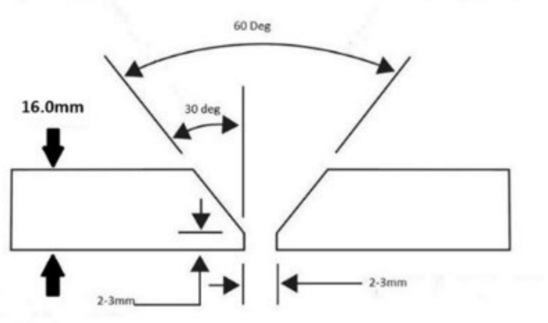
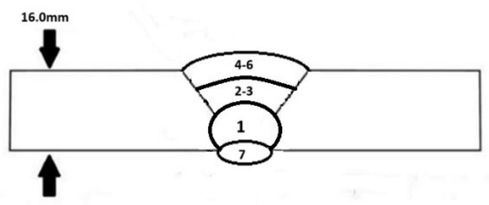
Procedure Qualification Record (PQR)

MANUFACTURER	Mech-Tem (PTY) Ltd		Page 1 of 2
PQR No.	P006-25	**WPS No.**	W006-25
CODE AND YEAR EDITION	ASME BPVC IX:2023		
WELDER NAME	SS Mofokeng		
ID/PASSPORT No.	850131 5408 087		
WELDER STAMP No.	Not applicable		
PQR TEST DATE	2025/06/06		
REVISION	00		
Base Metals			
MATERIAL GRADE 1	VRN 400	**GROUP No.**	Unassigned Mat.
MATERIAL GRADE 2	VRN 400	**GROUP No.**	Unassigned Mat.
MATERIAL THICKNESS 1	16.0 mm		
MATERIAL THICKNESS 2	16.0mm		
BACKING MATERIAL	Weld Metal (Back Grinding)		
PIPE OUTSIDE DIAMETER	Not applicable		
TYPE OF JOINT	CJP Single V Groove Joint		
FILLER METALS			
NUMBER OF PROCESSES	One		
PROCESS	Gas Metal Arc Welding (GMAW)		
PROCESS TYPE	Semi Auto		
FILLER SPEC. (SFA)	AWS SFA A5.18		
FILLER CLASS No. (AWS)	ER70S-6		
FILLER F No.	F6		
FILLER A No./CHEM	A1		
DEPOSITED WELD THICKNESS	16.0mm		
TRADE NAME	EWN&S		
FILLER SIZE	1.2 mm		
FILLER BATCH NUMBER	0912		
SUPPLEMENTAL FILLER	N/A		
BACKING	Weld Metal		

PREHEAT AND INTERPASS TEMPRERATURE		**SHIELDING GAS**	
PREHEAT TEMP.	**107.3ºC**	**GAS TYPE**	Argoshield 5
HEAT METHOD	**No Method Used**	**% COMP**	Ar- 93% / Co2- 5%/ O2- 2%
TEMPERATURE CHECK	**Digital Thermometer**	**FLOW RATE**	23 Liter per Minute
INTERPASS TEMPERATURE	**275° C Maximum**	**ORIFICE**	16 mm
HEAT AREA	**75mm each side of weld**	**TRAILING GAS**	**None**
PREHEAT MAINTANCE	**None**	**BACKING GAS**	**None**
OTHER	**None**	**FLOW RATE**	**None**

JOINT DESIGN	**PASS LOCATION AND SEQUENCE**
	

PREPERATION METHODE	Grind	**MAX RUN THICKNESS**	5. 0mm
INITIAL CLEAN	Degreased	**GOUGE METHOD**	Back Grinding to sound metal
BACK GOUGING	Yes	**INTERPASS CLEAN**	Grind/Brush

ELECTRICAL CHARACTERISTICS

PROCESS	**WELD PASS NO.**	**CONSUMABLE TYPY**	**FILLER SIZE**	**WELD POSITION**	**AMPS (A)**	**VOLTS (V)**	**TRAVEL SPEED (mm/min)**	**PROGRESS**	**TYPE AND POLARITY**	**HEAT INPUT (kJ/MM)**
GMAW	1-7	ER70S-6	1.2 mm	2G	240-280	24-27	285-332 mm/min	Not Applicable	DCEP	1.04-1.59

