Fused Welding Flux WP 380

Flux type: Calcium-Silicate
Classification:
ISO 14174 (stainless steels) S F CS 2 5742 DC
ISO 14174 (low alloy steels) S F CS 1 63 DC

Characteristics:
Specially designed for welding austenitic stainless steels WP 380 is also suitable for welding both low-alloy steels for use at elevated temperatures as well as the combination with austenitic stainless steels. As a result of the semi- basic flux characteristics crack free welds are obtained for most grades of stainless steels welded with the corresponding wire electrodes. The metallurgical behavior of the flux is neutral (C-neutral, low Si pick-up and low Mn burn-out) without Cr compensation.
It is suitable for welding DC using single or DC/AC for multi-wire processes and produces smooth weld beads free of slag residuals with flat weld interfaces even in narrow gaps and on preheated work pieces.

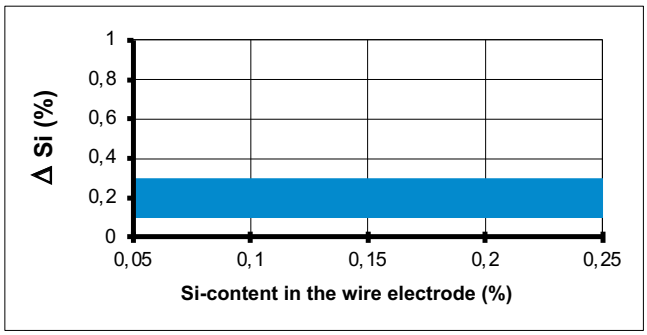
Application:
Joint welding and surfacing of:
- creep-resistant CrMo-steels such as 12CrMo19-5/A355 grade P22-P5 or X20CrMoWV12-1/A351 for boiler, vessel and pipe fabrication
- martensitic and ferritic Cr(NiMo)-steels acc. to EN 10088 with the appropriate wire electrodes in conjunction with the corresponding heat treatments
- austenitic CrNi(Mo)-steels (including ELC-grades) acc. to EN 10088; resistant against intergranular corrosion in both the as-welded and solution-treated condition
- high-alloy CrNi(Mo)-steels for use at low temperatures and heat-resistant steels
- high-alloy Cr(NiMo)-steels in combination with low-alloy steels (dissimilar joints)
- Nickel-base alloys using NiCr- and NiCrMo-wire electrodes acc. to AWS A5.14/EN ISO 18274

Characteristic chemical Constituents:

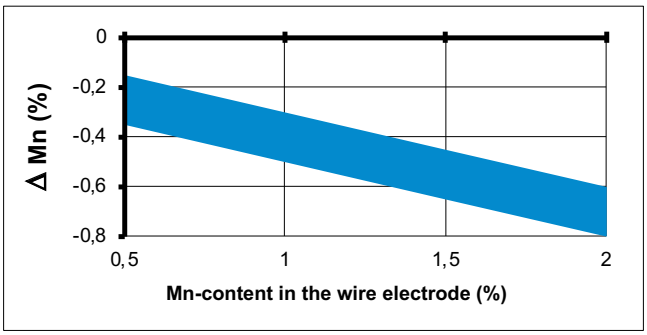
SiO_2	Al_2O_3 + MnO	CaO + MgO	CaF_2
20 %	55 %	35 %	20 %
Basicity according to Boniszewski: ~0.6			

Metallurgical behaviour acc. to ISO 14174 type of current DC:

Pick-up Silicon



Pick-up/Burn-out Manganese



Flux density: 1.5 kg/dm³ (l)
Grain size acc. to ISO 14174: 1–16 (Tyler 10×65)
Current-carrying capacity: up to 900 A DC using one wire

Chemical composition of all-weld metal acc. to EN ISO 15792-1 and AWS A5.9/5.23/5.14:
(characteristical values in wt. %)

Wire electrode		C	Si	Mn	Cr	Ni	Mo	Nb
BA-S2Mo	EA2	< 0.08	< 0.5	< 1.0			0.5	
BA-SCrMo5	EB6	< 0.08	< 0.7	< 0.6	5.5		0.6	
BA-SCrMo9	EB8	< 0.12	< 0.8	< 1.2	8.0–10.0		0.8–1.2	Cu: < 0.35
BA-SCrMo91[1]	EB91	< 0.10	< 0.5	< 1.2	8.5–10.5	0.6	1.0	0.02–0.10 V: 0.2
BA-WIRE 308L	ER308L	< 0.03	< 1.0	< 2.5	19.5–22.0	9.0–11.0		
BA-WIRE 309L	ER309L	< 0.03	< 1.0	< 2.5	23.0–25.0	12.0–14.0		
BA-WIRE 316L[1]	ER316L	< 0.03	< 1.0	< 2.5	18.0–20.0	11.0–14.0	2.0–3.0	
BA-WIRE 318	ER318	< 0.08	< 1.0	< 2.5	18.0–20.0	11.0–14.0	2.0–3.0	8 × C/1.0 max
BA-WIRE 347	ER347	< 0.08	< 1.0	< 2.5	19.0–21.0	9.0–11.0		10 × C/1.0 max
BA-WIRE 2209	ER2209	< 0.03	< 0.9	< 2.0	21.5–23.5	7.5–9.5	2.5–3.5	N: 0.08–0.20
BA-WIRE 276	ERNiCrMo-4	< 0.02	< 0.4	< 1.0	14.5–16.0	> 50.0	15.0–17.0	W ≈ 4/V: 0.35
						Fe ≈ 4.0–7.0		Co < 2.5

