



Manufacturers Data Report

ADSN000XXXXX



MDR



-XXXXXXXXX-

Manufacturers Data Report

Customer	Sample MDR
PO Number	XXXXXXXX
Aflex Job Number	XXXXXXXX
Aflex Batch Number	XX
Aflex Item Number	XX
Serial Number	ADSN000XXXX
Release ID	XXXX
Release Date	XX/XX/24
Item Description	01 - 1 x 250NB TUEB
Report Generated	XX/XX/24 02:50 PM



Photo is indicative only and may be of another item in the same batch



ABN 73 070 676 201
Unit 14, 12-14 Beaumont Road
Mount Kuring-gai, NSW 2080

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Phone +61 02 9457 7530
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ISO 9001 Certification



Certificate Number: 500-15633-Q

Certificate of Registration

This document certifies that the Management System at

Aflex Pty Ltd

Of

Unit 14, 12 - 14 Beaumont Road, Mt. Kuring-gai NSW 2080 Australia

has been evaluated by the auditors of Citation Certification Pty Ltd and found to be conforming to the requirements of:

ISO 9001:2015 Quality Management Systems

In respect of the following activities:

Design and manufacture of metal expansion bellows for use in pipework

This certificate is valid from 21/09/2022 to 21/09/2025

Original Certification Date: 21/09/2013

Current Issue date: 26/08/2024

Barry Fairman

Barry Fairman - Certification Manager

Citation Certification Pty Ltd



To verify the validity of this certificate please visit <https://register.jasanz.org/certified-organisations>
Citation Certification Pty Ltd trading as Citation Certification
Ground Floor, Suite 1, 352 Hunter Street, Newcastle, NSW 2300 Australia
1800 065 800 | <https://citationgroup.com.au/certification/>



**MDR**

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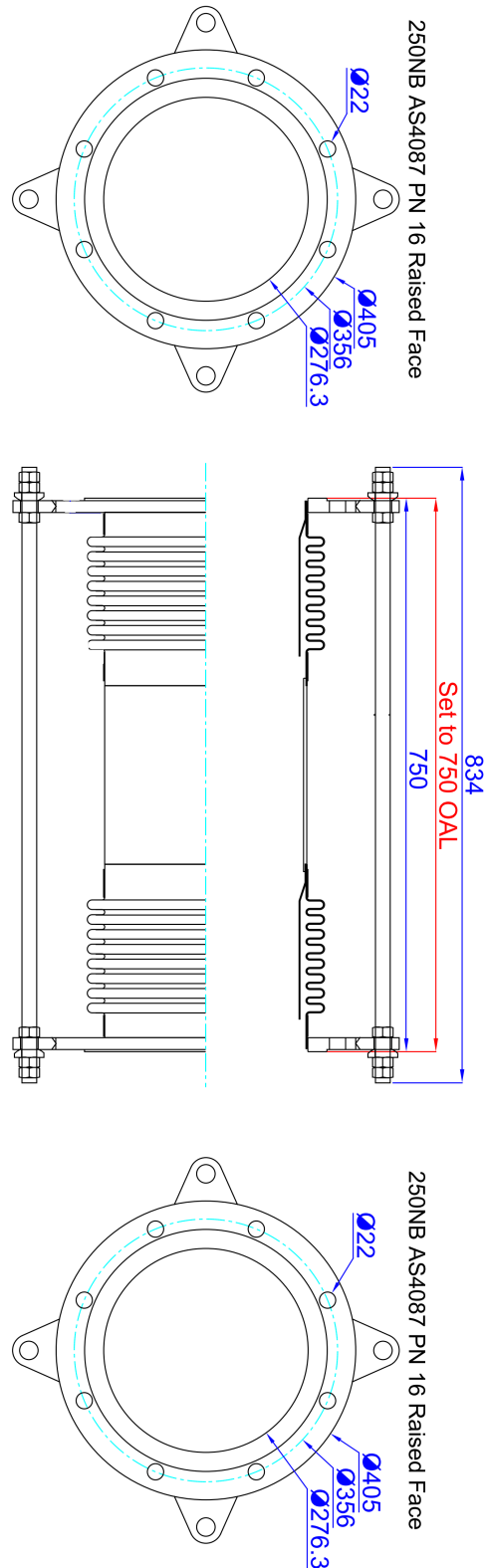
Assembly Data Sheet

