

# MATERIALS & TESTING LABORATORIES LIMITED

Destructive & Non-destructive Test House

## CERTIFICATE OF TEST

Report No. 28125/1  
Page 1 of 1 page

**Reference:** NZ HERA  
Order No. 922491

**Test Standard:** According to AS 2205

**Identification:** **Joint type:** Plate Butt Weld  
**Material thickness:** 3mm  
**Marking:** MPIG3


**RESULTS:** **Transverse Tensile Test**  
Shimadzu Universal Testing Machine, Model REH 50, Serial No. 72666.  
Calibration due June 2010.

Reduced specimen, weld reinforcement removed.

1	
Dimensions (mm)	2.45 x 24.84
Tensile Strength (MPa)	407
Fracture Location	6mm OWJ
Fracture Face	NDO

**NDO** = No Defects Observed  
**OWJ** = Outer Weld Joint

This report applies only to the samples under test.

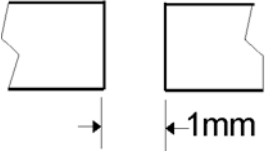
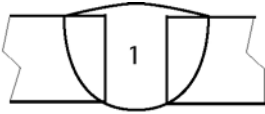
Tested by: AG  
Date tested: 28/07/09  
Reported by: AG  
Date reported: 28/07/09  
Checked by: 

Signed:   
A. GHERMAN

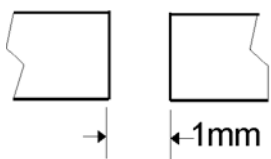
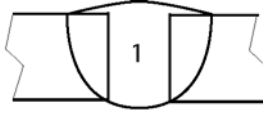


All tests reported herein have been performed in accordance with the Laboratory's scope of accreditation

## WELDING PROCEDURE SPECIFICATION

Material spec/grade	Mild steel e.g. AS/NZS 1594 Grades 200, 250					
Fabricator	Advanced Plasma Technology Ltd	WPS No.	MP1G3			
Standard	AS/NZS 1554.7:2006 to Clause 1.4. Innovation	Date qualified	22/07/09			
Process	Plasma welding	PQR No.	MP1G3			
Welding Equipment	Multiplaz 3500	Page	1			
Edge Preparation	Square	Revision	1 Date: 25/8/09			
Thickness range	2-3mm	Position	Flat 1G			
Preheat temperature	na					
Inter-run temp. (max)	na					
Joint sketch	Run sequence	Joint tolerance				
		Prequal. Joint No.	PC 1b			
		To table	E1			
		Root gap	+0.5mm			
		Root face	na			
		Included angle	na			
		Backing	na			
<b>WELDING CONSUMABLES</b>						
Filler Specification:	AS/NZS 1167.2					
Filler Classification:	RG					
Working fluid	40%Methylated Spirits 60% water					
<b>WELD RUN DETAILS</b>		<b>WELDING PARAMETERS</b>				
No.	Position	Filler Ømm	Voltage	Current And Polarity	Travel Speed mm/min	
1	1G	2.4 - 3.2	150-160	DCEN	60-80	
Technique:	Stringer/weave					
Single-run or multi-run	Single					
Initial cleaning	Grinding/sanding to remove mill scale					
Notes/revisions						

**PROCEDURE QUALIFICATION RECORD**

Material spec/grade	Mild steel AS/NZS 1594 HA250	To	Mild steel AS/NZS 1594 HA250				
Fabricator	Advanced Plasma Technology Ltd	PQR	MP1G3				
Standard	AS/NZS 1554.7:2006 to Clause 1.4. Innovation	Date qualified	22/07/09				
Process	Plasma Welding	Welded by	Andrei Kouzmenkov				
Welding Equipment	Multiplaz 3500						
Edge Preparation	Square	Page	1				
Weldability group no.	3	Revision	1 Date: 25/8/09				
Specimen thickness	3mm	Qualified Position	Flat 1G				
Preheat temperature	na	PWHT	na				
Method / check method	na	Hold	na				
Inter-run temp. (max)	na	Other	na				
<b>Joint sketch</b>	<b>Run sequence</b>	<b>Joint tolerance</b>					
		Prequal. Joint No.	B-C1b				
		To table	E1				
		Root gap	±0.5mm				
		Root face	na				
		Included angle	na				
		Backing	na				
<b>WELDING CONSUMABLES</b>							
Filler Specification:	AS/NZS 1167.2						
Filler Classification:	RG						
Working fluid	40%Methylated Spirits 60% water						
<b>WELD RUN DETAILS</b>		<b>WELDING PARAMETERS</b>					
No.	Position	Filler Ømm	Voltage	Current And Polarity	Travel Speed mm/min		
1	1G	2.4	150	DCEN	70		
Technique:	Stringer/weave						
Initial cleaning	Grinding/sanding to remove mill scale						
<b>Test Results</b>							
Test type	Visual	Macro	Tensile	Bend	Charpy V	Hardness	Other
Test by	NZWC		MTL	NZWC			
Report no.	na		28125/1	BTR MP1G3			
Result	Complies		Complies	Complies			
Notes/revisions							
Witnessed by: A.McClintock NZ Welding Centre							