Procedure Qualification Record (PQR)

MANUFACTURER	Mech-Tem (PTY) Ltd		Page 2 of 2
PQR No.	P006-25	**WPS No.**	W006-25
CODE AND YEAR EDITION	ASME BPVC IX:2023		
WELDER NAME	SS Mofokeng		
ID/PASSPORT No.	850131 5408 087		
WELDER STAMP No.	Not applicable		
PQR TEST DATE	2025/06/06		
REVISION	00		

WELDING TECHNIQUE

SINGLE/MULTI ELECTRODE	Single Electrode	**SOLID/TUBULAR WIRE**	Solid	**PEENING**	None
SINGLE/MULTI PASS	Multi Pass	**ELECTRODE SPACE**	N/A	**C.T.W.D.**	Not Recorded
SIDES WELDED	One side	**TRANSFER MODE**	Globular and Spray	**TUNGSTEN TYPE**	N/A
STRING/WEAVE BEAD	Stringer & Weave	**OSCILLATION**	N/A	**TUNGSTEN SIZE**	N/A
POWER SOURCE	Constant Voltage	**WIRE FEED SPEED**	Amperage Controlled		

POST-WELD HEAT TREATMENT

HEATING RATE	None	**COOLING RATE**	None
HOLDING TEMPERATURE	None	**MATHOD**	None
HOLDING TIME	None	**PWHT CERT No.**	None

NON-DESTRUCTIVE EXAMINATION

TYPE OF TESTING	ACCEPTABLE/NOT APPLICABLE	REPORT NO.
RADIOGRAPHY	Acceptable	AMH-RT-25096
ULTRASONIC	N/A	
MAGNETIC PARTICAL	N/A	
DYE PENETRANT	N/A	
VISUAL	Acceptable	

DESTRUCTIVE TESTING

TENSILE TEST

MARK	WIDTH (mm)	THICKNESS (mm)	AREA (MM)	ULTIMATE LOAD (KN)	TENSILE (MPa) STRENGHT	FRACTURE LOCATION AND APPEARANCE
1	**20.32**	**15.19**	**308.66**	**192**	**710**	**Weld ductile**
2	**20.28**	**14.97**	**303.59**	**173**	**634**	**Weld ductile**

BEND TEST: YES	**BEND ANGLE:** 180	**Mandrel Dia (mm):** 40
TYPE OF BEND TEST	**4 off Side bends**	
RESULT OF BEND TEST	**Acceptable**	
MACRO TEST	**N/A**	
FILLET FRACTURE	**N/A**	
MECHANICAL TEST REPORT No.	**Performed by VML Report MT0013/25/B**	

NOTES:	MANUFACTURER:	COMPILED BY: AMH Quality Services
REMARKS:	SIGNATURE:	SIGNATURE: AMH Quality Services Aubrey Harmse (ANDT Level 2)
	DATE:	DATE: 2025/06/19

martin dutoit2025/06/03

Customer Order No	4501411145/30
Order Number	Cert Number
MPLQ 5043751	P83888 A
Gross Mass	Invoice Mass
7770 Kg	7536 Kg

SAP Order No	Transport	Page
1700792195	ROAD	1 of 1

Dimensions (mm)
12000 X 2500 X 016.000

MACSTEEL SERVICE CENTRES SA (PTY) LTD
MACSTEEL VRN ROODEKOP
PO Box 123813
ALRODE
1451

INSPECTION CERTIFICATE
AS PER REPORTING REQUIREMENTS EN10204: 2004; TYPE 3.1
ArcelorMittal South Africa Limited
Vanderbijlpark Works Reg No 1980/002/164/06

ArcelorMittal

ISO17025 accredited for:
Hardness testing: MCSTHWP000003 based on ASTM E10, ASTM A370, ISO 6506-1
Impacts testing: MCSTHWP000006 based on ASTM A370, ASTM E517, ISO 148-1 and ASTM E646
Tensile Testing: MCSTHWP000009 based on ASTM E8, BS EN ISO 6892-1, BS EN ISO 10002-1, ASTM A370, JIS Z2241, ASTM E517 and ASTM E646

