

# 2205

For welding steels such as Outokumpu	EN	ASTM	BS	NF	SS
2205	1.4462	S32205	318S13	Z3 CND 22-05 Az	2377

## Standard designations

EN ISO 14343 G 22 9 3 N L

AWS A5.9 ER2209

## Characteristics and welding directions

AVESTA 2205 is primarily designed for welding the duplex grade Outokumpu 2205 and similar but it can also be used for 2304 type of steels.

AVESTA 2205 provides a ferritic-austenitic weldment that combines many of the good properties of both ferritic and austenitic stainless steels.

The welding can be performed using short, spray or pulsed arc. Welding using pulsed arc provides good results in both horizontal and vertical-up positions. The best flexibility is achieved by using pulsed arc and  $\varnothing$  1.20 mm wire.

## Welding data

	Diameter mm	Current A	Voltage V
Short arc	0.80	60 – 100	18 – 20
	1.00	90 – 120	19 – 21
Spray arc	1.00	180 – 220	27 – 30
	1.20	200 – 240	28 – 31
	1.60	250 – 330	29 – 32
Pulsed arc	1.20	$I_{peak}$ = 450 – 550 A $I_{bkg}$ = 150 – 200 A Freq = 120 – 150 Hz	

## Shielding gas

1. Ar + 30% He + 2.5% CO<sub>2</sub>.
2. Ar + 2% CO<sub>2</sub> / Ar + 2% CO<sub>2</sub>.

MIG welding is best performed using argon with an addition of approx. 30% He and 2 – 3% CO<sub>2</sub>. The addition of helium (He), will increase the energy of the arc.  
Gas flow rate 12 – 16 l/min.

## Chemical composition, wire (typical values, %)

C	Si	Mn	Cr	Ni	Mo	N
0.02	0.50	1.6	23.0	8.5	3.1	0.17

Ferrite 50 FN WRC-92

## Mechanical properties

	Typical values (IIW)	Min. values EN ISO 14343
Yield strength $R_{p0,2}$	550 N/mm <sup>2</sup>	450 N/mm <sup>2</sup>
Tensile strength $R_m$	770 N/mm <sup>2</sup>	550 N/mm <sup>2</sup>
Elongation $A_5$	30 %	20 %
Impact strength KV		
+20°C	150 J	
-40°C	110 J	
Hardness	230 Brinell	

**Interpass temperature:** Max. 150°C.

**Heat input:** 0.5 – 2.5 kJ/mm.

**Heat treatment:** Generally none (in special cases quench annealing at 1100 – 1150°C).

**Structure:** Austenite with 45 – 55% ferrite.

**Scaling temperature:** Approx. 850°C (air).

**Corrosion resistance:** Very good resistance to pitting and stress corrosion cracking in chloride containing environments.

## Approvals

- CE
- DNV
- TÜV
- DB
- GL