The following table must be read in conjunction with the attached assembly drawing which comprises part of this data sheet

Customer / Distributor	
Aflex Part Number	N/A
Assembly Description	250NB TUEB-FF-1400-L 750 mm
Assembly Type	Tied Universal Expansion Bellows
Finish	Painted - Standard 1 Primer 2 Top Coat
Inlet Connection	Flange - Carbon Steel AS4087 PN 16 Raised Face
Nominal Bore	250NB
Outside Diameter	405
Thickness	19
No. Bolt Holes	8
Bolt Hole Dia.	22
Pitch Circle Diameter	356
Outlet Connection	Flange - Carbon Steel AS4087 PN 16 Raised Face
Nominal Bore	250NB
Outside Diameter	405
Thickness	19
No. Bolt Holes	8
Bolt Hole Dia.	22
Pitch Circle Diameter	356
Bellows	
Reference	2404
Material	316/316L
Material Thickness	1.5 mm
Design Code	EJMA 10th Edition
Liner	316/316L 1.2 mm thk
Overall Assembly Length (OAL)	750 mm
Working Pressure	1400 kPa
Design Pressure	2000 kPa
Bellows Plies	1
Design Temperature	200 Deg. C.
Rated Axial Compression	0 mm
Rated Axial Extension	0 mm
Rated Lateral Offset	60 mm
Rated Angular Deflection	0 Deg.



Afex Master Drawing 11610901 R0



Tolerances: $\pm 3\text{mm}$ for OAL and external hardware dimensions, flange and pipe tolerances are to the relevant standards



Bellows Calculations

Aflex Bellows Calculations (EJMA 10th Ed.)

Reference: Sherriff Electrical Wholesalers 116109 - 01 - 1 x 250NB TUEB

Bellows Design Inputs

Bellows ID	db	270.5	mm
Working Pressure	p	1400	kPa
Design Pressure	pd	2000	kPa
Pitch	q	20.0	mm
Working Temperature (< 450 Deg. for EJMA)	temp	200	Deg C
Pressure Band Material Thickness	tc	3.00	mm
Bellows Material Thickness	t	1.50	mm
Convolution Height	w	23.6	mm
Axial Compression	xcomp	0	mm
Axial Extension	xext	0.0	mm
Lateral Movement	y	60.0	mm
Angular Movement	tod	0.0	Degrees
Youngs Modulus, Room Temp	eybrt	193.1	GPa
Youngs Modulus, Design Temp	eybdt	184.6	GPa
Yield Stress, Room Temp	sycrt	206	MPa
Yield Stress, Design Temp	sycdt	141.04	MPa
Yield Stress, Material Cert	sym	280	MPa
Element Length	el	750.0	mm
Cuff Length 1	lt_1	45.0	mm
Cuff Length 2	lt_2	45.0	mm
Mean Convolution Radius	rm	5.0	mm
Number of Convolutions	n	8	cons
Number of Plies	np	1	plies
Cp Factor	C_p	0.7	cp
Cf Factor	C_f	1.6	cf
Cd Factor	C_d	1.61	cd

