

Outershield 19-H

Creep resistant rutile cored wire

Classification

AWS A5.29/A5.29M : E 81T1-B2M-H4
 EN 12071 : T CrMo1 P M 2 H5

General description

All position mix gas shielded 1.25% Cr 0.5% Mo-alloyed rutile cored wire
 Superior weldability, low spatter, good bead appearance
 Outstanding operator appeal
 Very low hydrogen content ($H_{DM} < 5$ ml/100 g)
 Superior product consistency with optimal alloy control
 Excellent wire feeding

Welding positions



Current type/Shielding gas

DC +
 Ar+ (>5-25)% CO₂ (EN 439: M2¹)
 15-25 l/min

Approvals

Tüv
 Pending

Chemical composition (w%), typical, all weld metal

Shielding gas	C	Mn	Si	P	S	Cr	Mo	H _{DM} ml/100g
M21	0.06	0.74	0.24	0.013	0.010	1.24	0.52	3

Mechanical properties, 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	
EN 12071		SR ²	min. 355	min. 510	min.20	47	
Typical values:	M21	SR ³	545	636	22	163	76

Stress relieving: SR¹ = 690 ± 15°C/1h, SR⁻² = 660-700°C/1h, SR⁻³ = 1h/690°C

Packaging and available sizes

Unit type	Net weight/unit (kg)	Diameter (mm)
Wire reel B300	15	X

Outershield 19-H: rev. EN 20

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Materials to be welded

Steel	Code	Type
Creep resisting steel	EN 10028-2	13 CrMo 4-5
	EN 10083-1	25 CrMo 4
	EN 10222-2	14 CrMo 4-5
Tool steel	DIN 17210	16 MnCr 5

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 weld metal
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, shielding gas Ar + (>5 - 25)% CO₂

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

Remarks

Recommended preheat temperature: 200-250°C

Recommended PWHT temperature: 660-700°C

Time depends on material thickness