PLATE ROLLER QUENCHED <=50 MM	Specification	ROQ LAST TH400/VRN400	2005
Material Supplied	ROLLER QUENCHED		
Test Pieces Tested	06 - ROLLER QUENCHED		

SPECIFICATION REQUIREMENTS

PCM Formula 1		CEQ Formula 2	

Impact Subsize charpy specimen on thickness less than 12mm

Temperature	Positions	Single Values	Average Values	Temperature	Positions	Single Values	Average Values

Tensile Test Piece Positions	YS (MPa) Min	YS (MPa) Max	TS (MPa) Min	TS (MPa) Max	N Value	EL %	RA Min	Hardness Unit	Hardness Min	Hardness Max	Bend Angle	Grain Type
								BHN	370	430		
	0	0	0	0							Dia	Min / Max

Chemical Analysis		Elements	C %	MN %	P %	S %	SI %	NI %	CR %	MO %	NB %	B %	Hot Temp	Hot Value
	Ladle	Minimum					0.2000							
		Maximum	0.2500	1.6000	0.0300	0.0100	0.6000	1.3000	1.0000	0.7500	0.0400	0.0050		
	Product	Elements												
		Minimum												
		Maximum												

TEST RESULTS

Lift Card	Cast No	Serial Tested	Qty	Impact Tests: Test Piece Dimensions (mm) Wth	Thk	Test Piece Pos	Cond	Temp °C	Results Deca-Joules 1	2	3	Avrg.	Lat. Exp.			# Tensile Tests: Test Piece Pos	Cond	YS (Mpa) ( )	TS (Mpa)	Yield/ Tensile Ratio	EL %	RA %	N Value	Hardness Test (* If applicable HR-W)	Hot Test	ANAL	C NB %	MN B %	P AL %	S N %	SI %	NI %	CR %	MO %	PCM1 CEQ2
VPK08801	F501545	1023	001																					BHN 415		L	0,1878 0,0001	1,3958 0,0025	0,0200 0,0266	0,0025 0,0041	0,2968	0,0107	0,4020	0,0022	
VPK08801	F501552	2802	001																		-			BHN 408		L	0,1841 0,0005	1,3581 0,0025	0,0163 0,0229	0,0028 0,0036	0,3694	0,0152	0,4318	0,0049	

Purchaser's Authorized Inspection Representative

SERIALS TESTED MAY DIFFER FROM CONSIGNMENT NOTE SERIALS AS ALL MATERIAL DOES NOT REQUIRE TESTING AS PER SPECIFICATION

Ultrasonic test	Not required
Dimensional Inspection	ASTM A20M ALLOYED - Satisfactory
Surface Inspection	EN 10163-2- B/3 - Satisfactory

Marks on material : Cast No / Serial No / TH400/VRN400

Note: This certificate is generated by a computerized system.
It is hereby certified that the material described above complies with the requirements of the order

Cast Prefix Denotes	Test Piece Position	Annexures	Tolerance Dimensions		ISO 9001 2015
F = LADLE FURNACE CONCAST OSM		CONSIGNMENT NOTE HEAT TREATMENT	Date 2025-05-31	MA Joubert (Metallurgical Technician) Quality Control Representative	Results apply to sample as recieved

AMH Quality Services
2025/06/06
Aubrey Harmse (ANDT Level 2)

martin.dutoit2025/06/03

Customer Order No	4501411145/30
Order Number	Cert Number
MPLQ 5043751	P83888 A
Gross Mass	Invoice Mass
7770	7536

SAP Order No	Transport	Page
1700792195	ROAD	1 of 1

Dimensions
12000 X 2500 X 016.000

MACSTEEL SERVICE CENTRES SA (PTY) LTD
MACSTEEL VRN ROODEKOP
PO Box 123813
ALRODE
1451

HEAT TREATMENT ANNEXURE

ArcelorMittal South Africa Limited
Reg No 1989/002164/06
Vanderbijlpark Works

ArcelorMittal

PLATE ROLLER QUENCHED <=50 MM		Specification	ROQ LAST TH400/VRN400	2005
Material Supplied	ROLLER QUENCHED			
Test Pieces Tested	ROLLER QUENCHED			

