AMA OP 129

Standards: EN 760 S A CS 1 77 AC
DIN 32 522 B CS 1 77 AC 10 M

AWS/ASME: F6A0-EL12 F7P2-EM12
F7A2-EM12

Application / Properties: Agglomerated Calcium-Silicate type flux for welding general structural steels, pressure vessel steels, pipe steels as well as fine grain structural steels. It produces a mean silicon pick-up and when used with wire electrodes, 50-14,50-15,50-11,50-12 also a manganese pick-up. The neutral point for manganese is at approximately 2%. AMA OP 129 can therefore be combined with wire electrodes having a low manganese content.
It is particularly for twin-wire, tandem and multi-wire at high speeds. AMA OP 129 is likewise suited for welding from both sides in one pass,. For increased weld metal toughness, wire electrode containing molybdenum 50-14 should be preferably used. AMA OP 129 can be used on either DC or AC up to 1000A (in single wire welding),

Slag removal is easy. The resulting slag is short, i.e., girth seams on work pieces having a small diameter can be welded without the danger of the slag running off.

Damp flux shall be retried by baking at 300-350C
Grain size according to DIN 32 522:2-20.

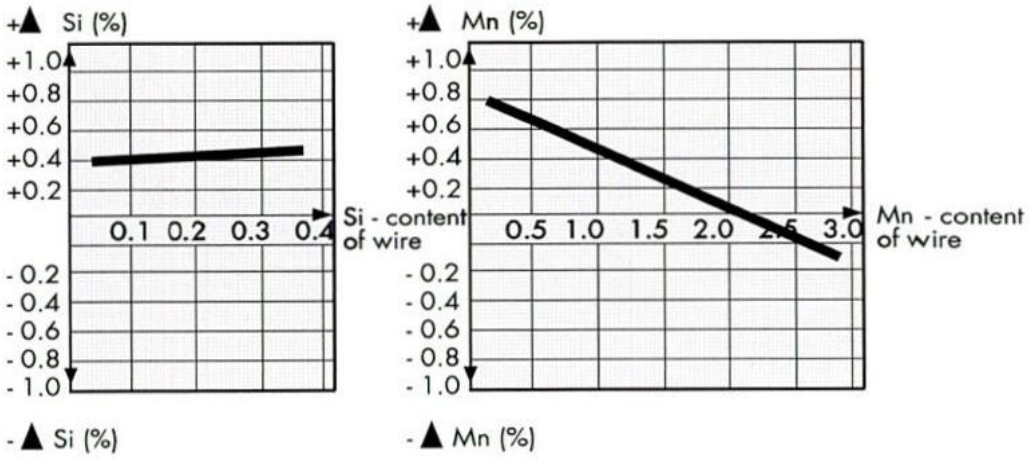
Main constituents:

SiO2 + TiO2	CaO + MgO	Al203 + MnO	CaF2
40%	20%	25%	10%

Basicity to boniszewskii: ~1.0

Metallurgical behavior: Pick-up and burn-off the alloying elements Si and Mn as a function of the alloy content of the wire electrode, DVS Merkblatt 0907, part 1

(DVS Merkblatt 0907, part 1)



All -Weld metal analysis (typical values):

With Wire electrode		Weight-%			
	DIN/EN	C	Si	Mn	Mo
50-11	S1	0.04 - 0.08	0.3 - 0.7	0.8 - 1.3	-
50-12	S2	0.04 - 0.08	0.3 - 0.7	1.1 - 1.7	-
50-15	S3	0.04 - 0.08	0.3 - 0.7	1.3 - 1.9	-
50-14	S2Mo	0.04 - 0.08	0.3 - 0.7	1.1 - 1.7	0.5

Mechanical properties of all -weld metal (typical values) :

With Wire electrode	Heat treatment	Tensile Strength (N/mm^2)	Yield Strength (N/mm^2)	Elongation Lo = 5d %	Impact energy (j) (Joule) ISO - V +20	±0	- 20	- 40°C
50-11	As - Welded	420 - 500	> 360	> 24	>100	>60	>30	–
50-12	As - Welded	520 - 620	> 400	> 24	>100	>80	>50	–
50-15	As - Welded	550 - 650	> 460	> 24	>130	>100	>70	>50
50-14	As - Welded	600 - 700	> 480	> 20	>90	>50	>35	–

Application:

Materials	Multi pass joint welding	Welding from both sides in one pass
General structural steels	With wire electrode	With wire electrode
St37.2, USt37.2, RSt37.2	50-11	50-12,50-14
St37.3, St44.2, St44.3, St52.3	50-12	50-12,50-14
Pipe steels	With wire electrode	With wire electrode
StE210.7, StE240, StE290.7	50-11	50-12,50-14
StE320.7, StE360.7	50-12	50-12,50-14
St35, St35.4, St35.8	50-11	50-12,50-14
St45, St45.4, St45.8	50-12	50-12,50-14
St52, St52.4	50-12	50-12,50-14
X42	50-11	50-12,50-14
X46, X52, X56	50-12	50-12,50-14
X60, X65, X70	50-14	50-12,50-14
Boiler plates	With wire electrode	With wire electrode
H I, H II	50-11	50-12,50-14
17Mn4, 19Mn5	50-12	50-12,50-14
Fine grain structural steels	With wire electrode	With wire electrode
StE255, WStE255, TStE255***	50-12*	50-12,50-14
StE285, WStE285, TStE285***	50-12*	50-12,50-14
StE315, WStE315, TStE315***	50-12*	50-12,50-14
StE355, WStE355, TStE355***	50-12*;50-15**	50-12,50-14
StE420, WStE420, TStE420***	50-15**	50-12
StE460, WStE460, TStE460***	50-15**	50-12

For welding from both side in one pass, especially in multi-wire welding **50-14** wire electrode should be used Because of the fine-grain formation caused by molybdenum.

* At service temperatures down to -20°C

** At service temperatures down to -40°C