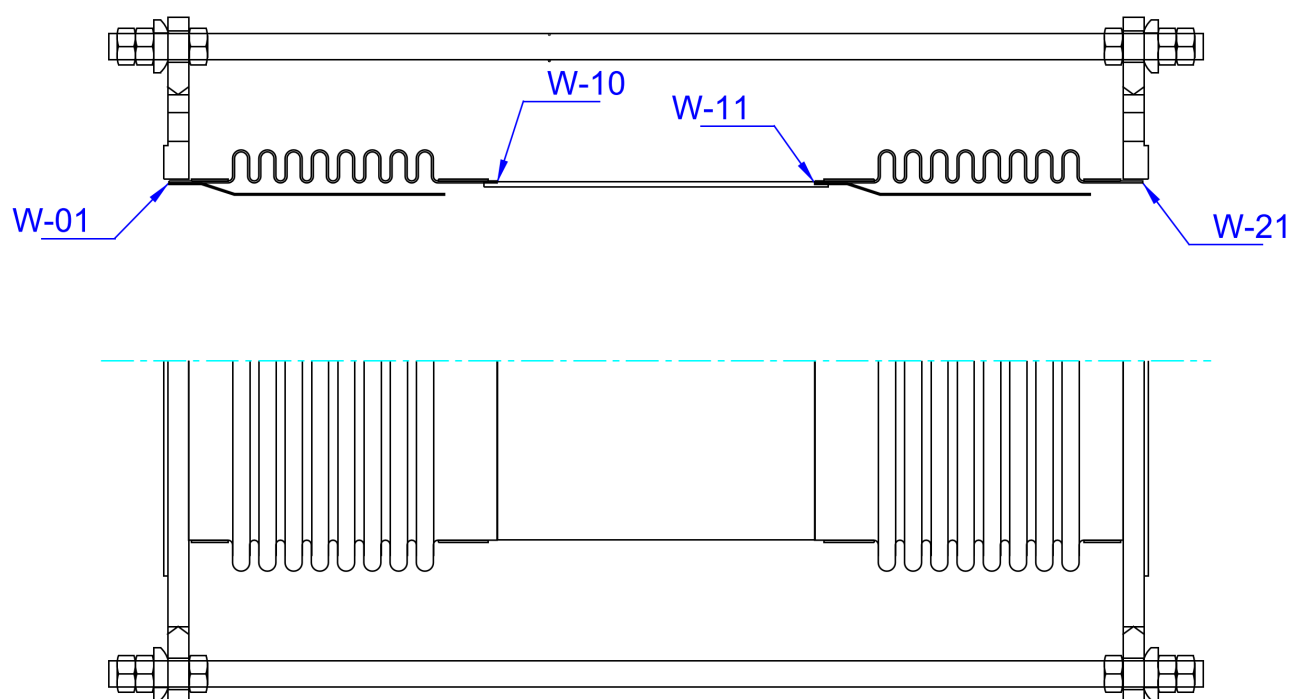
Bellows Design Results

Calculated Cycle Life	N_c	2,547	cycles
Bellows Cuff Circumferential Pressure Stress	S_1	60	MPa
Pressure Band Circumferential Pressure Stress	S_1c	62	MPa
Bellows Circumferential Pressure Stress	S_2	75	MPa
Meridional Membrane Pressure Stress	S_3	16	MPa
Meridional Bending Pressure Stress	S_4	190	MPa
Meridional Membrane Stress due to Deflection	S_5	27	MPa
Meridional Bending Stress due to Deflection	S_6	1,478	MPa
Total Stress due to Pressure and Deflection	S_t	1,650	MPa
Design Pressure Limit due to Column Instability	P_sc	2,725	kPa
Design Pressure Limit due to Inplane Instability	P_si	3,473	kPa
Axial Spring Rate	ksr	816	N/mm
Lateral Spring Rate	uml	95	N/mm
Angular Spring Rate	umt	0	Nm/Deg
Bellows Effective Area	A_e	68,628	mm^2
Bellows Pressure Thrust (Only applicable to unrestrained assemblies)	P_Thrust	137,255	N



Welding Information

Weld Map



Drawing not to Scale

Identifier	Weld Description	Procedure	Process
W-01	Bellows Inlet to Flange	Group A1/K Bellows Attachment	GTAW
W-10	Bellows To Centre Spool 1	TIG Group K / Group K (Bellows...	GTAW
W-11	Bellows to Centre Spool 2	TIG Group K / Group K (Bellows...	GTAW
W-21	Bellows Outlet to Flange	Group A1/K Bellows Attachment	GTAW



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Weld W-01

Weld ID	WPS Name	Operator	Welder	Date
549996	Group A1/K Bellows Attachment	MM	Kemppi TIG325...	13/09/24
Avg. Amps	Filler Material	Filler Size	Shielding Gas	Gas Flow
131.0	AWS ER309/309L	1.6	100% Argon	12.0



Note: Weld photo is indicative only and may be of another item in the same batch.

Links to Supporting Documents

[Weld Procedure Specification \(WPS\) / Weld Procedure Qualification Record](#)

NDT Results

Check ID	Description	Technician	Date Performed	Result
476146	Aflex 100% Through Dye Pen.	MM	13/09/24 12:24 PM	PASS



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Weld W-10

Weld ID	WPS Name	Operator	Welder	Date
549997	TIG Group K / Group K...	MM	Kemppi TIG325...	13/09/24
Avg. Amps	Filler Material	Filler Size	Shielding Gas	Gas Flow
131.0	316/316L	1.6	100% Argon	12.0



Note: Weld photo is indicative only and may be of another item in the same batch.

