

Sample Result Name	Type	Measure Date Time	Recalculation Date Time	Origin
10457 (hno-22194) test sample	Unknown	Tuesday, January 13, 2015	11:36:32 AM	Measured
Method Name	Method Version	Operator Name	Check Type	Check Status
Fe-10-MO		SARA SAE	None	Not Used
Grade Verification Name	Grade Verification Similarity	Correction Type	Type Corr Sample Name	Grade Search Name
	0	None		
Grade Search Similarity	Type	Status	Outlier Removal	
0	None	Not Used		

Sample Name	Grade
10457 (hno-22194) test sample	

	C	Si	Mn	P	S	Cr	Mo	Ni	Al	Co	Cu	Nb	Ti	V	W	Pb	Sn	As	Zr
	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
2	0.086	0.061	0.47	0.026	0.018	0.050	0.011	0.044	0.004	0.005	0.080	<0.003	<0.0010	0.004	0.066	<0.010	0.006	<0.005	0.003
3	0.076	0.065	0.46	0.025	0.016	0.048	0.009	0.043	0.003	0.005	0.080	0.004	<0.0010	0.002	0.057	<0.010	0.005	0.006	0.003
4	0.072	0.064	0.47	0.026	0.017	0.048	0.013	0.044	0.004	0.005	0.080	0.004	<0.0010	0.003	0.065	<0.010	0.006	<0.005	<0.003
Rep	0.078	0.064	0.47	0.025	0.017	0.049	0.011	0.044	0.004	0.005	0.080	0.004	<0.0010	0.003	0.063	<0.010	0.005	0.005	0.003
Min Cal	0.005	0.005	0.004	0.003	0.002	0.005	0.003	0.005	0.003	0.002	0.002	0.003	0.0010	0.002	0.030	0.010	0.002	0.005	0.003
Mean	0.078	0.064	0.47	0.025	0.017	0.049	0.011	0.044	0.004	0.005	0.080	0.003	<-0.002	0.003	0.063	<0.007	0.005	<0.005	<0.003
Max Cal	1.80	24.00	2.76	0.16	0.30	10.10	10.20	6.48	2.40	2.52	1.44	0.39	1.20	1.32	3.72	0.31	0.18	0.17	0.28
	Ca	Ce	B	Zn	La	Fe													
	Conc	Conc	Conc	Conc	Conc	Conc													
	%	%	%	%	%	%													
2	<0.0005	0.017	0.0007	0.013	0.003	99.0													
3	<0.0005	0.017	<0.0005	0.014	0.003	99.0													
4	<0.0005	0.016	0.0006	0.014	0.002	99.0													
Rep	<0.0005	0.017	0.0006	0.013	0.003	99.0													
Min Cal	0.0005	0.006	0.0005	0.003	0.002														
Mean	<0.0002	0.017	0.0005	0.013	0.003	99.0													
Max Cal	0.016	0.66	0.018	0.036	0.27														

Qualify in 100% as per
 Ser 26-615
 Dupale

USHA MARTIN LIMITED

MRV No: - 22037

F/QA 4/11

PLANT: ADITYAPUR, JAMSHEDPUR, INDIA POST BOX NO: 147, PHONE : 3295772/3295773

QUALITY ASSURANCE TEST CERTIFICATE

TC NO 23455	Challan No	Quantity	Rolling Input 150x150
Customer	P.O. NO / Date 8354 / Invoice No: - R-81		
PROCESS ROUTE :- MBF-> EAF-> LF-> VD-> CCP-> RM		Normal Size	60-Dia
Heat NO 22194	Grade SAE 1008	Product ROUND	Colour code BROWN
Production Date 20/09/14	Specification code	Condition Hot Rolled	

CHEMICAL COMPOSITION (Free from hazardous elements like Hg during processing)

Element	%C	%Mn	%Si	%P	%S	%Cr	%Ni	%Cu	%Mo	B PPM
Min.	-	0.25	-	-	-	-	-	-	-	-
Max.	0.08	0.40	0.35	0.040	0.050	-	-	-	-	-
Actual	0.050	0.31	0.180	0.008	0.010	0.010	-	-	-	-
Element	%Al	%Pb	%V	%Ti	%Ca	N ₂ PPM	O ₂ PPM	H ₂ PPM	%Sn	
Min.	-	-	-	-	-	-	-	-	-	-
Max.	-	-	-	-	-	-	-	-	-	-
Actual	0.030	-	-	-	-	-	-	-	-	-

MECHANICAL PROPERTIES

Requirement	Hardness (BHN)	Impact Strength (IZOD/CHARPY)	YS (Mpa)	UTS (Mpa)	%EL GL=4D	%RA	JOMINY HARDENABILITY (HRC)				
Min.	-	-	-	-	-	-	NA				
Max.	-	-	-	-	-	-					
Actual	101-105	-	-	-	-	-					

METALLURGICAL PROPERTIES

INCLUSION RATING AS PER ASTM-45A

Requirement	Depth of Decarb (mm)	Max ^m Depth of Srfce Defect (mm)	Grain Size (ASTM E112)	MACRO Etch (ASTM E 381)	Step down	A		B		C		D	
Min.	-	-	5	-	-	T	H	T	H	T	H	T	H
Max.	-	-	8	C2R2S2	-	2.0	2.0	2.0	1.5	1.0	1.0	2.0	2.0
Actual	-	NIL	6-7	C2R1S1	-	1.0	-	1.0	-	1.0	-	1.0	-

Remarks Dimension +0.58/-0.00 , Ovality 0.38, 100% Spark/Spectral test confirms no mix up.

Length of Bar :- 4.00 Mtrs To 5.00 Mtrs.

Micro structure :- Pearlite+Ferrite

Ultrasonic test done as per standard acceptable.

100% Visual inspection done.

Test certificate meets TDC. Results based on sample testing

Signature
22/09/14
Officer QA
Email : qa_sbm@ushamartin.co.in
Website : www.ushamartin.com

OK as per 26-615 in 1008

Rajabhat 13/11/15