

OE CROMO S 225 V

OE CROMO F 537

WIRE AND FLUX SAW PROCESS

PRODUCT DATA SHEET



Product Data Sheet - PDS

OE CROMO S 225 V
OE CROMO F 537

REV. 0 del 17/01/03

Pag 2 / 11

INDEX

1	TYPE OF PRODUCT	3
2	PRODUCT CHARACTERISTICS	3
2.1	SIZES AND TOLERANCES:	3
2.2	DIFFUSIBLE HYDROGEN:	4
2.3	CHEMICAL ANALYSIS:	4
2.4	WELDABILITY:	5
3	ALL WELD METAL REQUIREMENTS	5
3.1	CHEMICAL COMPOSITION:	6
3.2	MECHANICAL PROPERTIES:	6
4	APPLICATION	7
4.1	BASE MATERIAL STANDARD :	7
4.2	ALL WELD METAL CHARACTERISATION :	7
5	ANNEX LIST	9

1 TYPE OF PRODUCT :

OE CROMO F 537

OE CROMO F 537 is a special agglomerate fluoride-basic neutral flux. It was developed for application in which the weld metal is required to guarantee excellent impact properties after Step Cooling heat treatment.

Flux Classification:

- EN 760: SA FB 1 55 AC H5

OE CROMO S 225 V

OE CROMO S 225 V is a special solid wire developed for application in which the weld metal is required to guarantee excellent impact properties after Step Cooling heat treatment.

Classification:

- ASME IIC - AWS 5.23 : F9P2 EGR G

2 PRODUCT CHARACTERISTICS

2.1 Grain Size :

OE CROMO F 537 – according DIN EN 760 : 2 – 20

Sizes and Tollerances:

OE CROMO S 225 V – according AWS 5.23

Diameter (mm)	Tollerance (mm)
2,4	± 0,04
3,2	± 0,006
4,0	± 0,006

2.2 Diffusible Hydrogen:

OE CROMO S 225V + OE CROMO F 537

- Diffusible Hydrogen : < 5 ml/100 g; determined in accordance with AWS A 4.3-93

2.3 Chemical analysis :

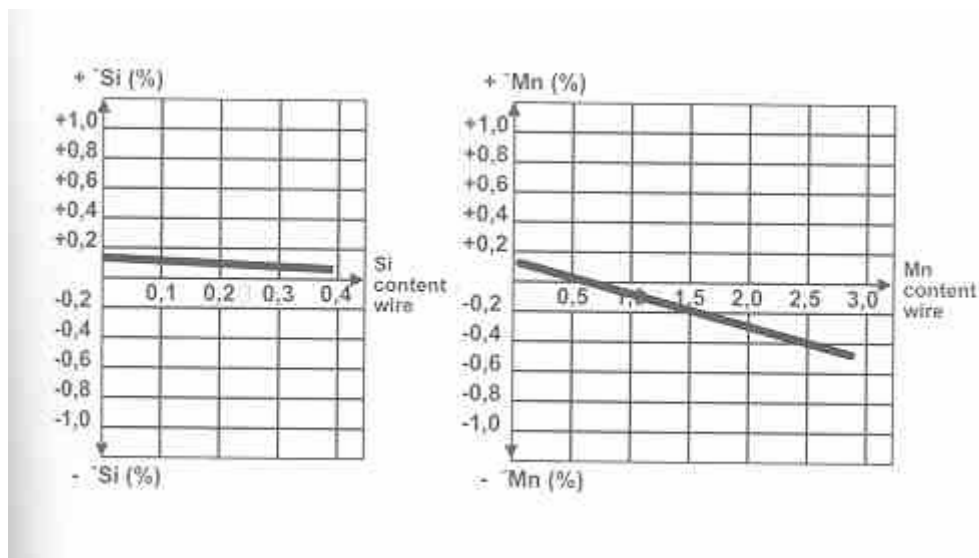
OE CROMO F537

Boniszewski Index : 2,6

Main Constituents :

$\text{SiO}_2 + \text{TiO}_2$	$\text{CaO} + \text{MgO}$	$\text{Al}_2\text{O}_3 + \text{MnO}$	CaF_2
15%	40%	20%	25%

Pick up and burn off of the alloy elements Si and Mn



OE CROMO S 225 V

The weld metal deposit is in accordance with ASME II-C AWS 5.23 and ASME VIII Appendix 26

The chemical analysis of both wire and weld deposit is very pure and all the tramp elements and impurities (As, Sb, Sn, P, S, Cu,...) are strictly under control.