## TEST RESULTS - BEND TEST Specimen MP1G3

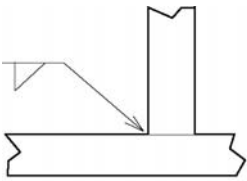
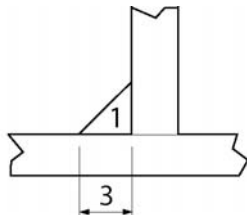
Standards: AS 2205.3.1-2003 Methods of testing welds in metal  
Method 3.1 Transverse guided bend test

Identification of specimen(s):	MP1G3
Type of equipment	Rounded supports. 25m clear space
Type of material	Mild steel to AS/NZS 1594 HA250
Dimensions of specimens	30mm and 40mm wide x 200mm - 3 specimens 100mm total length
Diameter of former	18mm
Surface in tension	Root
Angle of bend	180° until flat
Any special features	Butt weld from 1 side, no backing
Condition of specimen after testing	No cracks visually detected
Appearance, size and location of any fracture after bending	na
Compliance with standard	Complies with AS/NZS 1554.7 Clause 4.7.4.1

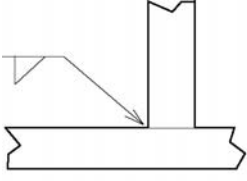
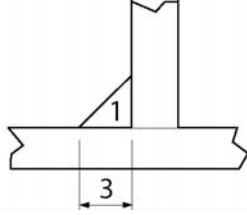
Test and report by: AM

A. McClintock CBIP CWI  
Date: 29/07/09

## WELDING PROCEDURE SPECIFICATION

Material spec/grade	Mild steel e.g. AS/NZS 1594 Grades 200, 250					
Fabricator	Advanced Plasma Technology Ltd	WPS No.	MP2F3			
Standard	AS/NZS 1554.7 to Clause 1.4. Innovation	Date qualified	22/07/09			
Process	Plasma welding	PQR No.	MP2F3			
Welding Equipment	Multiplaz 3500	Page	1			
Edge Preparation	na	Revision	1 Date: 25/8/09			
Thickness range	2-3mm	Positions	Flat 1F Horizontal-vert 2F			
Preheat temperature	na	PWHT	na			
Joint sketch	Run sequence	Joint tolerance				
		Prequal. Joint No.	F1			
		To table	E3			
		Root gap	+0.5mm			
		Root face	na			
		Included angle	na			
		Backing	na			
<b>WELDING CONSUMABLES</b>						
Filler Specification:	AS/NZS 1167.2					
Filler Classification:	RG					
Working fluid	40%Methylated Spirits 60% water					
<b>WELD RUN DETAILS</b>			<b>WELDING PARAMETERS</b>			
No.	Position	Filler Ømm	Voltage	Current And Polarity	Travel Speed mm/min	
1	1G	2.4 - 3.2	150-160	DCEN	60-80	
Technique:	Stringer/weave					
Single-run or multi-run	Single					
Initial cleaning	Grinding/sanding to remove mill scale					
Notes/revisions						

**PROCEDURE QUALIFICATION RECORD**

Material spec/grade	Mild steel AS/NZS 1594 HA250	To	Mild steel AS/NZS 1594 HA250				
Fabricator	Advanced Plasma Technology Ltd	PQR	MP2F3				
Standard	AS/NZS 1554.7 to Clause 1.4. Innovation	Date qualified	22/07/09				
Process	Plasma welding	Welded by	Andrei Kouzmenkov				
Welding Equipment	Multiplaz 3500						
Edge Preparation	na	Page	1				
Weldability group no.	3	Revision	1 Date: 25/8/09				
Specimen thickness	3mm	Qualified Position	Horizontal-vert 2F				
Preheat temperature	na	PWHT	na				
Method / check method	na	Hold	na				
Inter-run temp. (max)	na	Other	na				
<b>Joint sketch</b>	<b>Run sequence</b>	<b>Joint tolerance</b>					
		Prequal. Joint No.	<b>F1</b>				
		To table	<b>E3</b>				
		Root gap	<b>+0.5mm</b>				
		Root face	na				
		Included angle	na				
		Backing	na				
<b>WELDING CONSUMABLES</b>							
Filler Specification:	AS/NZS 1167.2						
Filler Classification:	RG						
Working fluid	40%Methylated Spirits 60% water						
<b>WELD RUN DETAILS</b>		<b>WELDING PARAMETERS</b>					
No.	Position	Filler Ømm	Voltage	Current And Polarity	Travel Speed mm/min		
1	1G	2.4	150	DCEN	70		
Technique:	Stringer/weave						
Initial cleaning	Grinding/sanding to remove mill scale						
<b>Test Results</b>							
Test type	Visual	Macro	Tensile	Bend	Charpy V	Hardness	Other
Test by	NZWC			NZWC			
Report no.	na			BTR MP2F3			
Result	Complies			Complies			
Notes/revisions							
Witnessed by: A.McClintock NZ Welding Centre							

TEST RESULTS - BEND TEST Specimen MP2F3

Standard: AS/NZS 1554.7

Identification of specimen(s):	MP2F3
Type of equipment	na
Type of material	Mild steel to AS/NZS 1594 HA250
Dimensions of specimens	50mm wide
Diameter of former	na
Surface in tension	Root
Angle of bend	90° until flat
Condition of specimen after testing	No cracks visually detected after bending
Appearance, size and location of any fracture after bending	Complete fusion at root of joint
Compliance with standard	Complies with AS/NZS 1554.7 Clause 4.7.4.2

Test and report by: AM

A. McClintock CBIP CWI  
Date: 29/07/09