Outershield® 20-H

CLASSIFICATION

AWS A5.29	E 91T1-B3M-H4	**A-Nr**	4
ISO 17634-A	T CrMo2 P M 2 H5	**F-Nr**	6
		9606 FM	3

GENERAL DESCRIPTION

All position mix gas shielded 2.25% Cr 1% 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%) CO_2
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	Cr	Mo	HDM
M21	0.07	0.75	0.21	0.013	0.008	2.23	1.09	3 **ml/100 g**

MECHANICAL PROPERTIES, TYPICAL, ALL WELD METAL

	Shielding gas	Condition	Yield strength (N/mm²)	Tensile strength (N/mm²)	Elongation (%)	Impact ISO-V(J) +20°C	Impact ISO-V(J) -20°C
Required: AWS A5.29		SR[1]	min. 540	620-760	min. 17	not required	
ISO 17634-A		SR[2]	min. 400	min. 500	min. 18	min. 47	
Typical values	M21	SR[3]	570	680	19	150	60

Stress relieving: SR[1] = 690 ± 15°C/1h, SR[2] = 690-750°C/1h, SR[3] = 1h/690°C

PACKAGING AND AVAILABLE SIZES

Diameter (mm)	**1.2**
15 kg spool B300	X

Outershield® 20-H: rev. C-EN26-01/02/16

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EXAMPLES OF MATERIALS TO BE WELDED

Steel grades/Standard	Type
Creep resistant steels	
EN 10028-2	10CrMo9-10 & similar alloys
EN 10222-2	12CrMo9-10 & similar alloys
ASTM A387	Grade 21 & 22
ASTM A182	Grade F22
ASTM A217	Grade WC9
ASTM A234	Grade WP22
ASTM A199/A200	Grade T21 & T22
ASTM A213	Grade T22
ASTM A335	Grade P22

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)% CO_2)

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

REMARKS/APPLICATION ADVICE

Recommended preheat temperature: 200 - 250°C
Recommended tempering heat treatment range: 690-750°C
Time depends on material thickness