



**Standards:** DIN EN 760 SA AB 167 AC H5  
 DIN 32 522 B AB 167 AC 12 MHP5

**AWS/ASME:** F7A4-EM12 F7P5-EM13K F8A4-EA2  
 F7A4-EM12K F8A5-EH12K F8P4-EA2  
 F7P5-EM12K F7P6-EH12K  
 F7A5-EM13K

**Application / Properties:** Agglomerated aluminate-basic type flux for welding of pipe steels according to DIN 17172 and API 5L steels up to X70. Weld metal hardness is less than 240HV and resistant to sour gas environment. AMA OP 132 produces a slight silicon and manganese pick-up. Weld metal toughness in low temperature is very good. When using this flux with S2MoTiB or S3MoTiB wire, The toughness of weld metal will be increased. It is suitable for longitudinal welding of sour gas and oil pipes and spiral pipes at high speed welding with single and multi-wire (up to 5 wires) welding system. The weld bead is of uniform profile, good wetting without undercut. The slag detachment is excellent. AMA OP 132 can be used on either DC (positive) or AC up to 1200A on a single wire.

Damp flux shall be redried by baking at 300-350C  
 Grain size in according with DIN 32 522:3-18.

**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>
20%	25%	35%	15%

Basicity to boniszewski: ~1.5

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

With Wire electrode	Weight-%				
	DIN/EN	C	Si	Mn	Mo
50-11	S1	0.06	0.15	0.8	-
50-12	S2	0.06	0.20	1.3	-
50-14	S2Mo	0.05	0.20	1.3	0.47
50-18	S4	0.06	0.30	1.8	-

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

With Wire electrode	Heat treatment	Tensile Strength (N/mm <sup>2</sup> )	Yield Strength (N/mm <sup>2</sup> )	Elongation Lo = 5d (%)	Impact energy (j) ISO - V			
					±0°C	-20°C	-40°C	-60°C
50-11	As - Welded	470	360	26.5	200	80	-	-
50-12	As - Welded	520	420	28	-	160	120	-
50-14	As - Welded	580	495	23	-	110	60	-
50-18	As - Welded	580	480	26	-	105	65	50

**Mechanical properties of Welded joints (typical values) :**

X70 plates - Weld From both sides in one pass.

With Wire electrode	Heat treatment	Tensile Strength (N/mm <sup>2</sup> )	Yield Strength (N/mm <sup>2</sup> )	Elongation Lo = 5d (%)	Impact energy (j) ISO - V			
					±0°C	-20°C	-30°C	-40°C
50-12	As - Welded	> 460	> 350	-	90	80	65	50
50-14	As - Welded	> 610	> 520	-	> 100	>70	>50	-