

MMA Electrodes Chromium-Molybdenum steels

Basic coated MMA electrode used for welding boilers, pressure vessels, pipes etc., with operating temperatures of up to +600 °C. The all-weld metal composition matches that of steel grade 12 CrMo 19-5, having equal resistance to high-pressure hydrogen attack, creep resistance and creep rupture strength. Typical applications are: petrochemical process plants, hydrocrackers in chemical industries. Vacuum packaging.

Classification	
AWS	A5.5: E8015-B6-H4
EN	1599: E CrMo 5 B 22 H5

Approvals	Grades
TÜV	

see Appendix, Classification Society Approvals, for details pag. 521

Analysis of all-weld metal (Typical values in %)

C	Mn	Si	P	S	Cr	Ni	Mo	Nb	V	N	Cu
0.07	0.80	0.30	≤ 0.012	≤ 0.010	5	-	0.50	-	-	-	-

All-weld metal Mechanical Properties

Heat Treatment	Yield Strength N/mm ²	Tensile Strength N/mm ²	Elongation A5 (%)	Impact Energy ISO - V (J) + 20 °C	Hardness
PWHT 740 °C x 1 h/air	≥ 460	600-700	≥ 19	≥ 100	-
960°Cx0,5h/air+710°Cx2h	≥ 580	650-750	≥ 17	≥ 120	-

Materials

12CrMo19-5, X12CrMo5; A182 Gr. F5, A199 Gr. T5, A213 Gr.T5, A335 Gr.P5

A 336 Cl. F5, A 369 Gr. FP5, A 387 Gr.5, Cl 1 and 2

Storage and redrying

Keep dry and avoid condensation.

HD ≤ 5: Re-dry at 340-360 °C for 2 hours, 5 times max.

Current condition and welding position

DC+



Packaging data

Diameter (mm)	Length (mm)	Current (A)	Electrode average weight (g)	Weld metal weight per electrode (g)
2,5	300	65-95	18,9	11,3
3,2	350	90-130	36,5	21,9
4,0	350	125-165	52,4	31,5
5,0	450	170-220	97,2	58,3