



TEST CERTIFICATE

CUSTOMER	: HIM TEKNO FORGE LTD. PITHAMPUR, DHAR.	INVOICE NO	:	QA/RM/F10
SPECIFICATION	: TDC NO.1 DT 25.08.2014	TRUCK NO	:	
REV No / REF NO	: --	DATE	:	14/05/2018
HEAT NO	: D 60037	NO OF PCS / BNDL	:	
GRADE	: 20MNCR5	QUANTITY (MT)	:	
SECTION(MM)	: 63RCS	COLOUR CODE	:	RED+BLUE DOT
REDUCTION RATIO	: 8.2	SUPPLY CONDITION	:	AS ROLLED
INPUT SIZE (MM)	: 180 X 180	MULTIPLE LENGTH	:	5-6MTR
PROCESS ROUTE	: BF/EDF/LRF/VD/CCM/SEN/M'EMS/AMLC			

1. CHEMICAL COMPOSITION % (Ladle/Product)

	%C	%Mn	%P	%S	%Si	%Cr	%Ni	%Mo	%Pb	%Cu	%Sn	%V	%Ti	%B	%Al	%Ca
CUST. MIN	0.170	1.100	--	0.020	0.100	1.000	--	--	--	--	--	--	--	--	0.020	--
SPEC. MAX	0.220	1.400	0.035	0.035	0.250	1.300	--	--	--	--	--	--	--	--	0.040	--
ACTUAL	0.170	1.210	0.019	0.023	0.220	1.040	0.020	0.003	--	0.009	0.005	0.004	0.0030	0.0003	0.030	0.0012

2. MECHANICAL PROPERTIES

SPECIFIED

ACTUAL

YS	:	--	
UTS	:	--	
ELONGATIONS(5.65Sq.rt.A) %	:	--	
REDUCTION AREA %	:	--	
IMPACT VALUE	:	--	
HARDNESS(BHN/HRB/HRC)	:	--	170/190BHN

3. METALLURGICAL PROPERTIES

MICRO STRUCTURE	:	P+F	PEARLITE+FERRITE
GRAIN SIZE(ASM E112/IS:4748)	:	6/8	6.5/7.5
TOTAL DECARB (MM) SAEJ419	:	--	--
INCL RATINGS(ASM E-45/IS:4163)	:		

SPECIFIC REQUIREMENT

ACTUAL

THIN	THICK	THIN	THICK	THIN	THICK	THIN	THICK
A-2.0/1.0	B-2.0/1.0	C-2.0/-	D-2.0/1.0				
1.5	0.0	0.5	0.0	0.0	0.0	1.5	0.0

MACRO ETCH TEST (ASTM E - 381)	:	C2R2S2 MAX.	BETTER THAN C2R2S2
4. D. I. VALUE (J406)	:	--	
JOMINY REQUIREMENT	:	--	
HARDENABILITY IS:384B/A255-02	:		

DIST-INCH/MM	1/16"	2/16"	3/16"	4/16"	5/16"	6/16"	7/16"	8/16"	9/16"	10/16"					
VALUES(HRC)	45.00	43.50	40.00	36.00	33.00	30.00	29.00	28.00	26.50	25.00					

5. GAS LEVEL (PPM) SPECIFIED MAX	:	O2: 20.0	N2: 90.0	H2: 2.0
GAS LEVEL (PPM) ACHIEVED	:	O2: 15.7	N2: 70.0	H2: 1.5

6. REMARKS	:	100% SPARK/SPECTRAL/MOBILE SPECTRO TEST :OK
	:	STEP DOWN TEST :OK
	:	UPSET TEST :NA
	:	100%UT AND MPI OK.

 AUTHORIZED SIGNATORY