



# DET NORSKE VERITAS

## WELDING PROCEDURE QUALIFICATION TEST

Ref.. 1/131-PA/DNV

According to (code, standard)  
ISO 15614-2:2005

Manufacturer's welding procedure No.  
1/131-PA/DNV

Manufacturer **Meblomor S.A., Czarnków, Poland**

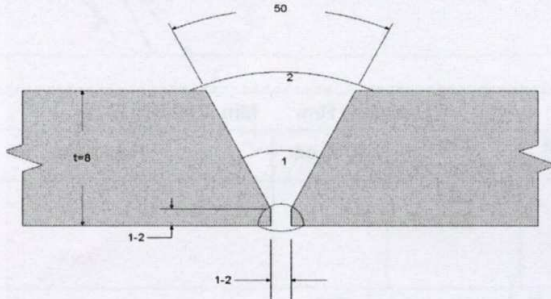
Place and date **Czarnków, 2007-04-05**

Purchaser's spec. No. -

Project -

Requirements beyond code/standard **ISO 15614-2:2005**

Joint preparation and welding sequence (Sketch).  
State rolling direction, if applicable



### BASE MATERIAL SPECIFICATION AND GROUPING

Cert. No: 207665/02

Heat No: 40321

Grade	C, %	C eq %	Grade	C, %	C eq %
Alu 5083	-	-	Alu 5083	-	-

Group: 22, Subgroup: 4 according to ISO 15608

If applicable, the following C eq based on ladle analysis is to be calculated:

$$C_{eq} = C + \frac{Mn}{6} + \frac{Cr + Mo + V}{5} + \frac{Cu + Ni}{15} \%$$

Welding process(es) **131**

Welding position **PA**

Single-/double sided welding **DOUBLE**

#### WELDING CONSUMABLES:

Index	Consumable(s), trade name	Code designation
A	<b>Safra AlMg 4.5Mn</b>	<b>A.W.S./ASTM A5.10: ER 5183</b>
B	<b>Crysal Messer: Argon 4,8</b>	<b>I1 acc. to EN 439</b>
C		
D		

#### WELDING PARAMETERS

Pass No.	Index	Diam. mm	Gas composition	Gas L/min	Current polarity	Amps	Volts	Travel speed mm/min	Wire feed mm/min	Heat input kJ/mm
1	A+B	1,2	I1	18-20	DC(+)	179-182	21-22	320-330	-	0,70-0,73
2	A+B	1,2	I1	17-18	DC(+)	183-186	23-24	340-350	-	0,74-0,77
3	A+B	1,2	I1	17-18	DC(+)	183-186	23-24	340-350	-	0,74-0,77

Other information (weaving, backing, groove preparation, gouging, grinding, etc.):

**Root cleaning: grinding**

SPECIAL REQUIREMENTS: Preheat min. **50°C**      Interpass max **100°C**      PWHT **N/A**      Time **N/A**  
 Heating/cooling rate **N/A**      Baking of electrodes **-**      Others **-**

WELDING CARRIED OUT BY **Kazimierz Kina**      TEST PIECE MARKED **1/131-PA 87073-B4**

EXTENT OF APPROVAL. Base material(s) **Group 22 (ISO 15608)**      Positions: **PA, PB**

Plate /wall thickness **3-16 mm**      Diam. **>150 mm (PA)**      Other limitations **-**

**None.**

We certify that the statements in this record are correct and that the test weld was prepared, welded and heat treated in accordance with the specified Code/Standard and/or purchaser's requirements.



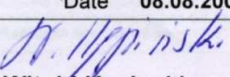
Manufacturer's signature and stamp

DNV's survey station and surveyor's signature

*Witold Kepinski*  
**DNV Gdansk – Witold Kepinski**



If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.

NON-DESTRUCTIVE TESTING									
1. Radiographic testing - report No.: TT121/1473/2007									
Procedure ref. EN 1435			Acceptance criteria EN 30042 - class B			Result Positive			
Film type Kodak MX 125-Pb			Screens 0,027 / 0,027 mm Pb			IQI 10AI EN			
KV 70		mAmin. 3		Sensitivity -		Density 2,5			
2. Ultrasonic examination - report No.: 1403 / 2007									
Procedure ref. PN-EN 1714			Acceptance criteria PN-EN 1712, ISO 5817-B			Result Positive			
3. Other examination Type: Penetrant testing- see report No.. 1399 /2007									
Procedure ref. PN-EN 1289			Acceptance criteria PN-EN ISO 5817 - class B			Result Positive			
Place and date Kromet, Elbląg, Poland 19.04.2007				Reviewed by Witold Kepinski					
Laboratory signature and stamp									
MECHANICAL TESTING (According to ISO 15614-2:2005)									
1. Tensile tests				Specified R <sub>eH</sub>		Specified R <sub>m</sub> : Min. 275-350 MPa			
Test No.	Dim (mm)	Area (mm <sup>2</sup> )	Yield load (kN)	ReH (N/mm <sup>2</sup> )	U.T load (kN)	R <sub>m</sub> (N/mm <sup>2</sup> )	A, % on	Remarks	
1	8x25	200				284			
2	8x25	200				287			
2. Bend tests		Specified 180		degr.		Former diameter Ø40			
Type and dimensions			Results		Type and dimensions		Results		
8x30			Positive						
8x30			Positive						
8x30			Positive						
8x30			Positive						
3. Impact tests Type: - Size: - Requirement: -									
Notch Location/Direction		Temp. °C		Values, J			Average J		Remarks
				1	2	3			
-		-		-	-	-	-	-	
4. Macro examination 1 specimen acc. to EN 1321:2000 - report No.. - Positive - report: MT1/0267/2007									
5. Hardness test Specified type if test: HV 10 acc. to EN 1043-1:2000 - report as above									
Sketch showing indentations				Point	Hardness	Point	Hardness	Point	Hardness
6. Other tests				Type and results: Visual Inspection EN790, EN30042 -B report No.: TT121/1472/2007					
Place Metrotest, Elbląg, Poland			Date 05.06.2007		Reviewed Witnessed by Witold Kepinski				
Laboratory signature and stamp									
We hereby certify that by virtue of the information given on page 1 of this form and the laboratory test results given above, this welding procedure meets the Code/Standard and/or purchaser's specification, and that within the limitations given in the Code/Standard and/or purchaser's specification by our signature is approved for welding on said product.				Place Poznań, Poland		Date 08.08.2007r.			
				Surveyor		 Witold Kepinski			