

Outershield® 12-H

CLASSIFICATION

AWS A5.29	E81T1-A1M-H4	A-Nr	2
ISO 17634-A	T MoL P M 2 H5	F-Nr	6
		9606 FM	1/3

GENERAL DESCRIPTION

All position mix gas shielded 0.5% Mo-alloyed rutile cored wire
 Superior weldability, low spatter, good bead appearance
 Outstanding operator appeal
 Superior product consistency with optimal alloy control
 Excellent wire feeding

WELDING POSITIONS (ISO/ASME)



PA/1G



PB/2F



PC/2G



PF/3Gu



PE/4G

CURRENT TYPE / SHIELDING GAS (ISO 14175)

DC +
 M21 : Mixed gas Ar+ (>15-25%) CO₂
 Flow rate: 15-25 l/min

APPROVALS

Shielding gas	TÜV
M21	+

CHEMICAL COMPOSITION (W%), TYPICAL, ALL WELD METAL

Shielding gas	C	Mn	Si	P	S	Mo	HDM
M21	0.065	0.8	0.2	0.014	0.010	0.46	3 ml/100 g

MECHANICAL PROPERTIES, TYPICAL, ALL WELD METAL

	Shielding gas	Condition	Yield strength (N/mm ²)	Tensile strength (N/mm ²)	Elongation (%)	Impact ISO-V(J)	
						+20°C	-20°C
Required: AWS A5.29		SR ⁽¹⁾	min. 470	550-690	min. 19	not required	
ISO 17634-A		SR ⁽²⁾	min. 355	min. 510	min. 22	min. 47	
Typical values	M21	SR ⁽³⁾	540	600	27	160	79
Stress relieving: SR ⁽¹⁾ = 620 ± 15°C/1h, SR ⁽²⁾ = 570-620°C/1h, SR ⁽³⁾ = 1h/620°C							

PACKAGING AND AVAILABLE SIZES

Diameter (mm)	1.2
16 kg spool B300	X

Outershield® 12-H rev. C-EN27-01/12/16

Outershield® 12-H

EXAMPLES OF MATERIALS TO BE WELDED

Steel grades/Standard	Type
Creep resistant steels	
EN 10028-2	P295GH, P355GH, 16Mo3 & similar alloys
EN 10222-2	17Mo3, 14Mo6 & similar alloys
ASTM A335	Grade P1
ASTM A209	Grade T1
ASTM A250	Grade T1
ASTM A336	Grade F1
ASTM A204	Grade A, B, C
ASTM A217	Grade WC1
ASTM A352	Grade LC1
Fine grained steels	
EN 10025 part 3	S275, S355, S420
EN 10025 part 4	S275, S355, S420

CALCULATION DATA

Diameter (mm)	Electrical stick-out (mm)	Wire Feed Speed (cm/min)	Current (A)	Arc Voltage (V)	Deposition rate (kg/h)	kg wire/kg weldmetal
1.2	20	445	130	20-22	1.6	1.20
		700	180	23-25	2.5	1.20
		950	220	25-27	3.4	1.20
		1270	265	27-29	4.5	1.20
		1590	305	30-32	5.9	1.20

WELDING PARAMETERS, OPTIMUM FILL PASSES IN SHIELDING GAS Ar + (>15-25)% CO₂

Diameter (mm)	Welding positions				
	PA/1G	PB/2F	PC/2G	PF/3Gup	PE/4G
1.2	230-280A	230-280A	200-240A	200-240A	160-220A
	26-32V	26-32V	25-32V	25-28V	23-28V

REMARKS/APPLICATION ADVICE

Recommended tempering heat treatment range: 570-630°C
Time depends on material thickness