

## OUTERSHIELD® 690-HSR

RUTILE FLUX CORED WIRE, FOR HIGH STRENGTH STEEL GRADES LIKE GRADE S690

LOW ALLOY STEELS

## PRODUCT 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)  
 Superior product consistency with optimal alloy control  
 Good wire feeding

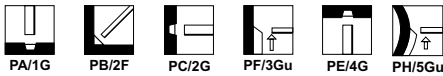
## CLASSIFICATIONS

AWS A5.29 E11T1-K3M-J  
 ISO 18276-A T 69 4 Z P M 2 H5 T

## ASME IX QUALIFICATION

QW432 F-No -6  
 QW442 A-No -10

## WELDING POSITIONS (ISO/ASME)



## CURRENT TYPE / SHIELDING GAS (ISO 14175)

DC +  
 M21 : Mixed gas Ar+ (>15-25%) CO<sub>2</sub>  
 Flow rate : 15-25 l/min

## CHEMICAL COMPOSITION (WELD METAL WT %) - M21

	C	Mn	Si	P	S	Ni	Mo	HDM
min.	0.3	--	--	--	--	--	--	--
max.	0.10	--	0.90	0.02	0.05	--	--	--
Typical	0.06	1.5	0.2	0.015	0.010	2.0	0.5	3 ml/100 g

## ALL-WELD MECHANICAL PROPERTIES

	Required: AWS A5.29		ISO 18276-A		Typical values	
	AW	PWHT	AW	PWHT	AW	PWHT
Tensile strength (MPa)	760-900		770-940		740	720
0.2% proof strength (MPa)	min. 680		min. 690		790	770
Elongation (%)	min. 15		min. 17		19	20
Impact ISO-V(J) -30°C	min. 27		-		75	--
	-40°C		min. 47		70	60
PWHT: 1h/580°C, 3G up - V60°						

WELDING PARAMETERS, OPTIMUM FILL PASSES IN SHIELDING GAS Ar + (>15-25)% CO<sub>2</sub>

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

## PACKAGING DATA

Diameter (mm)	Weight (kg)	Packaging	Item number
1.2	16	B300	942804N
1.2	4.5	S200	942818
1.6	16	B300	942828N

All information in this data sheet is accurate to the best of our knowledge at the time of printing. Please refer to [www.specialalloys.eu](http://www.specialalloys.eu) for any updated information.