Links to Supporting Documents

[Weld Procedure Specification \(WPS\) / Weld Procedure Qualification Record](#)

NDT Results

Check ID	Description	Technician	Date Performed	Result
476147	Aflex 100% Through Dye Pen.	MM	13/09/24 12:24 PM	PASS



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Weld W-11

Weld ID	WPS Name	Operator	Welder	Date
549998	TIG Group K / Group K...	MM	Kemppi TIG325...	13/09/24
Avg. Amps	Filler Material	Filler Size	Shielding Gas	Gas Flow
131.0	316/316L	2.4	100% Argon	12.0



Note: Weld photo is indicative only and may be of another item in the same batch.

Links to Supporting Documents

[Weld Procedure Specification \(WPS\) / Weld Procedure Qualification Record](#)

NDT Results

Check ID	Description	Technician	Date Performed	Result
476148	Aflex 100% Through Dye Pen.	MM	13/09/24 12:24 PM	PASS



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Weld W-21

Weld ID	WPS Name	Operator	Welder	Date
549999	Group A1/K Bellows Attachment	MM	Kemppi TIG325...	13/09/24
Avg. Amps	Filler Material	Filler Size	Shielding Gas	Gas Flow
131.0	AWS ER309/309L	1.6	100% Argon	12.0



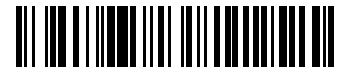
Note: Weld photo is indicative only and may be of another item in the same batch.

Links to Supporting Documents

[Weld Procedure Specification \(WPS\) / Weld Procedure Qualification Record](#)

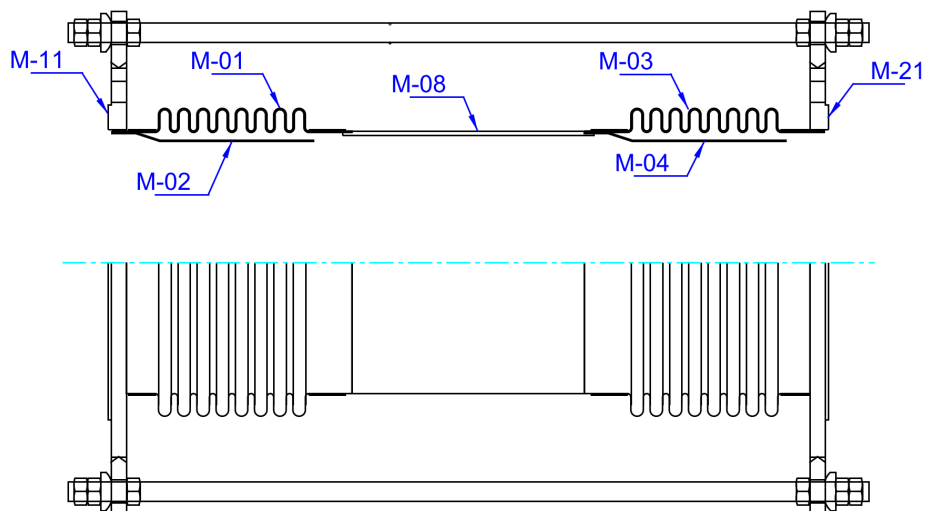
NDT Results

Check ID	Description	Technician	Date Performed	Result
476149	Aflex 100% Through Dye Pen.	MM	13/09/24 12:24 PM	PASS



Materials Information

Materials Map



- M-05 - 16mm MS Lugs
- M-06 - M20 MS Threaded Rod
- M-07 - M20 MS Nuts
- M-09 - MS Weld Washers
- M-10 - 1.5mm Pressure Bands 866 Circ

Drawing not to Scale

Materials Records

Identifier	Material Name	M-ID	Heat Number	Cert Doc ID
2	Sheet - 1220 x 2440 1.5mm 316/316L	116624	y231103B25-2	105788
4	Sheet - 1220 x 2440 1.5mm 316/316L	116624	y231103B25-2	105788
5	Plate - 16mm Carbon Steel (21)	116541	SQ41237	106554
6	Threaded Bar - M20 CS Grade 8.8	117286	G390004897	109601
7	Fastener - M20 Nut CS Grade 8.8	117289	0500230	109326
8	Pipe - 250NB 10" SCH 10S 316/316L 273.000	115308	PCD070884	102079
9	Uncontrolled Purchase Item	113033		
10	Sheet - 1220 x 2440 1.5mm 316/316L	116624	y231103B25-2	105788
11	Flange 137393 - 250NB AS4087 PN 16 Raised	117540	3K005201	109830
21	Flange 137393 - 250NB AS4087 PN 16 Raised	117540	3K005201	109830

