

896
AHA



GERDAU STEEL INDIA PVT LIMITED

PLANT: TADIPATRI. DIST.: ANANTPUR. A.P.: 515411

TEST CERTIFICATE

F/QA-TC/12 Rev. 01

TC No : 2018/00095060	Invoice No. : ST2017006140	Quantity : 10.502 t	Rolling Input : 160X180 mm
Customer : GERDAU STEEL INDIA PVT. LTD	S.O. No. / Date : 51867		
PROCESS ROUTE :- BF>>BOF>>LRF>>VD>>CCM(EMS & AMLC) >>RM	Size : 42 Dia	Truck No.: AP02TC 2224	
Heat No:- 35203	Product : Rolled Bar	Colour Code:	WHITE/GREEN
NO OF BUNDLES: 4 NO OF BARS: 169	Grade :- 16MNCR5		
TAS No. : 903/2014	TDC No :- PFG/MQC/52,REV.NO.-00/02, DATE:08/08/2014	Condition :As Rolled	Reduction Ratio: 18.48 :1

CHEMICAL COMPOSITION

Element	%C	%Mn	%Si	%P	%S	%Cr	%Ni	%Cu	%Mo	%Al	%Pb	%V	%Ti	%Ca
Min.	0.14	1.00	0.15	-	0.015	0.80	-	-	-	0.015	-	-	-	-
Max.	0.19	1.30	0.35	0.025	0.035	1.10	-	-	-	0.035	-	-	-	-
Actual	0.14	1.16	0.30	0.017	0.026	1.06	-	-	-	0.034	-	-	-	-
OTHER ELEMENTS														
Element	%B	%Nb	%As	%Sb	%Sn	%W	%Bi	GAS LEVEL						
Min.	-	-	-	-	-	-	-	O ₂ PPM	H ₂ PPM	N ₂ PPM				
Max.	-	-	-	-	-	-	-	Min	-	-	-	-	-	-
Actual	-	-	-	-	-	-	-	Max	25	2	80			
								Actual	16	0.8	70			

MECHANICAL PROPERTIES

Requirement	Hardness (BHN)	Impact Strength (IZOD/CHARPY)	Yield Strength (Kg/mm ²)	UTS (Kg/mm ²)	%Elong.	%RA	JOMINY HARDENABILITY (HRC)					
							J1/16"	J4/16"				
Min.	-	-	-	-	-	-	Min.	32	-	-	-	-
Max.	190	-	-	-	-	-	Max.	42	37	-	-	-
Actual	157	-	-	-	-	-	Actual	41.6	33	-	-	-

METALLURGICAL PROPERTIES

Requirement	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.	0.50	C2R2S2	-	8	Max	2.0	1.5	2.0	1.5	2.0	1.5	2.0
Actual	0.22	C1R1S1	-	6.5-7	Actual	2.0	1.0	1.0	-	-	1.0	0.5

Spark & Spectral Test:	100% OK	Other Tests:		Oil Quenched Core Hardness:	
Surface Inspection:	100% OK	1. MFL:	100% OK		
Ultrasonic Test:	100% OK	2. Step Turn:	Found Satisfactory		
MPI:	-	3. Blue Fracture:	-	Min. in HRC	-
		4. Upset Test:	-	Actual in HRC	-

Remarks : Microstructure : Pearlite + Ferrite (free from harmful banding)

Length of Bar :- 6000mm	"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 30.01.2018
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Corporate Office: 304/305 World Trade Centre, Brigade Gateway Complex, Malleswaram (West), Bangalore-560016, India

Please contact in case of query e-mail id: inml.techservice@gerdau.com



URJA METALLURGICAL SERVICES

J/P-15, TELCO-BHOSARI ROAD, OPPOSITE TO RELIANCE COMMUNICATION, BHOSARI,
PUNE-26 PH-020-46768703, 4678190, Email-urjametallurgical@gmail.com

TEST CERTIFICATE

Test Report No. 41092	Report Date :	20/03/2018
PRECIFORGE AND GEARS	Sample Received :	20/03/2018
(DIVN. OF PATODIA FORGINGS AND GEARS LTD.)	Tested Date :	20/03/2018
GAT NO.150/2, MAHALUNGE INGLE	Lab No:	UML-648
CHAKAN TALEGAON RD, TAL-KHED,PUNE-410 501.	Challan No :	DC/17-18/10556/17.3.18
Maharashtra - 411052	P.O. No:	-

Sample Description : DIA 42 MM BAR, MATL.SPEC.16MnCr5, HEAT NO.35203, SUPP NAME - GERDAU

FERROUS TEST


Test Method :ASTM E 415-14

	OBS	MIN	MAX		OBS	MIN	MAX
C %	0.14	0.14	0.19	Cu %	--		
S %	0.020		0.035	Pb %	--		
P %	0.019		0.035	W %	--		
Si %	0.30	0.15	0.40	B %	--		
Mn %	1.21	1.00	1.30	N %	--		
Ni %	--			--	--	--	--
Cr %	1.00	0.80	1.10	--	--	--	--
Mo %	--			--	--	--	--
Al %	--			--	--	--	--
Nb %	--			--	--	--	--
Ti %	--			--	--	--	--
V %	--			--	--	--	--

Remark: ABOVE TEST RESULT CONFORMS TO DIN 17210-1969 GR.16MnCr5 QUALITY MATERIAL.

END OF REPORT

FOR URJA METALLURGICAL SERVICES



Rohidas B. Chavhan

(Technical Manager)

Note- Sample(s) are not drawn by Urja Metallurgical Services. This report refers to sample(s) submitted for test. Report shall not be reproduced except in full, without the permission of the laboratory. Tests marked as * (Star) are not covered under the scope of NABL Accreditation presently.



ORIGINAL

URJA METALLURGICAL SERVICES

ORIGINAL / DUPLICATE / TRIPLICATE

J/P-15, TELCO-BHOSARI ROAD, OPPOSITE TO RELIANCE COMMUNICATION, BHOSARI,
PUNE-26 PH-020-46768703, 4678190, Email-urjametallurgical@gmail.com

TEST CERTIFICATE

Test Report No. 41203

PRECIFORGE AND GEARS

(DIVN. OF PATODIA FORGINGS AND GEARS LTD.)

GAT NO.150/2, MAHALUNGE INGLE

CHAKAN TALEGAON RD, TAL-KHED, PUNE-410 501.

Report Date:

21/03/2018

Sample Received :

20/03/2018

Tested Date :

21/03/2018

Lab No:

UML-645

Challan No :

DC/17-18/10556/17.3.18

P.O. No :

Sample Description : DIA 42 MM BAR, MATL.SPEC.16MnCr5, HEAT NO.35203, SUPP NAME - GERDAU

JOMINY HARDENABILITY TEST

Test Method :IS : 3848-1981 RA 2003

JOMINY DISTANCE FROM QUENCHED END IN MM**OBSERVED HARDNESS IN HRC**

J - 1/16"

39.8 HRC (REQ.42 HRC MAX)


J 4/16"

33.7 HRC (REQ.33-37 HRC)

Remark : ABOVE TEST RESULT CONFORMS TO 16MnCr5 QUALITY MATERIAL.
MIN MAX VALUE SPECIFIED BY CUSTOMER.

END OF REPORT

FOR URJA METALLURGICAL SERVICES


Rohidas B. Chavhan

(Technical Manager)

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T-2335 NABL T-2336