2.4 Weldability :

The OE CROMO F 537 shows a good weldability in DC and AC , with single wire technique and tandem too.

The slag removal detachability permits good performance also with narrow gap bevel preparation .

3 ALL WELD METAL REQUIREMENTS

The chemical analysis and the mechanical properties have been determined in accordance with AWS 5.23 requirements (battered bevel preparation).

PWHT min	705 °C	8 Hrs
PWHT min + SC	705 °C	8 Hrs + SC
PWHT MAX	705 °C	30 Hrs

See Macro in Annex 1

See Step Cooling diagram in Annex 2

3.1 All weld metal chemical analysis range :

:

C	Mn	Si	P	S	Cr	Mo	Ni	As	Sb	Sn	Cu	V	Nb	X	J
0,13 max	0,9 max	0,25 max	0,01 max	0,01 max	2 – 2,5	0,9- 1,1	0,2 max	0,01 max	0,01 max	0,01 max	0,20 max	0,2- 0,35	0,01- 0,025	15 max	150 max

3.2 Mechanical Properties :

Mechanical properties are in accordance with ASME II-C AWS 5.23 and ASME VIII Appendix 26 – API Recommended Practice 934.

<i>Tensile test at R.T. after PWHT min.</i>				
TS (N/mm2)	YS (N/mm2)	E % (5d)	Z %	YS/TS
590 - 750	> 414	> 18	-	-

<i>Tensile test at + 454°C after PWHT MAX</i>				
TS (N/mm2)	YS (N/mm2)	E % (5d)	Z %	YS/TS
	> 350	-	-	-

<i>Stress – Rupture test after PWHT MAX</i>		
Stress	Test temperature	Min. Rupture Time
207 MPa	538°C	> 900 Hrs

<i>Kv Impact test after PWHT min</i>					
Test Temperature	- 18°C	- 29°C	- 40°C	- 50°C	- 60°C
Kv (J)	-	54	-	-	-

Impact properties after Step Cooling
 $Cv54 + A (\Delta Cv54) \leq 10^\circ C$

A can be 2,5 or 3

4 APPLICATION

4.1 Base material standard:

- ASME SA 336 F22 V
- ASME SA 542 Tp. D Cl 4a
- ASME SA 541 Gr 22 V
- ASME SA 182 Gr F22V
- ASME SA 832 Gr 22V

4.2 All weld metal characterisation:

WELDING PARAMETER – single wire technique

Wire Ø	CURRENT	A	V	mm/1'	HI	Preheat Interpass
4,0	AC	600	31-32	600	1,9	200 – 250°C

