

**Fluxes for  
Submerged  
Arc Welding of  
Austenitic  
Stainless Steels**





# AMA OP 71 Cr

**Standards:** EN 760  
DIN 32 522

SA FB 2 63 DC  
B FB 5 63745 DC 8 K

**Type/ Characteristics:** Special agglomerated fluoride-basic type flux of extra low carbon quantity for welding austenitic stainless and heat resistant steels in combination with wire electrode according to DIN 8556.

Owing to its metallurgical behavior In terms of carbon, AMA OP 71 Cr is substances counteracting chromium burn-off.

AMA OP 71 Cr is characterized by causing a mean silicon pick-up and a slight manganese burn-off. It produces smooth and finely ripped weld beads merging into the base metal without undercut.

Owing to excellent slag removal, AMA OP 71 Cr is well suited for fillet welding. AMA OP 71 Cr can be used on DC (positive) up to 800 °C. Damp flux shall be redried by backing at 300 350 °C. Grain size according to DIN 32 522:2-20.

## Main constituents:

SiO <sub>2</sub> + TiO <sub>2</sub>	CaO + MgO	Al <sub>2</sub> O <sub>3</sub> + MnO	CaF <sub>2</sub>
%30	%30	%10	%25

Basicity to boniszewski: ~1.6

## All-Weld metal analysis (typical values):

With Wire electrode	Weight-%				
	C	Cr	Ni	Mo	Nb
30-51	< 0.03	> 18	> 9	-	-
30-52	< 0.07	> 18	> 9	-	> 8 × C
30-53	< 0.03	> 18	> 10	> 2.5	-
30-54	< 0.07	> 18	> 10	> 2.5	> 8 × C

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

With Wire electrode	Tensile Strength (N/mm <sup>2</sup> )	0.1% proof Stress Strength (N/mm <sup>2</sup> )	0.2% proof Stress Strength (N/mm <sup>2</sup> )	Elongation Lo = 5d %	Impact energy (Joule) ISO - V +20°C
30-51	> 550	> 350	> 320	> 35	> 75
30-52	> 575	> 370	> 350	> 30	> 65
30-53	> 550	> 350	> 320	> 30	> 75
30-54	> 600	> 370	> 350	> 30	> 65



## AMA OP 71 Cr

Application: joint welding of austenitic stainless Cr Ni steel, preferably for thinner plates.

Material	Material-No.	With wire electrod	Material-No.
X 2 Cr Ni 1911	1.4306	30-51	1.4316
X 5 Cr Ni 1810	1.4301	30-51	1.4316
X 6 Cr Ni Ti 1810	1.4541	30-52	1.4551
X 5 Cr Ni Nb 189	1.4543	30-52	1.4551
X 6 Cr Ni Nb 1810	1.4550	30-52	1.4551
X 12 Cr Ni Ti 189	1.4878	30-52	1.4551
X 2 Cr Ni Mo 17132	1.4404	30-53	1.4430
X 2 Cr Ni Mo 18143	1.4435	30-53	1.4430
X 5 Cr Ni Mo 17122	1.4401	30-53	1.4430
X 6 Cr Ni Mo Ti 17122	1.4571	30-54	1.4576
X 10 Cr Ni Mo Ti 1812	1.4573	30-54	1.4576
X 6 Cr Ni Mo Nb 17122	1.4580	30-54	1.4576
C 10 Cr Ni Mo Nb 1812	1.4583	30-54	1.4576
HI, HII, 17 Mn 4		30-55	~1.4462
StE 255, StE 355 Joined to X 6 Cr Ni Nb 1810	1.4550		



# AMA OP 76

**Standards:** EN 760  
DIN 32 522

SA FB 2 55AC  
B FB 6 55455 AC 8 MHP 5

**Type/ Characteristics:** Special agglomerated fluoride-basic type flux for welding austenitic stainless steels in combination with wire electrode according to DIN 8556.

As to carbon content of the weld metal, AMA OP 76 is strictly neutral, so that, using suitable wire electrodes steels having extra low carbon content can be safely welded. It has no chromium compensation which is of importance if certain ferrite content in the weld deposit must be observed. Its metallurgical behavior as regards silicon and Manganese burn off will take place when using wire electrodes having a high Manganese content. AMA OP 76 is designed for welding thick sections. It is a hydrogen controlled flux deposition low hydrogen weld metal.

AMA OP 76 is particularly suited to be used in tandem and multi-wire welding. It produces smooth and finely ripped weld beads merging into the base metal without undercut.

AMA OP 76 can be used on DC (positive) or AC up to 800 °C. Damp flux shall be redried by backing at 300 350 °C. Grain size according to DIN 32 522:2-20.