Bellows Records



-XXXXXXXXX-

Identifer	Material Name	M-ID	Heat Number	Cert Doc ID
1	Sheet - 1220 x 2440 1.5mm 316/316L	117529	C37AW2301719	109468
3	Sheet - 1220 x 2440 1.5mm 316/316L	117529	C37AW2301719	109468

Where applicable, Material Certificates can be found on the following pages...



No. 27Q, Sec. 4, Jungshan Rd., Shijou Shiang,
Chang-Hwa, Taiwan, R.O.C
<http://www.ycinox.com>
TEL +886-4-8899666 FAX +886-4-8899770



MDR



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Customer	VULCAN STEEL (AUSTRALIA) PTY LTD										Customer No.	FAU050	Certificate No.	230905C0016								
Product	PRIME COLD ROLLED STAINLESS STEEL SHEET										Commercial Invoice No.	J230900020	Date of Issue	2023/09/05								
Specification	ASTMA240M-23/A480M-23										PO No.	71489	Order No.	EC23070081-2								
Steel Grade	316/316L			Finish	2B	Protect	PI	P.I.No.	A11207061	Weight No.		C230900055										
Item No.	Heat No.	Product Description	Chemical Composition(%)										Tension Test		*O1	*O2	C.No.					
			C	Si	Mn	P	S	Ni	Cr	Nb	N	O2% Y.S.	T.S.	E.L.	HR	HT						
			X10 ⁻³	X10 ⁻³	X10 ⁻²	X10 ⁻³	X10 ⁻³	X10 ⁻³	X10 ⁻³	X10 ⁻³	X10 ⁻³	X10 ⁻³	X10 ⁻³	MPa	%	HRB	1040					
Specification			Mn.																			
			Max.																			
1	C:37AW/2301719	1.5mm x1,219,0mm x2,438,0mm	888	16	34	141	29	41001	1669	203	27	329	651	46	831050	C23						
2	C:37AW/2301719	1.5mm x1,219,0mm x2,438,0mm	890	16	34	141	29	41001	1669	203	27	329	651	46	831050	C24						
3	C:37AW/2301754	2mm x1,219,0mm x3,048,0mm	1,176	21	32	133	34	11002	1672	205	35	350	658	45	861050	C30						
4	C:37AW/2301754	2mm x1,219,0mm x3,048,0mm	1,181	21	32	133	34	11002	1672	205	35	350	658	45	861050	C31						
5	C:37AW/2301754	2mm x1,219,0mm x3,048,0mm	1,179	21	32	133	34	11002	1672	205	35	350	658	45	861050	C32						
TOTAL:			110	5,314																		
Standards: ASME SA240SA480			Remark										Note					Intergranular Corrosion Test (according to ASTM A262 Practice E) OK Hardness according to NACE MR0175 /ISO 15156-3 2015: Satisfactory.			*O1= Hardness Test *O2= Heat Treatment *Gauge Length: 50mm	
Surveyor By	We hereby certify that material described herein has been manufactured and tested with satisfactory results in accordance with the requirement of the above material specification. The material described above has been found free of radiation by raw material supplier.										Visual Inspection(Surface) and Dimension Check OK					1MPa = 1N/mm ² 10bar = 145psi = 10.2kgf/cm ²						
N/A																Manager of Quality Assurance Department Pippen Chiu						

NYC-20007-01D

9/11



MDR



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Material Certificate 105788 (Page 1 of 1)