				Quench								Postweld Heat Treatment					
Cast No	Serial No	HT Length	Strain %	Temp °C	Time (mins)	Temp °C	Time (mins)	Temp °C	Time (mins)	Temp °C	Time (mins)	Load Temp °C	Heat Rate (°C/H)	Soak Temp °C	Soak Time (mins)	Cool Rate (°C/H)	Off Load temp °C
PRODUCT HEAT TREATMENT																	
F501545	1023	12633		910	0032												
F501552	2802	12628		910	0032												

HT Length = Heat Treated Length of Plate

MA Joubert (Metallurgical Technician)
Quality Control Representative

2025-05-31

AMH Quality Services
2025/06/06
Aubrey Harmse (ANDT Level 2)

martin dutoit2025/06/03

Customer Order No	4501411145/30	
Order Number	Cert Number	
MPLQ 5043751	P83888 A	
Gross Mass	Invoice Mass	
7770	7536	
SAP Order No	Transport	Page
1700792195	ROAD	1 of 1
Dimensions		
12000 X 2500 X 016.000		

MACSTEEL SERVICE CENTRES SA (PTY) LTD
MACSTEEL VRN ROODEKOP
PO Box 123813
ALRODE
1451

CONSIGNMENT NOTE

ArcelorMittal

ArcelorMittal South Africa Limited
Reg No 1989/002164/06
Vanderbijlpark Works

PLATE ROLLER QUENCHED <=50 MM	Specification	ROQ LAST TH400/VRN400	2005
Material Supplied	ROLLER QUENCHED		
Test Pieces Tested	ROLLER QUENCHED		

Lift No	Cast No	Serial	Quantity	Dimensions	Lift No	Cast No	Serial	Quantity	Dimensions
VPK08801	F501545	1023	1	12000 x 2500 x 016.00	VPK08801	F501552	2802	1	12000 x 2500 x 016.00

AMH Quality Services
2025/06/06
Aubrey Harmse (ANDT Level 2)

MA Joubert (Metallurgical Technician)
Quality Control Representative

2025-05-31

EWN&S

Branches:

(Springs)
1 Jansen Road, Nuffield Springs
011 363 3330

(Nigel)
10 Lavers Road, Nigel
011 814 6251/5

(Sasolburg)
36 Geduld Street, sasolburg
016 976 0053

(Germiston)
45 Deodar Rd, Primrose
011 828 9907
Proud level 2 B-BBEE Contributor

CERTIFICATE NO. 20240928002 TEST CERTIFICATE

Commodity	Size	Batch No.	Mfg Date	Standard	Shielding Gas	Date of issue
MIG welding wire	1.2mm	0912	2024.09	AWS A5.18 ER70S-6	CO2+Ar	2024.09.28

Chemical Composition (%)

Element	C	Mn	Si	P	S	Cu	Ni	Cr	Mo	V	
Specification	0.06-0.15	1.40-1.85	0.80-1.15	≤0.025	≤0.035	≤0.50	≤0.15	≤0.15	≤0.15	≤0.03	-
Filler Metal	0.070	1.51	0.88	0.018	0.012	0.16	0.01	0.05	0.002	0.005	-

Mechanical Properties Of Weld Metal (As Welded)

	Tensile Strength MPa	Yield Point MPa	Elongation (%)	Impact Temp (°C)	Impact Value (J)
Requirement	500-640	≥420	≥20	-30	≥27
Real Parameter	548	445	27.5	-30	71.7
Remarks	This is a copy of the Original Certificate and the Original is kept at Head Office.				

