



Tata Steel UK Limited
 Stocksbridge
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10" W10

B4421A

INSPECTION CERTIFICATE TYPE 3.1 to BS EN10204

TATA STEEL INT (AMERICAS) INC.
 EARLE M JORGENSEN CANADA INC
 CORUS AMERICA A/C
 1255 AVENUE LAPLACE
 ST VINCENT DE PAUL, LAVAL
 QUEBEC H7C 2N6 CANADA

Cast No. B4421A	Works Order No. C8843870	Date of Issue 05-NOV-2012
	Customer Order No. P433640	Certificate No. 00393274/2
		Page No. 1 of 3

This certificate replaces 00393274/1 dated 25-Jun-2012

SPECIFICATIONS ASSOCIATED WITH THIS ORDER -
 4130HT 75KSI MIN YIELD/AMS-H-6875 MOD NACE MR01-75

PRODUCT INFORMATION -
 SIZE - 10.1"
 QUANTITY/WEIGHT - As per invoice
 CONDITION OF MATERIAL - COLD STR, H&T, NORMALISED, SM TURN
 STEELMAKING PROCESS/PROCESS OF MANUFACTURE - Electric VDG Ingot

HEAT TREATMENT OF MATERIAL - W63580

Normalise . at 900°C; for 01:00; time to 06:30; total time 07:30; Air Cooled.
 Harden . at 865°C; for 02:00; time to 08:17; total time 10:17; Water Quenched from 11°C.
 Temper . at 660°C; for 03:00; time to 08:00; total time 11:00; Air Cooled.

ANALYSIS -

Cast No	C	Si	Mn	P	S	Cr	Mo	Ni	Cu	Sn	Al	V
Cast Analysis												
B4421A	.325	.24	.57	.006	.008	1.10	.24	.14	.12	.015	.023	.003

Mechanical Test - Tested to ASTM A370 - 12

Sample Heat Treatment -

Normalise 900C Total time 03:00hr Air Cool in 4" SQ
 Harden 870C Total time 03:00hr Water Quench
 Temper 660C Total time 04:00hr Air Cool

Test No.	Ingot Id	Ingot Pos.	Sample Pos.	Orient	Temp.	0.2% PS	U.T.S	Elong 4D	R of A	Hardness
Units					F	PSI	PSI	%	%	HBW10/3000
Result	1945510	M	Mid-Radial	Lo	70	77500	103000	26	169	233

P433640 R829089 535883 843



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INSPECTION CERTIFICATE/TYPE 3.1 to BS EN10204

Cast No. B4421A	Works Order No. CBB43870	Date of Issue 05-NOV-2012
	Customer Order No. P433640	Certificate No. 00393274/2
		Page No. 2 of 3

Impact Test - Tested to ASTM A370 - 12
 Sample Heat Treatment -
 Normalise 900C Total time 03:00hr Air Cool in 4" SQ
 Harden 870C Total time 03:00hr Water Quench
 Temper 660C Total time 04:00hr Air Cool

Test No.	Ingot Id	Ingot Pos.	Sample Pos.	Geometry	Orient	Temp.	Imp Mean	Impact	Impact	Impact	Lat Exp	Lat Exp	Lat Exp	% Shear
Units							Ft.lbs	Ft.lbs	Ft.lbs	F(Lbs	mm	mm	mm	%
Result	1945511	M	Mid-Radial	CH2MMV	Lo	-75	51	56	58	38	0.90	0.96	0.57	20.0

Test No.	Ingot Id	Ingot Pos.	Sample Pos.	Geometry	Orient	Temp.	% Shear	% Shear
Units							%	%
Result	1945511	M	Mid-Radial	CH2MMV	Lo	-75	20.0	10.0

MacQuaid Ehn Grain Size - Tested to ASTM E112 - 10
 MacQuaid Ehn Grain Size - Carburised at 925 Deg C 8 Hours Furnace Cooled.

Tested at a magnification of X100

Test No.	Ingot Id	Ingot Pos.	G.Size	G.Size
Result	1852470		6	8

Surface Hardness -

Test No.	Ingot Id	Ingot Pos.	Hardness	Hardness
Units			HBW10/3000	HBW10/3000
Result	1945514		207	229

Ultrasonic Test - Tested to ASTM A388/A388M - 11
 Satisfactory to 6.0mm FBH
 US MEETS API6A 7.4.2.3.15(PSL3)+7.4.2.4.11(PSL4)

MISCELLANEOUS INFORMATION -

REDUCTION RATIO: 4.19:1
 Material type tested satisfactorily
 Method of Analysis
 - Elemental Analysis (combustion/fusion) tested at our Rotherham laboratory C S
 - Atomic Emission Spectroscopy (OES) tested at our Rotherham laboratory Si Mn P Cr Mo Ni Cu Sn Al V
 Our quality management system is accredited to the following standards : ISO9001 and AS/EN9100
 Our environmental management system is accredited to ISO14001.



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INSPECTION CERTIFICATE/TYPE 3.1 to BS EN10204

Cast No. B4421A

Works Order No. CB843870
Customer Order No. P433640

Date of Issue 05-NOV-2012
Certificate No. 00393274/2
Page No. 3 of 3

AUTHORISED SIGNATURE -

Certified by our Stocksbridge Works that, unless otherwise stated above, the whole of the above mentioned materials have been manufactured, tested & inspected in accordance with the terms of the acknowledged contract/order applicable thereto and conform fully to the standards/specifications quoted hereon.

Approved Signatory - Lee Ibbitson - Certification and Accreditation Manager

Signed.....

For Tata Steel UK Limited

This inspection certificate shall not be reproduced except in full, without the written approval of Tata Steel UK Limited
End Of Certificate