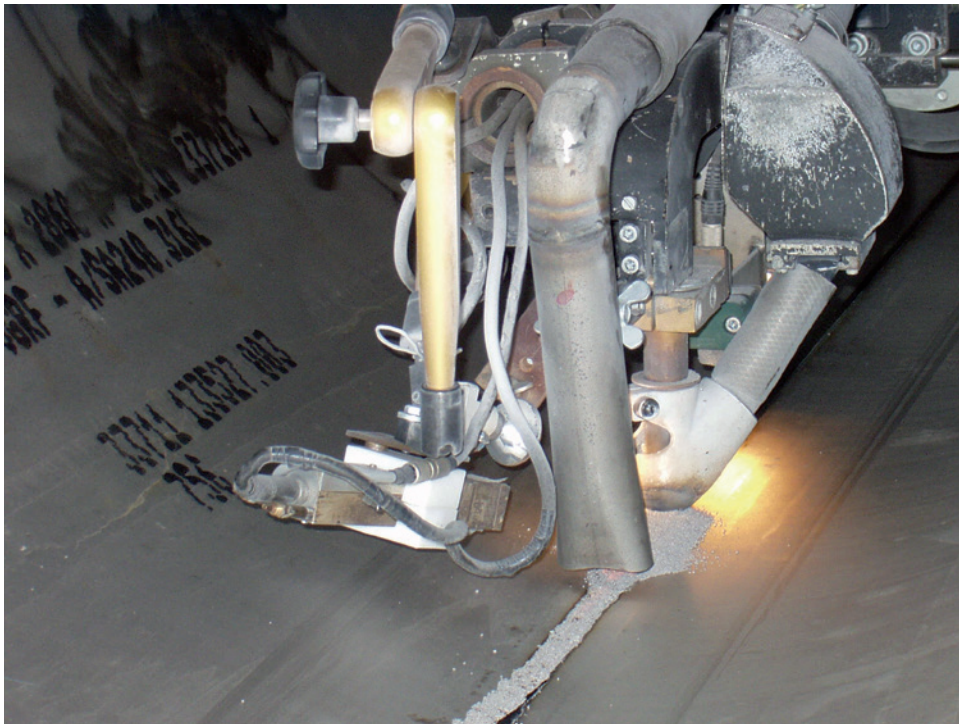
Mechanical properties of all-weld metal acc. to EN ISO 15792-1 and AWS A5.9/5.23/5.14:
(characteristical values)

Wire electrode		Heat treatment	0.2 % Proof stress	1.0 % Proof stress	TS MPa	Elong. %	Impact ISO-V (J)		
							RT	-120 °C -184 °F	-196 °C -321 °F
BA-S2Mo	EA2	S	> 440		> 540	> 20	> 90		
BA-SCrMo5	EB6	A	> 470		> 600	> 18	> 70		
BA-SCrMo91[1]	EB91	A	> 540		> 660	> 17	> 47		
BA-WIRE 308L	ER308L	AW	> 340		> 540	> 35	> 70		> 40
		ST1	> 250	> 280	> 520	> 35	> 80		> 50
BA-WIRE 309L[1]	ER309L	AW	> 380		> 580	> 30	> 70		
BA-WIRE 316L	ER316L	AW	> 350	> 380	> 550	> 30	> 70		> 40
		ST2	> 270	> 300	> 520	> 35	> 80		> 50
BA-WIRE 318	ER318	AW	> 370	> 410	> 580	> 30	> 80	> 40	
		ST2	> 290	> 330	> 550	> 35	> 80	> 60	
BA-WIRE 347	ER347	AW	> 360	> 400	> 570	> 30	> 80		> 40
		ST1	> 280	> 310	> 550	> 35	> 80		> 50
BA-WIRE 2209	ER2209	AW	> 550	> 600	> 750	> 25	> 80	-60°C: > 40	
BA-WIRE 276[2]	ERNiCrMo-4	AW	> 400		> 700	> 35	> 80		> 60

[1] Maximum wire diameter 2.4 mm
[2] Maximum wire diameter 2.0 mm
S = stress relieved 620 °C/15 h
A = annealed 740–760°C
ST1 = solution treated 1,050 °C/water
ST2 = solution treated 1,080 °C/water

Packaging: 15 kg Alpha Dry Alu-Bag
Storage: Unopened originally packed flux bags can be stored up to one year in dry storage rooms after date of delivery exfactory.

Redrying conditions specific to the flux:
150–200 °C effective flux temperature. Usually, if austenitic stainless steels are to be welded flux redrying can be neglected.



Versatile flux for welding stainless steels, but also suitable for welding Ni-alloys as well as low alloyed steel.