AMH Quality Services
2025/06/10
Aubrey Harmse (ANDT Level 2)

Radiographic Inspection Test Report

Glospech	*53 Houtkop Road* *Duncanville* *Vereeniging*	Date: 13/06/2025 Report No: AMH-RT-25096 Pages 1 of 1

Client Details

Job Description:	Test Plate	Client Order Number:	PQR
Client:	AMH	Project:	Procedure Qualification Record
Client Representative:	Aubrey Harmse	Job Location:	Glospech X-ray Bay

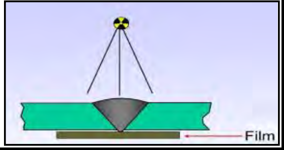
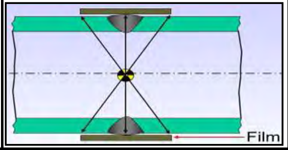
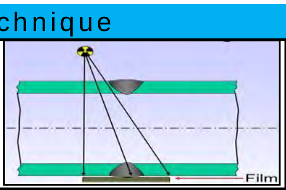
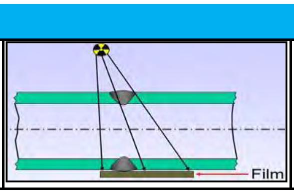
Test Component Details

Component Details:	Test Plate	Original Manufacturer:	SS Mofokeng 850131 5408 087
WPS/PQR	P006-25	Heat Treatment:	No Post weld heat treatment
Material:	VRN 400	Weld Prep:	CJP Single V Groove Joint
Material:	VRN 400	Extend of Test:	100% of weld
Manufacture Type:	GMAW		

Test Specification

Code:	ASME BPVC IX:2023	Procedure:	Glospech RT001 Rev 00
Acceptance Criteria:	ASME BPVC IX:2023	Technique Sheet:	Glo-ASME-SWSI Rev 00

Test Technique

	x						

Test Equipment & Consumables

Radiation Source / Voltage:	Ir192	Radiation Source Size:	1mm x 2mm
Source Strength / Current:	10Ci	Source Strength / Current:	10Ci
Film Type:	100XD	Screen Type:	Lead
Screen Thickness:	0,025mm	Screen Placement:	Top and Bottom
Penetrameter Type:	6FEEN	Penetrameter Placement:	Source side
Processing Chemicals:	AFGA	Processing Temperature:	20

Test Results & Final Disposition

Weld/Item Identification	Welder Stamp	Weld Size	Weld Thickness	Film Position	Sensitivity Wire No:	SFD	Density	Exposure Time	Indication Type	Disposition
SS Mofokeng 850131 5408 087	N/A	300mm	16mm	0-30	10	400mm	2,6	10m10s	No recordable indication	ACC

Name	Technician	Interpreter	Client	Inspection Authority
	ACI APPEL	A EARLE		AMH Quality Services
Qualification	SNT-TC-1A Level 1	SNT-TC-1A Level 2		
Signature	Aci.Appel	A.Earle		Aubrey Harmse (ANDT Level 2)
Date	13/06/2025	13/06/2025		2025/06/13

VAAL METALLURGICAL LABORATORY

Vaal Metallurgiese Laboratoriums (PTY) Ltd.
7 Bretts Lane, 21 Telford Street, Duncanville,
Vereeniging, 1939. Tel: 016 455 2000/1
081 251 7742 or 081 252 2494
E-mail: info@vml.co.za
Fax to E-mail: 086 653 1208

TEST REPORT IN ACCORDANCE WITH EN 10204		**REPORT NUMBER:**	**0013/25/B**
CUSTOMER:	**AMH Quality Services (Pty) Ltd For Mech-Tem (Pty) Ltd**	**DATE TESTED:**	**19/06/2025**
ADDRESS:	**13 Madission Street, Risiville, Meyerton, 1929**	**MATERIAL SPEC: ***	**VRN 400 To VRN 400**
TELEPHONE:	**071 408 5018**		
E-MAIL:	**aubrey@amhquality.co.za**	**SAMPLE ID: ***	**PQR 2: P006-25, WPS: P006-25** **Welder: S.S. Mofokeng, ID: 850131 5408 087** **Process: GMAW** **Position: 2G** **Consumable: ER70S-6** **16mm**
CONTACT:	**Aubrey Harmse**		
TEST: TENSILE AND BEND	**SPECIFICATION: * ASME IX:2023**	**METHOD: VML-QLT-MTD-0001 & VML-QLT-MTD-0006**	

