

# Innershield® NR® 311

## CLASSIFICATION

AWS A5.20/A5.20M : E70T-7

## GENERAL DESCRIPTION

Self shielded: easiest equipment arrangement  
 Good penetration, as in column butt welds and narrow gap welds  
 Fast travel speed  
 High deposition rates

## WELDING POSITIONS



## CURRENT TYPE

DC -

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

C	Mn	Si	P	S	Al
0.27	0.4	0.08	0.007	0.005	1.5

## MECHANICAL PROPERTIES, TYPICAL, ALL WELD METAL

	Condition	Yield strength (N/mm <sup>2</sup> )	Tensile strength (N/mm <sup>2</sup> )	Elongation (%)
Required: AWS A5.20		min. 400	480	22
Typical values	AW	430	590	24

## PACKAGING AND AVAILABLE SIZES

Diameter (mm)	2.0	2.4
Unit : 6.35 kg coil 14C	X	
22.68 kg coil 50C		X

Innershield® NR® 311: rev. EN 22

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## MATERIALS TO BE WELDED

Steel grades/Standard	Type
<b>General structural steel</b>	
EN 10025 part 2	S185, S235, S275, S355
<b>Ship plates</b>	
ASTM A131	Grade A, B, D, AH32 to DH36
<b>Cast steel</b>	
EN 10213-2	GP240R
<b>Pipe material</b>	
EN 10208-1	L210, L240, L290, L360
EN 10208-2	L240, L290, L360, L415
API 5LX	X42, X46, X52, X60
EN 10216-1/	P235T1, P235T2, P275T1
EN 10217-1	P275T2, P355N
<b>Boiler &amp; pressure vessel steel</b>	
EN 10028-2	P235GH, P265GH, P295GH, P355GH
<b>Fine grained steel</b>	
EN 10025 part 3	S275, S355, S420

## 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
2.0	32	255	190	21	2.2	1.28
		405	275	25	3.6	1.28
		760	410	28	7.1	1.28

## WELDING PARAMETERS, OPTIMUM FILL PASSES

Diameter (mm)		Welding positions			
		PA/1G	PB/2F	PC/2G	PG/3G down
2.0	Wire feed speed (cm/min)	610	510	410	380
	Current (A)	355	320	280	260
	Voltage (V)	26	26	25	25

## REMARKS/APPLICATION ADVICE

Horizontal butt welds such as column structural connections

Fillet and lap welds in the flat horizontal and downhill positions

Deep groove welds. The penetration and extremely easy slag removal permit using a narrow gap and small bevel angle to minimize the total amount of weld metal needed to fill the joint