

<div style="display: flex; justify-content: space-between; align-items: center;"> <div> <h2 style="margin: 0;">GERDAU STEEL INDIA PVT LIMITED</h2> <p style="margin: 0;">PLANT: TADIPATRI. DIST.: ANANTPUR. A.P.: 515411</p> </div> </div>																																		
TEST CERTIFICATE										F/QA-TC/12 Rev. 01																								
TC No : 2018/00098025					Invoice No. :					Quantity : t		Rolling Input : 160X160 mm																						
Customer : Sample TC										S.O. No. / Date :																								
PROCESS ROUTE :- BF>>BOF>>LRF>>VD>>CCM(EMS & AMLC)>>RM										Size : 26 Dia			Truck No.:																					
Heat No:- 35631										Product : Rolled Bar		Colour Code: PURPLE BASE/WHITE DOT																						
NO OF BUNDLES: NO OF BARS:					Grade :- 16MNCR5																													
TAS No. :2280/2016					TDC No :- MAC-TS-043B, Rev: 00, Dated: 20.04.2017					Condition :As Rolled		Reduction Ratio: 48.2:1																						
CHEMICAL COMPOSITION																																		
Element	%C	%Mn	%Si	%P	%S	%Cr	%Ni	%Cu	%Mo	%Al	%Pb	%V	%Ti	%Ca																				
Min.	0.14	1.00	-	-	-	0.80	-	-	-	-	-	-	-	-																				
Max.	0.19	1.30	0.40	0.035	0.035	1.10	-	-	-	0.040	-	-	-	-																				
Actual	0.14	1.17	0.25	0.016	0.012	1.03	-	-	-	0.024	-	-	-	-																				
OTHER ELEMENTS										GAS LEVEL																								
Element	%B	%Nb	%As	%Sb	%Sn	%W	%Bi				O ₂ PPM	H ₂ PPM	N ₂ PPM																					
Min.	-	-	-	-	-	-	-				Min	-	-	-																				
Max.	-	-	-	-	-	-	-				Max	20	2	100																				
Actual	-	-	-	-	-	-	-				Actual	16	0.9	80																				
MECHANICAL PROPERTIES																																		
Requirement	Hardness (BHN)	Impact Strength (IZOD/CHARPY)	Yield Strength (N/mm ²)	UTS (N/mm ²)	%Elong.	%RA	JOMINY HARDENABILITY (HRC)																											
							J1/16"	J3/16"	J4/16"	-	-	-																						
Min.	-	-	-	600	800	9	35	Min.	-	-	30	-	-	-																				
Max.	240	-	-	-	1100	-	-	Max.	42	-	34	-	-	-																				
Actual	166	-	-	827	980	12.5	36.5	Actual	40.6	34.8	31	-	-	-																				
METALLURGICAL PROPERTIES																																		
Require-ment	Depth of Decarb (mm) (SAE J419 TYPE III)	Macro Etch (ASTM E 381)	Max. Depth of Surface Defect (mm)	Grain Size (ASTM E 112)	INCLUSION RATING AS PER ASTM E45 (METHOD A)																													
					A		B		C		D																							
					T	H	T	H	T	H	T	H																						
Min.	-	-	-	6	Min	-	-	-	-	-	-	-																						
Max.	1% of dia max	-	-	8	Max	2.0	1.5	2.0	1.5	2.0	1.5	2.0																						
Actual	0.17	C1R1S1	-	7.5-8	Actual	1.5	0.5	1.0	-	-	-	1.0																						
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Spark & Spectral Test:</td> <td style="width: 33%;">100% OK</td> <td style="width: 33%;">Other Tests:</td> <td style="width: 33%;">-</td> </tr> <tr> <td>Surface Inspection:</td> <td>100% OK</td> <td>1. MFL:</td> <td>100% OK</td> </tr> <tr> <td>Ultrasonic Test:</td> <td>100% OK</td> <td>2. Step Turn:</td> <td>Found Satisfactory</td> </tr> <tr> <td>MPI:</td> <td>-</td> <td>3. Blue Fracture:</td> <td>-</td> </tr> <tr> <td></td> <td></td> <td>4. Upset Test:</td> <td>-</td> </tr> </table>															Spark & Spectral Test:	100% OK	Other Tests:	-	Surface Inspection:	100% OK	1. MFL:	100% OK	Ultrasonic Test:	100% OK	2. Step Turn:	Found Satisfactory	MPI:	-	3. Blue Fracture:	-			4. Upset Test:	-
Spark & Spectral Test:	100% OK	Other Tests:	-																															
Surface Inspection:	100% OK	1. MFL:	100% OK																															
Ultrasonic Test:	100% OK	2. Step Turn:	Found Satisfactory																															
MPI:	-	3. Blue Fracture:	-																															
		4. Upset Test:	-																															
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td colspan="4">Oil Quenched Core Hardness:</td> </tr> <tr> <td>Min. in HRC</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>Actual in HRC</td> <td>-</td> <td>-</td> <td>-</td> </tr> </table>															Oil Quenched Core Hardness:				Min. in HRC	-	-	-	Actual in HRC	-	-	-								
Oil Quenched Core Hardness:																																		
Min. in HRC	-	-	-																															
Actual in HRC	-	-	-																															
Remarks	Microstructure : Pearlite + Ferrite Mechanical Properties is in H&T condition.																																	
Length of Bar :-		"We certify that the contents of this report are correct & accurate & meet the requirements of the purchase order, technical delivery conditions, general steel requirements & the material certification requirements". Supplied material is free from radioactive element.						 Technical Service 16.03.2018																										
Corporate Office: 304/305 World Trade Centre. Brigade Gateway Complex. Malleswaram (West). Bangalore: 560046. India																																		
Please contact in case of query e-mail id: inml.techservice@gerdau.com																																		