Outershield® 81Ni1-HSR

CLASSIFICATION

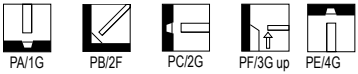
AWS A5.29/A5.29M : E81T1-Ni1M-JH4
EN ISO 17632-A : T 50 5 1Ni P M 2 H5 T

GENERAL DESCRIPTION

All position gas shielded 1% Ni flux cored wire, offshore and similar applications
Specific design for stress relieved applications, guaranteed impact properties after PWHT
Superior weldability, low spatter, good bead appearance
Outstanding operator appeal
Exceptional mechanical properties (CVN >47J at -50°C)
Very low hydrogen (H_{DM} <5 ml/100g)
Superior product consistency with optimal alloy control
Excellent wire feeding
Meet NACE MR-0175 requirements

WELDING POSITIONS

ISO/ASME PA/1G PB/2F PC/2G PF/3G up PE/4G



CURRENT TYPE

DC +
M21 : Mixed gas Ar+ (>15-25%) CO_2
Amount : 15-25 l/min

APPROVALS

Shielding gas	BV	DNV	GL	LR
M21	4YSDH5	IVYMSH5	4YH5S	4YSH5

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

Shielding gas	C	Mn	Si	P	S	Ni	H_{DM} ml/100 g
M21	0.05	1.4	0.2	0.013	0.010	0.95	3

MECHANICAL PROPERTIES, TYPICAL, ALL WELD METAL

	Shielding gas	Condition	Yield strength (N/mm^2)	Tensile strength (N/mm^2)	Elongation (%)	Impact ISO-V(J) -40°C	Impact ISO-V(J) -50°C
Required: AWS A5.29			min. 470	550-690	min. 19	min. 27	
EN ISO 17632-A			min. 500	560-720	min. 18		min. 47
Typical values	M21	AW	530	600	24	20	60
		SR	525	590	25		70

SR 1h/600°C, 3G up - V45°

PACKAGING AND AVAILABLE SIZES

Diameter (mm)	1.2
Unit : 4.5 kg plastic spool S200	X
14 kg S300 (alu bag)	X
15 kg spool B300	X

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MATERIALS TO BE WELDED

Steel grades/Standard	Type
General structural steel	
EN 10025 part 2	S185, S235, S275, S355
Ship plates	
ASTM A131	Grade A, B, C, D, AH32 to DH36
Cast steel	
EN 10213-2	G P 240R
Pipe material	
EN 10208-1	L210, L240, L290, L360
EN 10208-2	L240NB, L290NB, L360NB, L360QB, L240MB, L290MB, L360MB, L415MB, L415NB
API 5LX	X42, X46, X52, X60, X65, X70
EN 10216-1/	P235T1, P235T2, P275T1
EN 10217-1	P275T2, P355N
Boiler & pressure vessel steel	
EN 10028-2	P235GH, P265GH, P295GH, P355GH
Fine grained steel	
EN 10025 part 3	S275N, S275NL, S355N, S355NL, S420N, S420NL, S460N, S460NL
EN 10025 part 4	S275M, S275ML, S355M, S355ML, S420M, S420ML, S460M, S460ML S460ML

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
1.6	20	320	170	21-23	1.9	1.20
		510	235	22-24	3.1	1.20
		635	275	24-25	3.9	1.20
		760	310	25-27	4.7	1.20
		890	350	27-29	5.6	1.20
		1015	385	28-30	6.4	1.20
		1080	400	30-31	6.8	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
1.6	250-350A 24-32V	250-350A 24-32V	230-280A 24-32V	220-260A 24-28V	170-240A 22-28V