INSPECTION TEST CERTIFICATE

SHIPPER: MIKAS STAINLESS STEELS PTE LTD
CUSTOMER: MIDWAY METALS PTY LTD
ORDER NO: M-SA-12352
INVOICE: M-SINV-18805

228973-80

PRODUCT NAME: COLD ROLLED STAINLESS STEEL COIL
STEEL GRADE: 316/316L
SURFACE FINISH: 2B
SPECIFICATION: ASTM A240/A240M

DATE OF ISSUE: 8 MARCH 2024
CERTIFICATE NO: 2024-MK-090-2



No.	Heat No.	Product No.	Dimension (mm)	Weight (Kg)	Chemical Composition (%)										Tensile Test		Hardness
					C	S	P	Ma	Si	Cr	Ni	N	MO	T.S (Mpa)	Y.S (Mpa)	Elongation (%)	HV
1	V231103B25-2	QJ231G00768A	1.50MM X 1219MM	7.048	0.026	0.002	0.030	1.320	0.490	16.72	10.04	0.040	2.02	634	290	55.5	161/162
2	V231103B25-2	QJ231G00768B	1.50MM X 1219MM	6.840	0.026	0.002	0.030	1.320	0.490	16.72	10.04	0.040	2.02	634	290	55.5	161/162
3	V231103B25-2	QJ231G00768C	1.50MM X 1219MM	6.847	0.026	0.002	0.030	1.320	0.490	16.72	10.04	0.040	2.02	634	290	55.5	161/162
4	V231103B20-4	QJ231G00767A	2.00MM X 1219MM	6.949	0.024	0.002	0.026	1.330	0.480	16.60	10.04	0.040	2.02	658	279	54.5	153/152
5	V231103B20-4	QJ231G00767B	2.00MM X 1219MM	6.805	0.024	0.002	0.026	1.330	0.480	16.60	10.04	0.040	2.02	658	279	54.5	153/152
6	V231103B20-4	QJ231G00767C	2.00MM X 1219MM	6.939	0.024	0.002	0.026	1.330	0.480	16.60	10.04	0.040	2.02	658	279	54.5	153/152
7	V231102B20-5	QJ231G00774B	3.00MM X 1219MM	5.021	0.023	0.002	0.028	1.350	0.480	16.55	10.05	0.039	2.04	608	283	54.0	162/165
8	V231102B20-5	QJ231G00774C	3.00MM X 1219MM	5.038	0.023	0.002	0.028	1.350	0.480	16.55	10.05	0.039	2.04	608	283	54.0	162/165
TOTAL					51.507												

Remarks

1. Intergranular corrosion test as per ASTM A262 PRACTICE E: PASS

2. Melting Process: RKEF--AOD--F--CCM 3. Quench: AIR/SPRAY 4. Certification based on mill's certificate complies to EN 10204 3.1

1. We certify that the analysis and material on this certification is correct and meets the specifications stated

2. The radiation level exhibited by this material is not greater than the normal background level

3. This material is free from mercury contamination

4. Visual and dimensional control: no exceptions. The delivery is in accordance with the order.

5. Test to verify batch and quality have been made

6. Material not weld repaired

MANAGER OF QA DEPARTMENT / WORK INSPECTOR
QUALITY AND TECHNIQUE DEPARTMENT

Mikas
Authorized Signatory
For Mikas Stainless Steel

MIKAS STAINLESS STEELS PTE LTD
FULLY OWNED COIL/PLATE PROCESSING CENTRE

9 TUDAS SOUTH STREET 8, SINGAPORE 636931
EXCEL METAL INDUSTRIES SDN BHD, JOHOR BAHRU, MALAYSIA



MDR



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Material Certificate 106554 (Page 1 of 1)

Certificate No. : 231226-FH01KS-0456A1-0001
Date of Issue : Jan., 05, 2024

Mill Test Certificate

PO No. : '2311-PO003735
(60193)
Commodity : HOT ROLLED SHEET
Spec & Type : AS/NZS 1594 HAZ50