Tensile Test

TEST: TENSILE | **SPECIFICATION: * ASME IX:2023** | **METHOD: VML-QLT-MTD-0001**

Sample	Dimensions *(mm)*	Area *(mm²)*	Gauge *(mm)*	Yield Load *(FeL)* *(kN)*	Max Load *(Fm)* *(kN)*	Yield Stress *(ReL)* *(MPa)*	UTS *(Rm)* *(MPa)*	Elongation *(A)* *(%)*	ROA *(Z)* *(%)*	Fracture Location
Specification and customer requirements: VRN 400							**1380 Min**			
Specification and customer requirements: Consumable: ER70S-6						**470 Min**	**560 Min**			
A: PQR 2: P006-25	**20.32 x 15.19**	**308.66**	**50**	**192.00**	**219.20**	**622**	**710**	**11**	**6**	**Weld Ductile**
B: PQR 2: P006-25	**20.28 x 14.97**	**303.59**	**50**	**173.00**	**192.60**	**570**	**634**	**8**	**7**	**Weld Ductile**

Bend Test

TEST: BEND TEST | **SPECIFICATION: * ASME IX:2023** | **METHOD: VML-QLT-MTD-0006**

Bend Type	Mandrel Diameter *(mm)*	Bend angle *(Deg.)*	Requirements - Comments:
Side (4T)	**40**	**180°**	**Acceptable**
Side (4T)	**40**	**180°**	**Acceptable**
Side (4T)	**40**	**180°**	**Acceptable**
Side (4T)	**40**	**180°**	**Acceptable**

VML AUTHENTIC IF STAMP IS RED

sanas Testing Laboratory T0531

Tests requested, in accordance with spec. provided	x
Tests requested, NOT in accordance with spec. provided	
No requirements provided / For Info Only	

Remarks: Heat Treatment. As Welded.

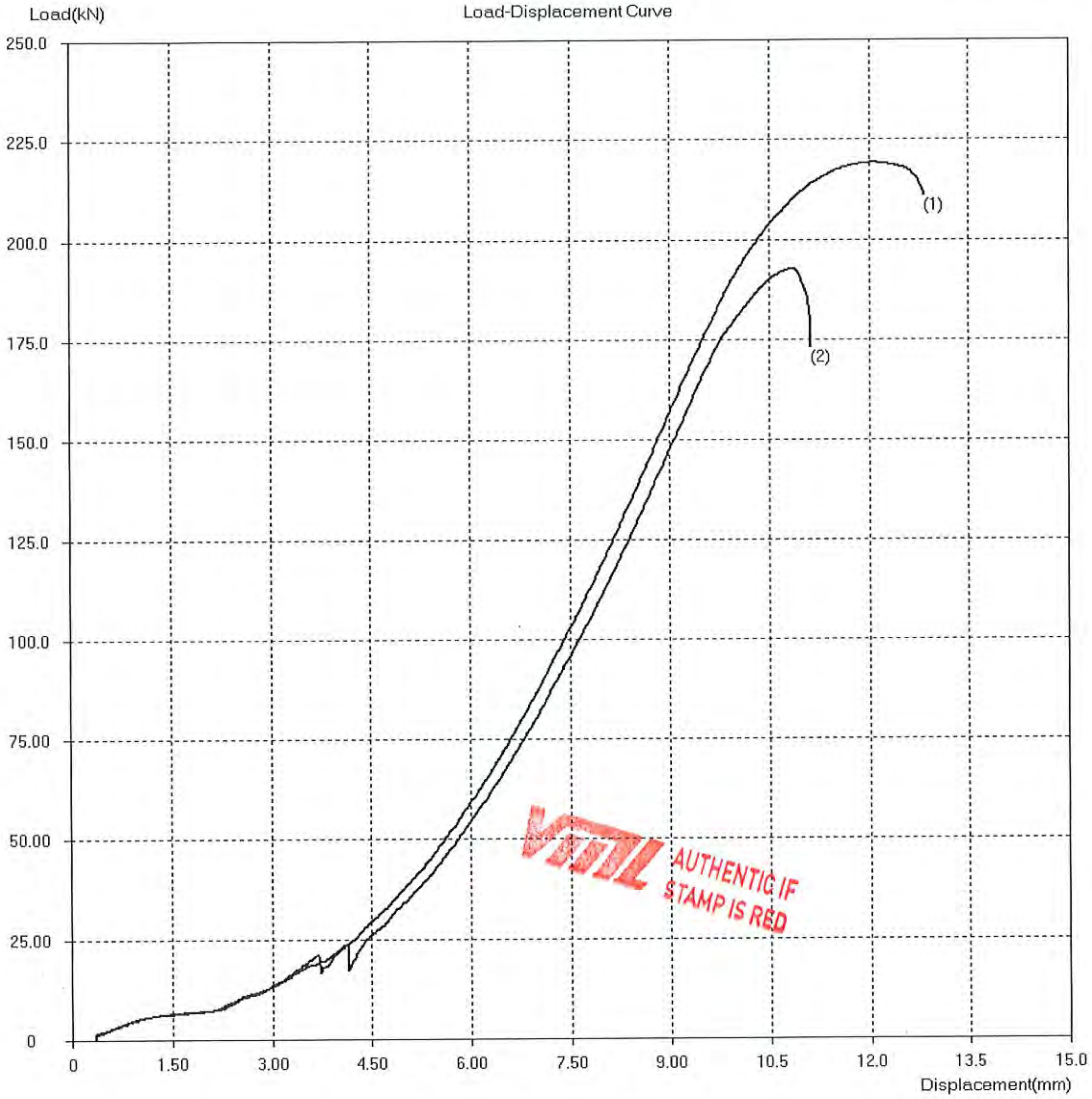
AMH Quality Services 2025/06/19 **Aubrey Harmse (ANDT Level 2)**	**L.J. Cloete** 19/06/2025
WITNESSED BY	**TECHNICAL SIGNATORY**

