

Agglomerated Welding Flux BF 1

Flux type: Aluminate-Rutile

Classification: ISO 14174 – S A AR 1 76 AC H5 *)
(EN 760 – SA AR 1 76 AC)

Characteristics:

Designed for all SAW-processes and welding of ordinary carbon-manganese, low alloy structural and boiler quality steels with yield strength up to 355 MPa ($t < 25$ mm) in combination with wire grades S1, S2, S2Mo and S CrMo1. The flux is suitable for high speed welding (up to 2 m/min.) and provides very good weld bead appearance and excellent slag release even with small angle preparation and fillet welds. The chemical nature of BF 1 flux provides high resistance to cracking on single pass applications. Additional features are resistance to porosity when welding rusty plates, heavy scale or other contaminations of plate surfaces (e.g. special primer-coatings) and low sensitivity to arc blow.

Application:

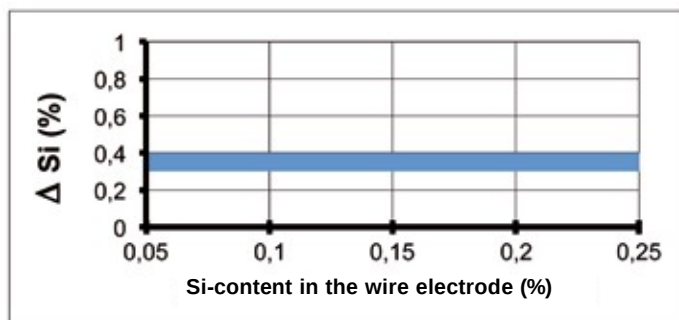
Preferentially used for single-run, two-run and fillet SA-welding. Main fields of application include structural steelwork, thin-walled containers, LP-gas cylinders and fin-tube walls.

Characteristic chemical Constituents:

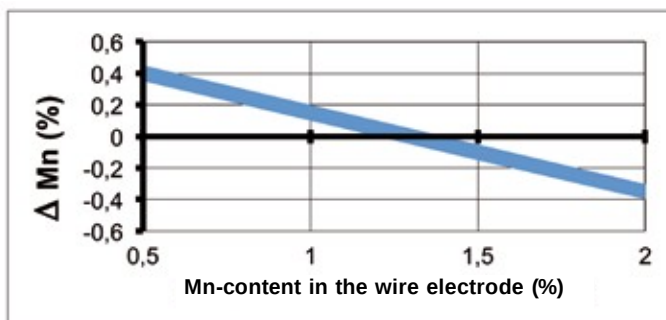
SiO ₂ + TiO ₂	Al ₂ O ₃ + MnO	CaO + MgO	CaF ₂
25 %	55 %	5 %	10 %
Basicity according to Boniszewski: ~0.6			

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

Pick-up Silicon



Pick-up / Burn-out Manganese



Flux density: 1.0 kg/dm³ (l)

Grain size acc. to ISO 14174: 4 – 16 (Tyler 10 x 65)

Current-carrying capacity: up to 800 A (DC or AC) using one wire

*) Diffusible hydrogen content H5: determined in deposited metal acc. to the method described in ISO 3690 Type of current DC; redrying conditions 200 ± 50 °C

All-weld metal multiple pass classification of wire-flux combinations:

Wire electrode (ISO 14171-A ISO 24598-A)	AWS A5.17/.23	Test assembly ISO 15792-1: type 1.3	AWS A5.17M/5.23M	AWS A5.17/5.23
BA-S1	EL12	ISO 14171-A- S 38 A AR S1	F48A0-EL12	F7AZ-EL12
BA-S2	EM12(K)	ISO 14171-A- S 42 A AR S2	F48A0-EM12(K)	F7AZ-EM12(K)
BA-S2Si	EM12K	ISO 14171-A- S 42 2 AR S2Si	F48A2-EM12K	F7A0-EM12K
BA-S2Mo	EA2	ISO 14171-A- S 46 2 AR S2Mo	F55A2-EA2-A2	F8A0-EA2-A2
BA-S2CrMo1	EB2	ISO 24598-A- S S CrMo1 AR	F55PZ-EB2-B2	F8PZ-EB2-B2

Two-run classification of wire-flux combinations:

Wire electrode (ISO 14171-A ISO 24598-A)	AWS A5.17/.23	Two-run/ISO 15792-2:type 2.5	AWS A5.17M/5.23M	AWS A5.17/5.23
BA-S2	EM12(K)	ISO 14171-A- S 3T A AR S2	F43TA0-EM12(K)	F6TAZ-EM12(K)
BA-S2Si	EM12K	ISO 14171-A- S 3T 2 AR S2Si	F43TA2-EM12K	F6TA0-EM12K
BA-S2Mo	EA2	ISO 14171-A- S 4T 2 AR S2Mo	F49TA2-EA2	F7TA0-EA2
BA-S4Mo	EA3	ISO 14171-A- S 5T 2 AR S4Mo	F55TA2-EA3	F8TA0-EA3
BA-S2CrMo1	EB2		F49TPZ-EB2	F7TPZ-EB2

Chemical composition of all-weld metal acc. to EN ISO 15792-1 and AWS A5.17/5.23: (characteristical values in wt. %)

Wire electrode		C	Si	Mn	Mo	Ni	Cr
BA-S1	EL12	0.04-0.08	0.3-0.6	0.8-1.1			
BA-S2	EM12(K)	0.04-0.08	0.3-0.6	1.0-1.4			
BA-S2Si	EM12K	0.04-0.08	0.4-0.8	1.0-1.4			
BA-S2Mo	EA2	0.04-0.08	0.3-0.7	1.0-1.4	0.4-0.6		
BA-S2CrMo1	EB2	0.04-0.08	0.3-0.7	0.9-1.3	0.4-0.6		1.0

Mechanical properties of all-weld metal acc. to EN ISO 15792-1 and AWS A5.17/5.23: (characteristical values)

Wire electrode		Heat treatment	YS MPa	UTS MPa	Elong. %	Impact ISO-V (J)				
						RT	± 0 °C +32 °F	-20 °C -4 °F	-30 °C -22 °F	-40 °C -40 °F
BA-S1	EL12	U	>400	>510	>24	>70	>40			
BA-S2	EM12(K)	U	>420	>530	>22	>70	>47			
BA-S2Si	EM12K	U	>430	>540	>22	>70	>47	>27		
BA-S2Mo	EA2	U	>480	>580	>20	>60	>47	>27		
BA-S2CrMo1	EB2	A*)	>470	>570	>20	>50				

Post Weld Heat Treatment *) 680 °C / 10 h

Approvals:

VdTUEV 1153 / TÜV-Wien
Deutsche Bahn

with wire electrodes:

S1, S2, S2Si, S2Mo and S CrMo1
S2Si, S2Mo

Packaging: 25 kg PE-bags or 500-1,250 kg Big Bags

Storage and redrying:

Unopened originally packed flux bags can be stored up to 1 year in dry storage rooms after date of delivery ex factory.

Redrying conditions specific to the flux: 200 ± 50 °C effective flux temperature.

BF 1 + EA2 Wire Electrodes for Fin Tube Welding



Characteristic for BF 1

- high speed welding
- no undercuts
- weld surface (not too concave)
- flux consumption