



BSI™



An ISO/TS 16949:2009 COMPANY

ARTI STEELS LIMITED

Registered Office : G.T.Road, Miller Ganj, Ludhiana.

Works : Focal Point, LUDHIANA - 141010. (INDIA)

Phone no. :- 0161-3006200 Fax :- 0161-3006250

MANUFACTURER'S OF :- CARBON ALLOYS & SPECIAL STEELS

--: TEST CERTIFICATE : --

-: Original :-

M/S.- HAPPY FORGINGS LTD.U-II, B-XXIX, 2254 | T.C.NO. 7839 | Date --: 20/01/2018 13:34:23
 /1.&OPP.HINDUSTAN TYRE. | Invoice No. 20411
 KANGANWAL ROADJUGIANA.LUDHIANA | Truck No. PB10DM-9097

GRADE	SIZE	HEAT NO.	MANUFACTURING ROUTE	COLOUR CODE	SUPPLY COND.N.	QTY. (MT)	NO. OF PCS.
-------	------	----------	---------------------	-------------	----------------	-----------	-------------

EN 353	90 DIA	6044	E.A.F.+L.F.+V.D.+CCM+EMS	BLUE+WHITE	E	AS ROLLED	15.640	51
--------	--------	------	--------------------------	------------	---	-----------	--------	----

--: CHEMICAL COMPOSITION IN PERCENTAGE :-

	C	Mn	S	P	Si	Ni	Cr	Mo	V	Al	Cu	Sn	Ti	B	Ca
Min	0.1400	0.5000	0.0200	--	0.1000	1.0000	0.7500	0.0800	--	0.0200	--	--	--	--	--
Max	0.2000	1.0000	0.0350	0.0500	0.2500	1.5000	1.2500	0.1500	0.0400	0.0400	0.2500	--	0.0060	0.0004	0.0020
Actual	0.1850	0.9700	0.0260	0.0190	0.2400	1.0500	1.2100	0.1200	0.0058	0.0235	0.1080	0.0110	0.0033	0.0004	0.0007

--: METALLURGICAL RESULTS :-

INCLUSION RATING IS : 4163/JK CHART/ASTM E-45A

	A			B			C			D			Aust. Grain Size ASTM No. (E-112)	Gas Content (ppm)	
	T	H	T	H	T	H	T	H	T	H					
STD MAX	2.5	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.16	02	14
ACTUAL	1.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	Micro-Structure	N2	87
													B+F+P	H2	.902

MECHANICAL PROPERTIES (ASTM A-370/IS-1608)

TEST CONDITION (N / H & T)

MACRO

ULTRASONIC TEST

MIX UP TEST

	U.T.S.	Y.S.	EL%	RA%	Impact Value	Hardness B.H.N./Rb	BETTER THAN C2,R2,S2 MAX LEVEL AS PER PLATE 1st OF ASTM-E-381	100 % DONE OK	SPARK TEST 100% DONE OK
Reqd.	-	-	-	-	-	-	-	-	-
Actual	-	-	-	-	-	248-262	-	-	-

--: HARDENABILITY (HRC) AS PER IS : 3848 :-

	J1/16	J2/16	J3/16	J4/16	J5/16	J6/16	J7/16	J8/16	J9/16	J10/16	J12/16
Distance	-	-	-	-	-	-	-	-	-	-	-
Required	-	-	-	-	-	-	37-41	-	-	-	-
Actual	-	-	43.5	42.5	41.5	40.5	39.5	37.5	-	-	-

Remarks :- REDUCTION RATIO=9.1,100% MOBILE SPECTRO DONE OK (X-RAYS)

%W: 0.0060, %CO: 0.012, %NB: 0.0059

BILLET SIZE=240X240 MM, SDT OK, SURFACE SATISFACTORY
MATERIAL CONFIRMS TO SPEC. BGL TS.01, REV. NO.: 11

Note :- TESTED FOR RADIOACTIVE CONTAMINATION OK

CERTIFIED THAT THE TEST FINDINGS ARE CORRECT & ARE BASED ON
ACTUAL RESULTS CARRIED OUT ON SAMPLES DRAWN AS PER Q.A.P.

PREPARED BY

AUTHORISED SIGNATORY