

**JSW STEEL LIMITED - SALEM WORKS**

QR / QA / 54

Works: pottaneri Village, Mecheri Post - 636 453, salem, india

Registered Office: "JSW CENTRE", Bandra Kurla Complex, Bandra (East), Mumbai - 400 051

TEST CERTIFICATE

Certificate No. : 238738				Date : 16.03.2018				Packing Slip No :705681918			
Customer Name: JSW Steel Ltd Depot - Pune, Alandi				SO No : 400799457				Invoice No :7100696831			
Cust. Address : Gate No. 399, Charoli Khurd				SO Date : 15.03.2018							
Pune,Maharashtra-412015,India				Truck No.: TN930508							
Heat No	Grade	Size (mm)	Length (mm)	M/L (mm)	No. of Bundles	No. of PCS	Weight	Billet/Bloom Size			
A5873	20MNCR5	60.00 mm DIA	6,000.00 mm	0 mm	4	91	11.990 MT	160MM 160MM			

Process Route : BF_EOF_LRF_VD_CCM_EMS_BRM

Reduction Ratio : / - 9.06 : 1

CHEMICAL ANALYSIS																			Prod STD No : QDQA06_667		
Element	C%	Si%	Mn%	P%	S%	Cr%	Mo%	Ni%	B ppm	V%	Cu%	Pb%	Sn%	Ti%	Nb%	Zr%	As%	Sb%	Al%	Ca ppm	CE%
MIN																					
MAX																					
Actual	0.177	0.206	1.250	0.012	0.029	1.150	0.008	0.027	2	0.003	0.015	0.001	0.007	0.0030	0.002	0.002	0.005	0.001	0.023	13	0.620

Gas Levels : N ppm : [/] -72 O ppm : [/] -11.6 H ppm : [/] -1.39

MECHANICAL PROPERTIES :																		
	Tensile Test ()				Hardness Test				Impact Test ()									
Cond.									Spec.									
Spec.	YS	UTS	Elong.	RA	As Rolled	As Quenched		As Q&T	Test Temp	Imp. Value (min)	1		2		3		Avg.	
		MPa	%	%	BHN													
Min																		
Max																		
Actual		1150.600	12.640		173.0													

Edge / Corner Radius (mm) : Upset Type : Upsetability:

JOMINY HARDENABILITY ()																			Ideal Diameter (DI) : [/] -		
Distance	J6/16																				
MIN (HRC)																					
MAX (HRC)																					
Actual(HRC)	36.50																				

METALLURGICAL PROPERTIES & PHYSICAL INSPECTION															
	Surface Inspection		Step Down Test		BFT Test		MPI Test		Segregation Test		Spark Test		Spectra Test		Metascope Test
Actual	OK		Pass				100 % OK				100 % OK		100 % OK		100% OK.
	Macro Etch Test		Micro Structure		CN		CZ Looser		CZ Closer		GBC Level		DEG. SPH		Distortion
Spec					/		/		/						
Actual	C1R1S1		Ferrite - Pearlite												
	Grain Size	Decarb (mm)	Banding (µm)	A		B		C		D		DOS µm	Ultrasonic Test		
				Thin	Thick	Thin	Thick	Thin	Thick	Thin	Thick				
Spec	/	/	/												
Actual	7.00	0.240 mm		2.00	1.00	0.50	0.00	0.00	0.00	0.50	0.00				

Inclusion Rating Test Standard: ASTM E45 - 13, A Grain Size Standard: ASTM E112 - 13 Decarb Standard: SAE J419_198312
Macro Etch Test Standard: ASTM E381 - 17 Banding Test Standard: UT Standard:

JSW COLOR CODE : HALF BROWN + HALF YELLOW CUSTOMER COLOR CODE :

INSPECTION CERTIFICATE 3.1 ACCORDING TO EN 10204 : 2004

Supply Condition : AS ROLLED

Remarks :

Reference : WE HERE BY CERTIFY THAT THE MATERIAL SHIPPED UNDER THIS TEST CERTIFICATE DID NOT COME IN DIRECT CONTACT WITH ANY MERCURY, CADMIUM HEXAVALENT CHROMIUM CONTAINING DEVICES, FREE FROM RADIOACTIVE CONTAMINATION EMPLOYING A SINGLE BOUNDARY OF CONTAINMENT DURING THE MANUFACTURING PROCESS,TESTS, INSPECTION AND STORAGE.

WE CERTIFY THAT CONTENTS OF THIS REPORT ARE CORRECT AND ACCURATE AND MEET THE REQUIREMENTS OF THE PURCHASE ORDER,TECHNICAL DELIVERY CONDITION, GENERAL STEEL REQUIREMENTS ANDTHE MATERIAL CERTIFICATION REQUIREMENTS.				NOTE: 1. THE RESULTS RELATES ONLY TO THE ITEM TESTED. 2. CERTIFICATE SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT THE WRITTEN APPROVAL OF ISSUING AUTHORITY.				For JSW STEEL LIMITED S. M. KUMAR - AVP (PC & QAD)			
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