Order No. : 01S6407625
Supplier : GS GLOBAL CORP.
Customer : APEX STEEL PTY LTD

Size	Product No.	Quantity	Weight (kg)	Heat No.	Country of Melt & Pour	Position	Tensile Test		Bend Test	Division	Chemical Composition												
							YP (MPa)	TS (%)			EL (%)	C (%)	Si (%)	Mn (%)	P (%)	S (%)	Cr (%)	Ni (%)	Cu (%)	Mo (%)	Ti (%)	Sol-Al (%)	CEQ (%)
15.95x1495x3000	HRX0837700001	7	3,941	SQ41237	KOR	B	289	477	27	Good	L	0.1880	0.008	0.832	0.0088	0.0035	0.014	0.004	0.009	0.006	0.0004	0.024	0.342
15.95x1495x3000	HRX0837700002	7	3,941	SQ41237	KOR	B	289	477	27	Good	L	0.1880	0.006	0.832	0.0088	0.0035	0.014	0.004	0.009	0.006	0.0004	0.024	0.342
15.95x1495x3000	HRX0837700003	7	3,941	SQ41237	KOR	B	289	477	27	Good	L	0.1880	0.006	0.832	0.0088	0.0035	0.014	0.004	0.009	0.006	0.0004	0.024	0.342
15.95x1495x3000	HRX0837700004	7	3,941	SQ41237	KOR	B	289	477	27	Good	L	0.1880	0.006	0.832	0.0088	0.0035	0.014	0.004	0.009	0.006	0.0004	0.024	0.342
15.95x1495x3000	HRX0837700005	6	3,378	SQ41237	KOR	B	289	477	27	Good	L	0.1880	0.006	0.832	0.0088	0.0035	0.014	0.004	0.009	0.006	0.0004	0.024	0.342
15.95x1495x3000	HRX0837700006	6	3,378	SQ41237	KOR	B	289	477	27	Good	L	0.1880	0.006	0.832	0.0088	0.0035	0.014	0.004	0.009	0.006	0.0004	0.024	0.342
15.95x1495x3000	HRX0837700007	5	2,815	SQ41237	KOR	B	289	477	27	Good	L	0.1880	0.008	0.832	0.0088	0.0035	0.014	0.004	0.009	0.006	0.0004	0.024	0.342
*** Sub Total (010) ***		45	25,335 (kg)									CEQ (S) = C + Mn/6 + (Ni + Cu)/15 + (Cr + Mo + V)/5											
*** Grade Total ***		45	25,335 (kg)																				
*** Grand Total ***		45	25,335 (kg)																				
											*** Last Item ***												

ACRS 190706

Position : T : Top, M : Middle, B : Bottom
Tensile Test Direction : Longitudinal, Gauge Length : 200 mm (Rectangular),
YP Method : Upper Point
Bend Test - Direction : Longitudinal, Angle : 180°
Division - L : Ladle Analysis

60193

Park, Junyoung

Chief of material testing section

Surveyor To :

Gwangyang Works, 20-26, Pokposara-gil, Gwangyang-si, Jeollanam-do, 57807, Korea

POSCO

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MDR



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Material Certificate 109601 (Page 1 of 1)

INSPECTION CERTIFICATE

Certificate No. 024303

DIN EN 10204 Inspection Certificate: Type 3.1

AS88GCM203000_G390004897

Part No.: AS88GCM203000

Description: M20 PC8.8 HDG Threaded Rod

Property Class: 8.8

Size: M20

Customer: Hobson Engineering PTY LTD

Surface Condition: Hot Dip Galvanised [AS/NZS 1214]

Product Standard: DIN 976

Certificate No.: 024303

Issue Date: 2023/10/12

P/O No.(s): 102618NS2

Item: 001

Desc: Thread Rod

Trace: G390004897

Chemical Composition (%)

		C%		P%		S%		B%	
		min	max	min	max	min	max	min	max
Spec	Carbon Steel w/ Additives	0.20	0.55	-	0.025	-	0.025	-	0.003
Item	001	0.350		0.0120		0.0040		/	

Mechanical Properties

		Proof		Tensile		Hardness
		Stress	Elong.	Yield	Tensile	Core
		MPa	µm	MPa	MPa	HRC
Unit		min	min / max	min	min	min / max
Spec	D≤M16	580	±12.5	640	800	22 32
	D>M16	600	±12.5	660	830	23 34
Item	001	Conforms	Conforms	-	935	29 30

Notes

This is to certify that the above results are true and correct in every detail

This product supplied comply with the relevant standards and/or specifications

ISO 9001

BUREAU VERITAS

Certification

Registration No. 9000117 (Hobson)

hobson.com.au

Head Office: 10 Clay Place, Eastern Creek NSW 2766 Australia

ISO9001: 2015

P (02) 8818 0288

F (02) 9620 1850

Authorised Signatory

Enter Name

Signature



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Material Certificate 109326 (Page 1 of 1)



HOBSON ENGINEERING PTY LTD

www.hobson.com.au

10 Clay Place Eastern Creek
NSW 2766
Australia

Phone: (02) 8818 0222
Fax: (02) 9620 1850

Order No: 83386QT1

Coating: HDG

Certificate No: IC2011218

Test Certificate

Product Details

Item	Heat No	Description
001	0500230	HDG AS1112 CL 8 HEX NUT: M20

Hobson Part No.

