

Outershield® 690-H

High strength rutile cored wire

Classification

AWS A5.29-98 : E111T1-K3MJ H4
EN 12535-00 : T 69 4 Z P M 2 H5

General description

All position gas shielded rutile flux cored wire, for high strength steel grades like grade S690
Outstanding operators appeal
Excellent mechanical properties (CVN >50J at -40°C)
Very low hydrogen H_{DM} <5 ml/100g)
Superior product consistency with optimal alloy control
Good wire feeding

Welding positions



Current type/Shielding gas

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

Approvals

Shielding gas ABS
M21 AWS

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

Shielding gas	C	Mn	Si	P	S	Ni	Mo	H _{DM} ml/100g
M21	0.06	1.5	0.2	0.015	0.010	2.0	0.5	3

Mechanical properties, all weld metal

	Shielding gas	Condition	Yield strength (N/mm ²)	Tensile strength (N/mm ²)	Elongation (%)	Impact ISO-V (J)			
						-18°C	-29°C	-40°C	-50°C
Required: A5.29-98			min. 680	760-900	min.15		min. 27		
EN 12535-00			min. 690	770-970	min.17		min. 47		
Typical values	M21	AW	800	830	17	80	60	50	

Packaging and available sizes

Unit type	Net weight/unit (kg)	Diameter (mm)	
		1.2	1.6
Plastic spool S200	4.5	X	
Wire reel B300	15	X	X

Outershield® 690-H: rev. EN 15

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Materials to be welded

Steel	Code	Type
Fine grained steel	EN 10137-2	S500-S690

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
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, 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	23-30
1.6	(A)	250-350	250-350	230-280	220-260	170-240
	(V)	24-29	24-29	24-28	24-26	22-26