

**Characteristics:** PITTARC FL196B is an agglomerated aluminate-basic flux with high current-carrying capacity, especially designed for windmill towers manufacturing in tandem-arc. FL196B is also suitable to joint unalloyed and low alloy structural steels, pipe steels, boiler steels and fine grain steels. This flux is suitable for single and multilayer welding of longitudinal, circumferential and fillet welds. Excellent slag removal in narrow groove welds of thick wall sections.

FL196B is a medium Manganese and Silicon pick up as well as a very low diffusible hydrogen level. It is suitable for AC and DC welding up to 1500 Amp. using one wire electrode.

**Application:** Joint welding of non-alloy and low alloy structural steels according to EN 10025, fine grain steels with  $YS < 420$  MPa and boiler steels such as P265GH (H II) and 16Mo3/A335 grade 91.

<b>Classification</b>	<b>ISO 14174: S A AB 1 67 AC H5</b>
<b>Basicity index</b>	about 1.9 (according to Boniszewski)
<b>Current</b>	up to 1500 Amp. (DC or AC) using one wire electrode
<b>Grain size</b>	according to ISO 14174: 2-20 (0.2-2.0 mm.)
<b>Density</b>	1.1 kg./dm <sup>3</sup>
<b>Packaging</b>	in PE-bags of 25 kg. or in big-bags of 500 ÷ 1250 kg
<b>Storage and re-drying</b>	Unopened originally packed flux can be stored up to 1 year in dry storage rooms. Diffusible hydrogen H <sub>5</sub> : determined in the weld metal according e to the method as per ISO 3690. Type of current DC; redrying conditions 200 ± 50 °C. Flux that has picked up moisture has to be re-dried at 200 ± 50 °C effective flux temperature.

### Main chemical constituents

SiO <sub>2</sub> + TiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub> + MnO	CaO + MgO	CaF <sub>2</sub>
20%	30%	35%	10%

### Chemical composition of all weld metal acc. to EN ISO 15972-1 and AWS A5.17/A5.23 specification

In combination with wire electrode	AWS A5.17 A5.23	C%	Mn%	Si%	Ni%	Mo%
<b>PITTARC S1</b>	EL12	0.05 ÷ 0.08	0.9 ÷ 1.3	0.2 ÷ 0.4	-	-
<b>PITTARC S2</b>	EM12K	0.05 ÷ 0.08	1.4 ÷ 1.8	0.2 ÷ 0.4	-	-
<b>PITTARC S2Si</b>	EM12K	0.05 ÷ 0.08	1.4 ÷ 1.8	0.2 ÷ 0.5	-	-
<b>PITTARC S3Si</b>	EH12K	0.05 ÷ 0.08	1.6 ÷ 2.0	0.2 ÷ 0.5	-	-
<b>PITTARC S2Mo</b>	EA2	0.04 ÷ 0.08	1.3 ÷ 1.7	0.2 ÷ 0.4	-	0.4 ÷ 0.6
<b>PITTARC S2Ni2</b>	ENi2	0.05 ÷ 0.08	1.1 ÷ 1.5	0.2 ÷ 0.4	2.0	-

### Mechanical properties of all weld metal (single values are typical values)

In combination with wire electrode	Heat Treat.	YS [MPa]	UTS [MPa]	Elong. [%]	Impact ISO-V [Joule]			
					±0° C +32 °F	-20 °C -4 °F	-40 °C -40 °F	-51 °C -60 °F
PITTARC S1	AW	≥ 400	≥ 510	≥ 24	≥ 80	≥ 47	-	-
PITTARC S2	AW	≥ 420	≥ 500	≥ 22	≥ 100	≥ 70	≥ 50	-
PITTARC S2	PWHT (1)	≥ 400	≥ 490	≥ 22	≥ 110	≥ 80	≥ 60	-
PITTARC S2Si	AW	≥ 430	≥ 520	≥ 22	≥ 100	≥ 70	≥ 50	-
PITTARC S2Si	PWHT (1)	≥ 400	≥ 490	≥ 22	≥ 110	≥ 80	≥ 60	-
PITTARC S3Si	AW	≥ 470	≥ 560	≥ 22	≥ 120	≥ 90	≥ 70	-
PITTARC S3Si	PWHT (1)	≥ 400	≥ 490	≥ 22	≥ 130	≥ 100	≥ 80	-
PITTARC S2Mo	AW	≥ 500	≥ 570	≥ 20	≥ 100	≥ 80	≥ 47	-
PITTARC S2Mo	PWHT (2)	≥ 470	≥ 570	≥ 22	≥ 110	≥ 70	≥ 47	-
PITTARC S2Ni2	AW	≥ 540	≥ 620	≥ 22	≥ 150	≥ 120	≥ 70	≥ 47
PITTARC S2Ni2	PWHT (2)	≥ 470	≥ 550	≥ 24	≥ 150	≥ 120	≥ 100	≥ 60

AW = as welded. PWHT = (1) after post weld heat treatment at 580 °C/1 h, (2) after post weld heat treatment at 620 °C/15 hrs.

### Classifications

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

In combination with wire electrode	AWS A5.17 A5.23	ISO 14171-A (Test ass. ISO 15792-1: type 1.3)	AWS A5.17M AWS A5.23M	AWS A5.17M AWS A5.23M
PITTARC S1	EL12	S 38 2 AB S1	F48A2-EL12	F7A0-EL12
PITTARC S2	EM12K	S 42 4 AB S2	F48A4/P4-EM12K	F7A4/P4-EM12K
PITTARC S2Si	EM12K	S 42 4 AB S2Si	F48A4/P4-EM12K	F7A4/P4-EM12K
PITTARC S3Si	EH12K	S 46 4 AB S3Si	F55A4/F49P4-EH12K	F8A5/F7P4-EH12K
PITTARC S2Mo	EA2	S 46 4 AB S2Mo	F55A4/P4-EA2-A2	F8A4/P4-EA2-A2
PITTARC S2Ni2	ENi2	S 50 5 AB S2Ni2	F62A5/F55P5-ENi2-Ni2	F9A6/F8P6-ENi2-Ni2

#### Two-run classification of wire-flux combinations

In combination with wire electrode	AWS A5.17 AWS A5.23	ISO 14171-A (Test ass. ISO 15792-2: type 2.5)	AWS A5.17M AWS A5.23M	AWS A5.17 AWS A5.23
PITTARC S1	EL12	S 2T 2 AB S1	F43TA2-EL12	F6TA0-EL12
PITTARC S2	EM12K	S 3T 2 AB S2	F49TA2-EM12K	F7TA0-EM12K
PITTARC S2Si	EM12K	S 3T 2 AB S2Si	F49TA2-EM12K	F7TA0-EM12K
PITTARC S3Si	EH12K	S 4T 3 AB S3Si	F55TA3-EH12K	F8TA2-EH12K
PITTARC S2Mo	EA2	S 4T 2 AB S2Mo	F55TA2-EA2	F8TA2-EA2

The above-mentioned values are indicative and may change without prior notice.

Edition: July 2018

