



-: Original :-

M/S.- HAPPY FORGINGS LTD.U-II,B-XXIX,2254 | T.C.NO. 8554 | Date -: 13/02/2018 17:16:18  
/1.&OPP.HINDUSTAN TYRE. | Invoice No. 21308  
KANGANWAL ROADJUGIANA.LUDHIANA | Truck No. PB19F-7754

GRADE	SIZE	HEAT NO.	MANUFACTURING ROUTE	COLOUR CODE	SUPPLY COND.N.	QTY. (MT)	NO. OF PCS.
EN 353	80 DIA	6297	E.A.F.+L.F.+V.D.+CCM+EMS	BLUE+WHITE	E	AS ROLLED	31.490   157

-: CHEMICAL COMPOSITION IN PERCENTAGE :-

	C	Mn	S	P	Si	Ni	Cr	Mo	V	Al	Cu	Sn	Ti	B	Ca
Min	--	0.5000	--	--	--	1.0000	0.7500	0.0800	--	--	--	--	--	--	--
Max	0.2000	1.0000	0.0500	0.0500	0.3500	1.5000	1.2500	0.1500	--	--	--	--	--	--	--
Actual	0.1800	0.8600	0.0220	0.0210	0.2050	1.0800	1.1000	0.1200	0.0045	0.0210	0.1250	0.0245	0.0025	0.0004	0.0005

-: METALLURGICAL RESULTS :-

INCLUSION RATING IS : 4163/JK CHART/ASTM E-45A									Aust.Grain Size ASTM No. (E-112)	7	Gas Content (ppm)	
A		B		C		D						
T	H	T	H	T	H	T	H					
STD	2.0	1.0	2.0	1.0	2.0	1.0	2.0	1.0	Decarb. (MM)	0.13	O2	16
MAX											N2	84
ACTUAL	1.5	0.5	0.5	0.0	0.0	0.0	1.0	0.0	Micro- Structure	B+F+P	H2	.912

MECHANICAL PROPERTIES (ASTM A-370/IS-1608) | AS ROLLED | MACRO | ULTRASONIC TEST | MIX UP TEST  
TEST CONDITION (N / H & T)

	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	-	-	-	-	-	229-239			

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

Distance	J1/16	J2/16	J3/16	J4/16	J5/16	J6/16	J7/16	J8/16	J9/16	J10/16	J12/16
Required	-	-	-	-	-	-	34-37	-	-	-	-
Actual	-	-	-	-	-	-	35	-	-	-	-

Remarks :- REDUCTION RATIO=8.0,100% MOBILE SPECTRO DONE OK (X-RAYS) | SURFACE SATISFACTORY

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