

## STEELS & ENERGY LTD TEST CERTIFICATE R. L.

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## Customer: M/S HAPPY FORGINGS.LTD.(UNIT'II)

B- XXIX-2254/1 & OPP. HINDUSTAN TYRES (ADJ. WARYAM STEELS), KANGANWAL ROAD, PO-JUGIANA, LUDHIANA.

TC NO.	Date	Invoice No.	Date	Truck No.	No. of Pcs	No. of Pcs Quantity in	Length	Supply Condition	Colour code
17-4219 01-02	01-02-2018	RL17-SI-3823	01-02-2018	RJ 07 GB 2883	28	27.110	5.0 to 6.0 MTR	AS ROLLED	YELLOW+ BLUE+WHITE
Process Route		Heat No.	Grade		As Cast Size	Produ	Product Size	Reduction Ratio	Customer TDC
EAF/LRF/VD/CCP-with MEMS	EMS	2-VYY-4	EN353	(6	280X320	AIG DIA	All	8-63:1	

Chemica	I Compo	Chemical Composition & Tramp Elements	ramp Ele	ments		H									,
Element	o%	15%	%Mn	d%	s%	%Cr	%Ni	%Mo	%cn	Λ%	%AI	%Ti	8%	%Ca	%As
Min.	0.14	,	0.50	1	0.020	0.75	1,00	0,08	9		0.020				1
Мах.	0.20	0.35	1.00	0.035	0.040	1.25	1.50	0.15	8		0.040				
Actual	0.195	0.25	0.95	0.022	0.027	1.09	1.04	0.13			0.023				
Tramp E	lements	Tramp Elements (Contd.) & DI / CE	DI / CE	THE PARTY OF				S	Gas Analysis.	sis.	ज्ञात्र विकास	Dir	nension	Dimension Tolerance	aor
Element	wsw.	%Pb	%Sp	CE	Di Value	ine			02	. H2	N2	Size Tol. (MM)	i. (MM)		
Min			*		*		(Waa	Min							
Max		2					) seg	Max	20.00	2.50	90.00	Specification	cation	As per Gra	As per IS 3739, Grade I,
Actual	E.							Actual	12.00	1.20	72.00				
Mechani	Mechanical Properties	erties									Macrostructure	ructure	Mic	Microstructure	ture
		Hardness						-÷	100	100					

Mechanical Properties	cal Flop	Sallies								macrostructure	ain	Microstructure	_
Hardness Test Code As Rolled	Hardness As Rolled	Hardness (H&T	YS (Kg/mm²)	mm²)	UTS (Kg/mm²)	%EI.	%RA	Impact Valu	Impact Values (Joules)	Macrostructure As	re As	Matrix	
	(BHN)	(BHN)						pozi	Charpy	DOCUMENT OF THE	100		
Spec.	240 Max.	×								Better Than C2R2S2	2R2S2	Uniform distribution of Ferrite plus Pearlite	-
Actual	206-217									C2R2S2		Uniform distribution of Ferrite plus Pearlite	
Metallurgical Properties	gical Pro	perties								Other Test Results	t Resi	ults	_
Test	Test Code	Decarb ASTM 1419	Decarb Grain Size	Inclusion	Inclusion Rating (As per IS 4163/ ASTME 45A) Plate IR	W ASTME-45	A) Plate IR	Magnaflux	Magnaflux Test (100%	UT Test	Spark/ Spectral Test		

										Snark	
Test Code	Decarb ASTM J419	Decarb Grain Size ASTM J419 as per ASTM	Inclusio	Inclusion Rating (As per IS 4163/ ASTME-45A) Plate IR	ber IS 4163	ASTME-45	A) Plate IR	Magnaflux Test (100%	UT Test (100%	Spectral	
*	(mm)	E112	Series	A	8	O	٥	Bars)		(100% Bars)	
Spec.	,	6.0 / 8.0	1/Н	2.071.0 2.070.0	2.0 / 0.0	2.0 / 0.0	2.0 / 1.0	ř			
Actual Value		6.0 / 7.0	Т/Н	1.5 / 0.5	0.5 / 0.0	0.0 / 0.0	1.5 / 0.5	OK	OK	ě	
Hardenability Test Result	et Boernit			10000		To the second		Policy III			Section of the last

34-38	36.00
Spec (HRC)	Actual Hardness

Remarks: Material is conforming to the customer specification.

NOTE:- This material is made for AL, and is complying to AL Std 258.02

(AUTHO DECLARATION: TEST RESULTS ARE BASED ON ACTUAL TESTS CARRIED OUT ON SAMPLES DRAWN AS PER QUALITY ASSURANCE PLAN. TEST CERTIFICATE CONFORMS TO THE CUSTOMER TDC.

Steels

To-Jours

For R.L. STERLS & ENERGY