### Main constituents:

SiO <sub>2</sub> + TiO <sub>2</sub>	CaO + MgO	Al <sub>2</sub> O <sub>3</sub> + MnO	CaF <sub>2</sub>
%15	%40	%20	%25

Basicity to boniszewski: ~2.7

### All-Weld metal analysis (typical values):

With Wire electrode	Weight-%					
	C	Cr	Ni	Mo	Nb	N
30-51	< 0.03	> 18	> 9	-	-	-
30-52	< 0.07	> 18	> 9	-	> 8×C	-
30-53	< 0.03	> 18	> 10	> 2.5	-	-
30-54	< 0.07	> 18	> 10	> 2.5	> 8×C	-
30-56	< 0.03	20	16	3.0	-	0.15
30-55	< 0.03	23	9	3.0	-	0.15
30-57	< 0.15	22	12	-	-	-
30-58	< 0.03	21	> 60	9.0	3.5	-

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

With Wire electrode	0.2% proof Stress Strength (N/mm <sup>2</sup> )	1% proof Stress Strength (N/mm <sup>2</sup> )	Tensile Strength (N/mm <sup>2</sup> )	Elongation Lo = 5d %	Impact energy (Joule) ISO - V +20°C
30-51	> 320	> 350	> 550	> 35	> 75
30-52	> 350	> 370	> 575	> 30	> 65
30-53	> 320	> 350	> 550	> 30	> 75
30-54	> 350	> 370	> 600	> 30	> 65
30-56	> 380	> 410	> 600	> 30	> 120
30-55	> 450	> 500	> 650	> 25	> 100
30-57	> 320	> 350	> 650	> 30	> 75
30-58	> 400	> 420	> 680	> 30	> 75



## AMA OP 76

Application: welding of austenitic stainless Cr Ni steel, particularly thick sections.

Material	Material-No.	With wire electrod	Material-No.
X 2 Cr Ni 1911	1.4306	30-51	1.4316
X 5 Cr Ni 1810	1.4301	30-51	1.4316
X 6 Cr Ni Ti 1810	1.4541	30-52	1.4551
X 5 Cr Ni Nb 189	1.4543	30-52	1.4551
X 6 Cr Ni Nb 1810	1.4550	30-52	1.4551
X 12 Cr Ni Ti 189	1.4878	30-52	1.4551
X 2 Cr Ni Mo 17132	1.4404	30-53	1.4430
X 2 Cr Ni Mo 18142	1.4435	30-53	1.4430
X 5 Cr Ni Mo 17122	1.4401	30-53	1.4430
X 6 Cr Ni Mo Ti 17122	1.4571	30-54	1.4576
X 10 Cr Ni Mo Ti 1812	1.4573	30-54	1.4576
X 6 Cr Ni Mo Nb 17122	1.4580	30-54	1.4576
X 10 Cr Ni Mo Nb 18 12	1.4583	30-54	1.4576
X 2 Cr Ni Mo N 22 5	1.4462	30-55	~1.4462
X 15 Cr Ni Si 20 12	1.4828	30-57	1.4829
X 12 Cr Ni Ti 18 9	1.4878	30-57	1.4828
X 2 Cr Ni 18 9	1.4306	30-56*	1.4455
X 5 Cr Ni 18 10	1.4301	30-56*	1.4455
X 6 Cr Ni Ti 18 10	1.4541	30-56*	1.4455
X 5 Cr Ni Nb 18 9	1.4543	30-56*	1.4455
X 6 Cr Ni Nb 18 19	1.4550	30-56*	1.4455
X 12 Cr Ni Ti 18 9	1.4878	30-56*	1.4455
X 2 Cr Ni Mo 17 13 2	1.4404	30-56*	1.4455
X 2 Cr Ni Mo 18 14 2	1.4435	30-56*	1.4455
X 5 Cr Ni Mo 17 12 2	1.4401	30-56*	1.4455
X 6 Cr Ni Mo Ti 17 12 2	1.4571	30-56*	1.4455
X 10 Cr Ni Ti Mo 18 12	1.4573	30-56*	1.4455
X 6 Cr Ni Mo Nb 17 12 2	1.4580	30-56*	1.4455
X 10 Cr Ni Mo Nb 18 12	1.4583	30-56*	1.4455

\*) If weld metal is required to be fully austenitic

Material	Material-No.	With wire electrod	Material-No.
X 8 Ni 9	1.5662	AMA OE 2016nC	1.4455
10 Ni 14	1.5637	AMA OE 2016nC	1.4455
12 Ni 19	1.5680	AMA OE 2016nC	1.4455

AMA OP 76 + 30-56 is out standing for joining unalloyed and low alloy steels to high alloy steels.