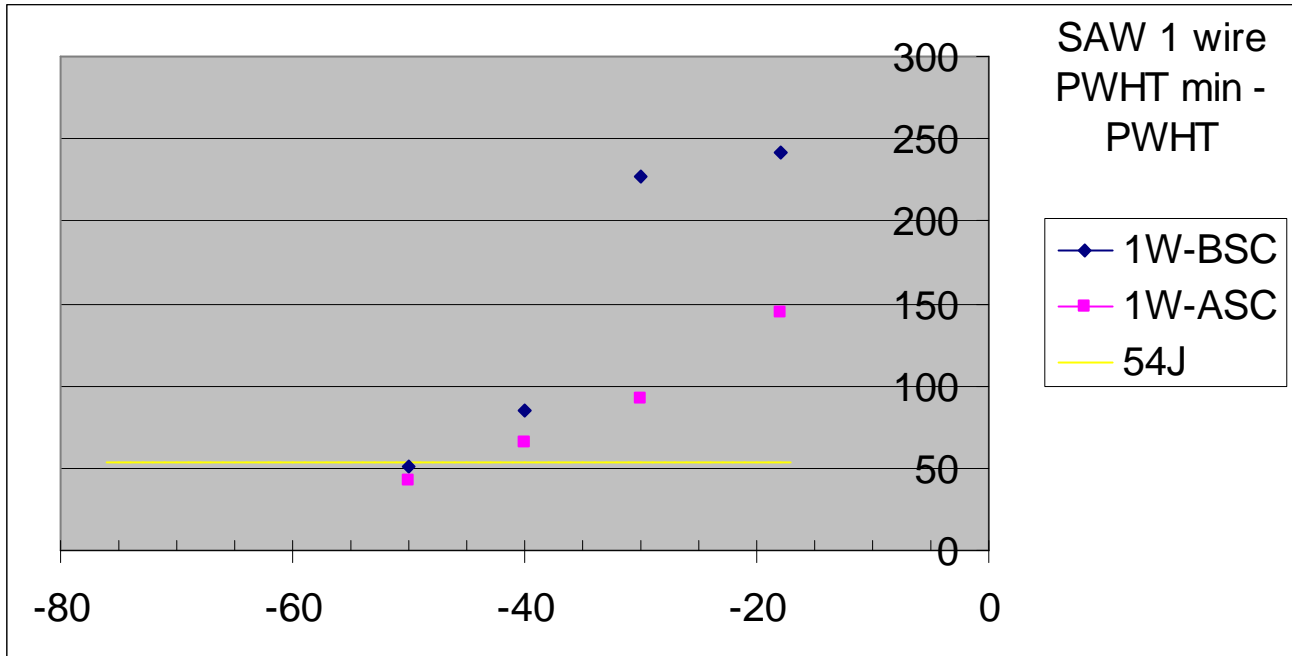
CHEMICAL ANALYSIS

C	Mn	Si	P	S	Cr	Mo	Ni	As	Sb	Sn	Cu	V	Nb	X	J	PE
0,12	0,9	0,18	0,005	0,002	2,13	0,92	0,13	0,003	0,003	0,002	0,020	0,26	0,02	9,6	75,6	2,9

MECHANICAL TEST RESULTS

	705°C X 8Hrs	705°C X 30Hrs	705°C X 8Hrs + SC
YS (Mpa) r.t.	630	575	-
TS (Mpa) r.t.	715	685	-
E (%) r.t.	19	19	-
TS (Mpa) + 454°C	-	580	-
Kv (J) @ -20°C	224-231-227	148-156-165	201-105-127
Kv (J) @ -30°C	292-227-205	168-118-134	187-164-154
Hv 10	229	215	-

Impact transition test temperature before and after Step Cooling



$Cv54 + A (\Delta Cv54) \leq 10^\circ C$

A can be 2,5 or 3

$-49 + 2,5 (49-45) = -39^\circ C$

<i>Stress – Rupture test after PWHT MAX</i>		
Stress	Test temperature	Rupture Time
207 MPa	538°C	> 1200 Hrs



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OE CROMO S 225 V
OE CROMO F 537

REV. 0 del 17/01/03

Pag 9 / 11

4 ANNEX LIST

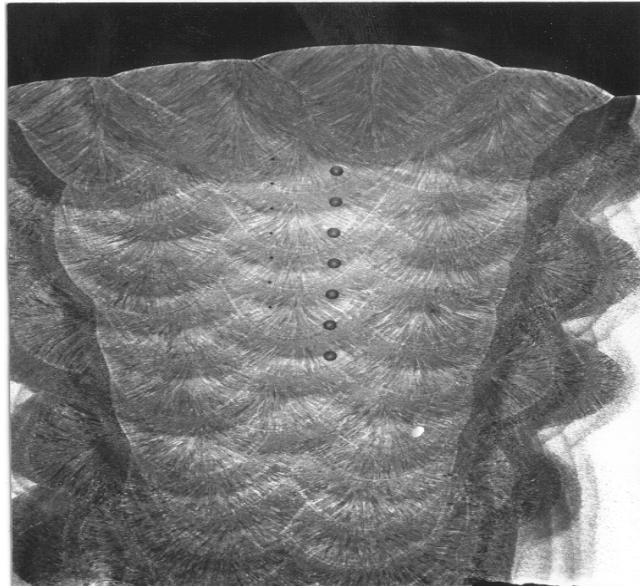
ANNEX 1: MACRO

ANNEX 2: STEP COOLING DIAGRAM

Annex 1:

MACRO

Buttered joint



Annex 2 :

Step Cooling Diagram

