TEST CERTIFICATE

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Customer: Customer Order No: 2314578	Supplier: New Zealand Steel Limited A BlueScope Company 131 Mission Bush Road, Glenbrook, South Auckland Postal: Private Bag 92121, Auckland 1142, New Zealand Telephone: (09) 375 8111 Auckland Sales Order No : 1541582 Printed On : 07/05/2021
ACCREDITED IANZ TESTING LABORATORY All tests reported herein have been performed in accordance with the laboratory's scope of accreditation	I certify that the original records of the company show that the Item(s) referred to on this certificate conform to the specifications as stated. S. BESTER - NEW ZEALAND STEEL APPROVED SIGNATORY Mechanical LAB 965 D. GRANGER - NEW ZEALAND STEEL APPROVED KTP Chemical LAB 101

Specification : **AS/NZS3678(2016) 300L15** Inspection: Supplier

Product : 12mm × 1520mm × 12500mm HEAVY PLATE Certification: Supplier

ITEMS COVERED BY THIS CERTIFICATE

Pack No	Heat No	Ordered Dimensions	Tested Unit
HDH0160611, HDH0161211, HDH0161221, HDH0161231, HDH0161241	986386	12mm × 1520mm × 12500mm	HCH0160620
HDH0160911, HDH0160921, HDH0160931, HDH0160941, HDH0161511, HDH0161521, HDH0161531, HDH0161541	986593	12mm × 1520mm × 12500mm	HCH0160920

CHEMICAL ANALYSIS

Percentage of element by mass (L=Cast, P=Product, -S=Soluble, -T=Total, CEV = Carbon Equivalent Value)

		x100			x1000										x10000		x100
Heat No	**L/P**	**C**	**Si**	**Mn**	**P**	**S**	**Cu**	**Ni**	**Cr**	**Mo**	**V**	**Nb**	**Ti**	**Al -T**	**B**	**N**	**CEV**
986386	L	19	12	103	16	5	13	15	24	TR	36	3	3	25	TR		37
986593	L	20	13	104	19	6	12	13	28	TR	45	1	3	27	TR		39

TR composition: Si (TR) < 0.01%, Mo/Nb/Ti (TR) < 0.001%, B (TR) <0.0001%

CEV = C+ (Mn/6) + ((Cr+V+Mo)/5) + ((Cu+Ni)/15)

MECHANICAL TESTING

Tensile

Tested Unit	Heat No	Yield stress MPa	Yield point type	Rm MPa	Lo	ELONG %
HCH0160620	986386	374	ReL	531	D	29
HCH0160920	986593	394	ReL	554	D	25

CHARPY V-Notch (300 Joules)

Tested Unit	Heat No	Thick mm	Width mm	Temp Deg C	Charpy1 Joules	Charpy2 Joules	Charpy3 Joules	Average Joules	Provider
HCH0160620	986386	10	10	-15°	114	123	58	98	2
HCH0160920	986593	10	10	-15°	77	56	62	65	2

MECHANICAL COMMENTS

Test methods for Mechanical analysis were, AS1391, AS1544.2
Elongation converted from 200mm gauge length using ISO 2566/1: 1984
Gauge Length Lo(D) = 5.65 square root of the original cross-sectional area of the test piece.
Test Direction Transverse.
ReL = Lower Yield Stress.

COMMENTS

Steel produced through the basic oxygen steelmaking process by New Zealand Steel. Steel is fine grained, fully killed, continuously cast. - Heat analysed from ladle - Results relate to test on a representative sample of the items covered in this test certificate. - This certificate may not be reproduced except in full. - NZ Steel, Chemical Laboratory IANZ Accreditation Number 101, KTP Mr D. Granger. - NZ Steel, Mechanical Laboratory IANZ Accreditation Number 965, Approved Signatory Mr Schalk Bester. - NZ Steel, Mechanical Laboratory IANZ Accreditation Number 965, Approved Signatory Mr S. Bester. NZ Steel Laboratories are accredited by, International Accreditation New Zealand (IANZ), a signatory to the International Laboratory Accreditation Cooperation mutual Recognition Agreement. - Charpy Test

Provider (2) NZ Steel Metallurgical Services: NZS Testing Laboratory IANZ accreditation Number 965, Approved signatory Schalk Bester. Test methods for chemical analysis were, ASTM E415: 2017 & JIS G1253: 2002.

New Zealand Steel operate a quality management system conforming to AS/NZS ISO 9001: 2015 as assessed by Telarc Ltd Registration Number: 82.