Outershield® 690-H

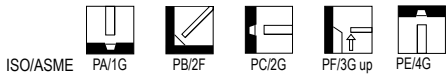
CLASSIFICATION

AWS A5.29/A5.29M : E111T1-K3M-JH4
ISO 18276-A : 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
Specific design for stress relieved applications, guaranteed impact properties after PWHT
Outstanding operator 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

DC +
M21 : Mixed gas Ar+ (>15-25%) CO_2
Amount : 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/100 g
M21	0.06	1.5	0.2	0.015	0.010	2.0	0.5	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) -29°C	-40°C	-46°C
Required: AWS A5.29			min. 680	760-900	min. 15	min. 27		
ISO 18276-A			min. 690	770-940	min. 17		min. 47	
Typical values	M21	AW	800	830	17	75	60	50

PACKAGING AND AVAILABLE SIZES

Diameter (mm)	1.2	1.6
Unit : 4.5 kg plastic spool S200	X	
14 kg S300 (alu bag)	X	
15 kg spool B300	X	X
15 kg spool BS300	X	X

Outershield® 690-H: rev. EN 25

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MATERIALS TO BE WELDED

Steel grades/Standard	Type
Fine grained steel	
EN 10025 part 6	S500Q to S690QL1
API 5L	X100
MIL-S-162164	HY100
ASTM A514	Grade F
ASTM A517	Grade A, B, F, H, D
ASTM A709	Grade 690 type F, grade 100W type F

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	230-280A	200-240A	200-240A	160-220A
	26-32V	26-32V	25-32V	25-28V	23-30V
1.6	250-350A	250-350A	230-280A	220-260A	170-240A
	24-29V	24-29V	24-28V	24-26V	22-26V