

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	Quantity in MT	Length	Supply Condition	Colour code
17-4136	30-01-2018	RL17-SI-3789 30-01-2018	30-01-2018	RJ 50 GA 8395	up.	2.040	5.0 TO 6.0 MTR	AS ROLLED	YELLOW+ BLUE+WHITE
Process Route	9	Heat No.	Grade		As Cast Size	Produ	Product Size	Reduction Ratio	Customer TDC
EAF/LRF/VD/CCP-with MEMS	h MEMS	2-VUP-4	EN353		240X280	06	90RCS	8.26:1	

%As	9			aou			per IS 3739, Grade I.	i
%Ca	*			Dimension Tolerance			As per IS 3739, Grade I.	
8%	,			imension	Size Tol. (MM)		Specification	
ш%	ï		·	D	Size To		Specif	
%Ail	0.020	0.040	0.027		N2		90.00	73.00
۸%				is.	HZ		2.50	1.10
%Cu		Ť		Gas Analysis.	02	,	20,00	11.00
%Mo	0.08	0.15	0.135	S	~	Min	Max	Actual
%Ni	1.00	1.50	1.03			(Wdd) ssə	
%Cr	0.75	1.25	1.10	+	en			
%S	0.020	0,040	0.026		Di Value			*
4%	*	0.035	0.030		CE			*
%Mn	0.50	1.00	0.95	DI / CE	%Sp	ĭ	3.	,
%S%		0.35	0.23	Tramp Elements (Contd.) & DI / CE	%Pb			
2%C	0.14	0.20	0.19	ements (%Su		*	,
Element	Min.	Мах.	Actual	Tramp E	Element	Min	Max	Actual

Mechan	Mechanical Properties	erties							Macrostructure	Microstructure
Fest Code	Hardness Test Code As Rolled	Hardness (H&T	YS (Kg/mm²)	UTS (Kg/mm²)	%EI.	%RA	Impact Vali	Impact Values (Joules)	Macrostructure As	Matrix
	(BHN)	(BHN)					pozi	Charpy	per AS IME-381	
Spec.	240 Max.		¥		٠	*	,		Better Than C2R2S2	Uniform distribution of Ferrite plus Pearlite
Actual	206-217			*	٠			,	C2R2S2	Uniform distribution of Ferrite plus Pearlite
letallur	Metallurgical Properties	perties							Other Test Results	sults
									Spark	

Inclusion Rating (As per IS 4163/ ASTME-45A) Plate IR			(BHN)							poz	Charpy				
Corain Size Inclusion Rating (As per IS 4163/ ASTME-45A) Plate IR Magnaflux Test (100% Tiest Spark 1100% Tiest Spectral Series A B C D Bars) Bars Bars Bars Bars C D	Spec.	240 Max.		*					×	,		Better Than		Uniform d	Uniform distribution of Ferrite plus Pearlite
Orain Size Inclusion Rating (As per IS 4163/ ASTME-45A) Plate IR Magnaflux Test (100% LASTM E112 Series A B C D Bars) 6.0 / 8.0 T / H 2.0 / 1.0 2.0 / 0.0 2.0 / 0.0 15 / 0.5 OCK	Actual	206-217							÷			C2R	282	Uniform	Uniform distribution of Ferrite plus Pearlite
Decarb Grain Size Inclusion Rating (As per IS 4163/ ASTME-45A) Plate IR Magnaflux Test (100% (100% ASTM E112 Series A B C D Bars) Bars) Bars) - 6.0 / 8.0	Metallur	gical Pro	perties									Other	Test Res	sults	
(mm) ASTM E112 Series A B C D Bars) Bars) - 6.0/8.0 T/H 2.0/1.0 2.0/0.0 2.0/1.0	Test	Code	Decarb ASTM J419	Grain Size as per	Inclusio	on Rating (As	per IS 4163/	ASTME-45	A) Plate IR	Magnaflux	Test (100%	UT Test	Spark/ Spectral Test		
- 6.0/8.0 T/H 2.0/1.0 2.0/0.0 2.0/0.0 2.0/1.0			(mm)	ASTM E112	Series	A	8	O.	a	e n	rs)	Bars)	(100% Bars)		
6.0/7.0 T/H 1.5/0.5 0.5/0.0 0.0/0.0 15/0.5	Sp	ec.			T/H	2.0 / 1.0	2.0 / 0.0	2.0 / 0.0					4	4	
	Actual	Value		6.017.0	Т/Н	1.5/0.5	0.5 / 0.0	0.0 / 0.0	1.5/0.5	ō	×	Yo	o X		
Hardenability Test Result	Hardena	bility Tes	t Result					HILL			and tells	The state of the s			

Jominy Distance (mm/inch)	J 7/16"	
Spec (HRC)	37-41	
Actual Hardness (HRC)	37.00	100 S 100
Remarks NOTE:- Th		FOR RISTEELS & ENERGY 3
DECLARA	DECLARATION: TEST RESULTS ARE BASED ON ACTUAL TESTS CARRIED OUT ON SAMPLES DRAWN AS PER QUALITY ASSURANCE	(AUTHOR SEE SIGNATORY)

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.

(AUTHOR