NH08GCM20

Spec/Grade

DIMENSIONAL STANDARD AS1112.1
MECHANICAL STANDARD AS4291.2 NUTS CLASS 8

Date Certificate issued:

2020/11/2

Chemical Analysis

Item	C%	Min%	P%	S%
001	0.36	0.72	0.012	0.004

Required Chemical Analysis

Item	C%	Min%	P%	S%
001	0.58	0.25	0.06	0.150

Mechanical Properties

Item	Stress Under Proof Load N/mm ²
001	920

Required Mechanical Properties

Item	Stress Under Proof Load N/mm ² (M4 to M7)	Stress Under Proof Load N/mm ² (M7 to M10)
001	855	870

Required Mechanical Properties

Item	Stress Under Proof Load N/mm ² (M10 to M16)	Stress Under Proof Load N/mm ² (M16 to M39)
001	880	920

Final Hardness

Item	Scale	Min	Max
001	HV	272	297

Required Final Hardness ≤ M16

Item	Scale	Min	Max
001	HV	200	302

Required Final Hardness > M16

Item	Scale	Min	Max
001	HV	233	353

☒ Marking: Grade & Trade Mark

☒ Decarburization & Head Soundness

☒ Visual/Dimensional Examination

☒ Coating Thickness

☒ Product verified by Independent Batch Testing in Australia (NATA-Approved)

This is to certify that the above results are true and correct in every detail.

The products supplied comply with the relevant standards and/or specifications.

Signature



Print Name of Signature

CHANG HUA

Quality Control Manager

QC MANAGER

Issue 3.0

Issue date: 30 Aug 2019

End of Certificate



MDR



-XXXXXXXXXX-

Material Certificate 102079 (Page 1 of 1)



No.270,Sec.4,Jungshan Rd.,Shiou Shiang,
Chang-Hwa,Taiwan,R.O.C
http://www.ycinox.com
TEL : +886-4-8899666 FAX : +886-4-8899770

INSPECTION CERTIFICATE
EN 10204-3.1:2004



Customer	STIRLINGS PERFORMANCE STEELS PTY LTD.										Customer No.	FAU009	Certificate No.	230906P0024																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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MDR



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Material Certificate 109830 (Page 1 of 1)



Camman Engineering International Pty Ltd

4 Clerke Place, Kurnell NSW 2231

Telephone: (02) 9540 2355 Facsimile: (02) 9540 2499

A.C.N 002 732 229 A.B.N 84 002 732 229

Inspection Certificate to DIN 50049-3.1B / EN 10204 - 3.1 / ISO 10474-3.1B



Heat Number: 3K005201

Folio No.: 123-1808

Items
100 DN 10-16 EN1092-1 FF BLIND
250 PN 16 AS4087 RF SOW PIPE

Material Specification
Grade 250
Material Origin
CHINA
Original Certificate Number(s)
23A4307523

CHEMICAL COMPOSITION (%)

	C	Si	Mn	P	S
Min.	0.22	0.55	1.70	0.040	0.030
Max.	0.16	0.17	0.28	0.027	0.010
Result					

CE

0.207

MECHANICAL PROPERTIES

	Tensile Strength	Yield Point	Elongation	Hardness	Reduction Of Area
Units	MPa	MPa	%		%
Min.	410	250	22		
Max.					
Result	414	275	33.5		

Heat Treatment

PLATE AS ROLLED.

Surface and Appearance Inspection

PASSED

Dimension Inspection

PASSED

Note: Yield strength greater than 250 Mpa.
CE ≈ C + (Mn/6) where Cr, Mo, V, Ni & Cu values are not available.

We hereby certify that the above data is true copy of data furnished to
Camman Engineering International Pty Ltd by the producing foundry, mill
or supplier or is the result of tests performed by approved laboratories.

Camman Engineering International Pty Ltd
Signed: QUALITY ASSURANCE DEPARTMENT

Date: 9/10/2023

M. Carl



MDR



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End of Report - This page intentionally left blank.