VML is accredited for the following methods: VML-QLT-MTD-0001 to 0011, 0013, 0022, 0030, 0031 and (Supporting international standards).

VML TENSILE TEST REPORT

CUSTOMER:	AMH
VML PROJECT NO:	MT0013-25
TYPE:	Flat
TEST DATE:	2025/06/19

	SampleNo	Size	Lo	FeL	Fm	ReL	Rm	So	A	Z	
		(mm)	(mm)	(KN)	(KN)	(Mpa)	(Mpa)	(mm^2)	%	%	
1	PQR P006-25	20.32*15.19	50	192.00	219.20	622	710	308.66	11	6	WELD
2	PQR P006-25	20.28*14.97	50	173.00	192.60	570	634	303.59	8	7	WELD



VML AUTHENTIC IF STAMP IS RED

TESTER:

AMH Quality Services
2025/06/19
Aubrey Harmse (ANDT Level 2)

AUDITING:

L CLOETE

AMH Quality Services
2025/06/06
Aubrey Harmse (ANDT Level 2)

GEREGISTREERDE WOON- EN POSADRES

1. Bewaar die bewys van u GEREGISTREERDE WOON- EN POSADRES in hierdie sakkie.

2. Indien u van adres verander het, of indien besonderhede van u huidige adres, bv. straatnaam en/of -nommer, ens. verander het, moet die vorm KENNISGEWING VAN ADRESVERANDERING, wat in die sakkie agter in die identiteitsdokument is, gebruik word om die verandering aan te meld en moet dit ingedien word by of gepos word aan die naaste streek-/distrikskantoor van die DEPARTEMENT VAN BINNELANDSE SAKE.

REGISTERED RESIDENTIAL AND POSTAL ADDRESS

1. Keep the proof of your REGISTERED RESIDENTIAL AND POSTAL ADDRESS in this pocket.

2. If you have changed your address, or, if particulars of your present address, e.g. name of street and/or street number, etc. have been changed, the NOTICE OF CHANGE OF ADDRESS form in the pocket at the back of the identity document must be used to report the change and it must be handed in at or posted to the nearest regional/district office of the DEPARTMENT OF HOME AFFAIRS.

1

I.D.No. 850131 5408 08 7

S.A.BURGER/S.A.CITIZEN

VAN/SURNAME
MOFOKENG

VOORNAME/FORENAMES
SENEPHANE SARIEL

GEBOORTEDISTRIK OF-LAND/
DISTRICT OR COUNTRY OF BIRTH
SOUTH AFRICA

GEBOORTEDATUM/
DATE OF BIRTH
1985-01-31

DATUM UITGEREIK
DATE ISSUED
2001-11-20