechanical Properties of the product tested in accordance with the Scheme of Testing and Inspection contained in the BIS Certification Marks licence No. CM/L-970002816 are as indicated below against each order No. etc.

(PLEASE REFER TO IS:7283-1992 FOR DETAILS OF SPECIFICATION REQUIREMENTS)

TEST RESULTS

Invoice No. AH Golden	S F 0.050 0.080 0.0 0.061 0.0 Grain (IS:4748/A	Section (Nominal Size mm) 100mm 100mm	C Cr 0.90 1.20 1.170	Finish Shape RCS Mo 0.015 I Decarb (IS:6396		Red. Ratio 4.0 Sn 0.005 D.I.	Supply Cond. Hot Rolled Al 0.080 0.130 0.106	BLACK	Ca	3-61 B	V 0.05 0.10	No of Bars	
Si Mn 0.15 0.90 0.35 1.20 0.260 1.130 N2 H2 1 PPM 100 2 77 1.2	S F 0.050 0.080 0.0 0.061 0.0 Grain (IS:4748/A	Ni 35 20 0.060 Size STM E112) 5 77.5	Cr 0.90 1.20 1.170	Mo 0.015	Cu 0.090 (mm)	Sn 0.005	AI 0.080 0.130 0.106	Ti	Ca 0.0020	B	V 0.05 0.10	78	
Si Mn 0.15 0.90 0.35 1.20 0.260 1.130 N2 H2 1 PPM 100 2 77 1.2 IS:4163 / AST	S F 0.050 0.080 0.0 0.061 0.0 Grain (IS:4748/A	Ni 35 20 0.060 Size STM E112) 5 77.5	Cr 0.90 1.20 1.170	 0.015 I Decarb (IS:6396	0.090 (mm)	0.005	0.080 0.130 0.106		0.0020		0.05		
Si Mn 0.15 0.90 0.35 1.20 0.260 1.130 N2 H2 1 PPM 100 2 77 1.2 IS:4163 / AST	0.050 0.080 0.0 0.061 0.0 Grain (IS:4748/A	35 20 0.060 Size STM E112) 5	0.90 1.20 1.170	 0.015 I Decarb (IS:6396	0.090 (mm)	0.005	0.080 0.130 0.106		0.0020		0.05		
0.15 0.90 0.35 1.20 0.260 1.130 N2 H2 1 PPM 100 2 77 1.2 - IS:4163 / AST	0.050 0.080 0.0 0.061 0.0 Grain (IS:4748/A	35 20 0.060 Size STM E112) 5	0.90 1.20 1.170	 0.015 I Decarb (IS:6396	0.090 (mm)	0.005	0.080 0.130 0.106		0.0020		0.05		
0.35 1.20 0.260 1.130 N2 H2 1 PPM 100 2 77 1.2 IS:4163 / AST	0.080 0.0 0.061 0.0 Grain (IS:4748/A 7.0 M E45A/ ISO 4	35 20 0.060 Size STM E112) 5	1.20	0.015 I Decarb (IS:6396	0.090 (mm)	0.005	0.130 0.106		0.0020		0.10		
0.260 1.130 N2 H2 PPM 100 2 77 1.2 Thick Thin	0.061 0.0 Grain (IS:4748/A 7.0 M E45A/ ISO 4	20 0.060 Size STM E112)	1.170	0.015 I Decarb (IS:6396	0.090 (mm)	0.005	0.106		100000000000000000000000000000000000000	-			
N2 H2 PPM 100 2 77 1.2 IS:4163 / AST	Grain (IS:4748/A 7.0 M E45A/ ISO 4	Size STM E112) 5 - 7.5		Decarb (IS:6396	(mm)	AMARIAN I		0.0032	0.0003	0.0000			
PPM	(IS:4748/A 7.0 M E45A/ ISO 4	STM E112) 5 - 77.5	Tota	(IS:6396		D.I.	Value		0.0000	0.0002	0.070		
	7.0 M E45A/ ISO 4	- 17.5)		value		Mic	ro Struct	ure	DESCRIPTION OF THE PERSON OF T	
100 2 77 1.2 - IS:4163 / AST Thick Thin	7.0 M E45A/ ISO 4	7.5											
77 1.2 - IS:4163 / AST Thick Thin	7.0 M E45A/ ISO 4	7.5					92 mm						
- IS:4163 / AST Thick Thin	M E45A/ ISO 4	111.55		-		122	2 mm			-			
Thick Thin	the same with a state of the		**			107.19 mm				122			
THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NAM	В	967, Method A									Hardne	ss BHI	
THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NAM	A B			CD			JIS		DIN			IS 1500:1983	
2.0 2.0	Thick Th	n Thick	Thin	Thick	A	B+C	Total	КЗ	K4		Min	Max	
	1.0 0.4	0.5	1.0	1.0								260	
0.5		50	1.0								220	240	
		JOMINY	HARDEN	ABILITY	(IN HRC)	(IS 3848)	77						
J14/16 J16/16													
37						7 4							
- 48					7								
48.5 46.5													
		MECH	HANICAL	PROPER	RTIES (IS	1608)							
Test Condition Tensile Stre			ength Yield Strength				gation	Reduction	on Area Impact Strength			ath	
i						-		/					
-		-				/		- /		-			
	-	S	uppleme	ntary Red	quirement	S							
		Ston Dow	PROPERTY.	and the second second	THE PERSON NAMED IN COLUMN 2 IS NOT THE OWNER.	70' 100							
andard Internal Soundness (ASTM E381 / IS11371)			Test (IS:10138)			Surface Defects (Visual /MFLT)			IFLT)	Bend Test (IS1599:1985			
C3R3S3 max			As per IS 4075			Dept	Depth of defect 0.3 mm max.						
C3R3S3 max			OK As per IS 4075				OK						
Ultrasonic Test			MFLT				Dimension Tolerance			Ovality / Lobbing			
Yes							IS:3739			IS:3739			
100% Bars manual ut done & found OK						Asper is 3739 gr 1			-				
A STATE OF THE PARTY OF THE PAR	ked by Spark,M	etascope,Ni S	pot test,M	lobile Spe	ectro - OK								
0	c3R3S3 m C3R3S3 m Ultrasonic T Yes s manual ut do	undness (ASTM E381 / IS11371 C3R3S3 max C3R3S3 max Ultrasonic Test Yes s manual ut done & found OK	Sundness (ASTM E381 / IS11371) C3R3S3 max C3R3S3 max Ultrasonic Test Yes s manual ut done & found OK 0% Bars Checked by Spark,Metascope,Ni S	Supplement Supplement Step Down (IS 407 Test (IS C3R3S3 max As per I Ultrasonic Test MFI Yes Smanual ut done & found OK Spark, Metascope, Ni Spot test, M	Supplementary Resource Supplementary Resource	Supplementary Requirement Supplementary Requirement Step Down (IS 4075) / Blue Fracture Test (IS:10138) C3R3S3 max As per IS 4075 C3R3S3 max OK As per IS 4075 Ultrasonic Test Yes Smanual ut done & found OK OW Bars Checked by Spark, Metascope, Ni Spot test, Mobile Spectro - OK	Supplementary Requirements	Supplementary Requirements	Supplementary Requirements	Supplementary Requirements	Supplementary Requirements	Supplementary Requirements	

Remarks:-

Free from radioactive material or banned substances.

IS 7283:1992, Customer Specification Caterpillar Inc.Chg. No.17,DT.19.11.2010 Reference Standard

For any Technical Support / Quality related issues please contact -

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Checked by:

Engineer - R&D

Approved by: **Authorised Signatory**

For VARDHMAN SPECIAL STEELS LTD.