

## Classifications

<b>EN ISO 3581-A</b>	<b>AWS A5.4 / SFA-5.4</b>
E 22 9 3 N L R	E2209-17

## Characteristics and typical fields of application

Rutile coated electrode of E 22 9 3 N L R / E2209-17 type. Primarily designed for welding 22Cr (1.4462 / UNS S32205 and S31803) duplex stainless steels used in offshore, shipyards, chemical tankers, chemical/petrochemical, pulp & paper, etc. All-position electrode with special advantages in the vertical-up and overhead positions. Developed for first class weld seams and easy handling on AC or DC. Thanks to the sharp and concentrated arc, these electrodes are extremely suitable for maintenance and repair welding, especially when joint surfaces are not particularly clean. The weld metal has very good resistance to pitting and stress corrosion cracking in chloride containing environments.

## Base materials

1.4462 X2CrNiMoN22-5-3, 1.4362 X2CrNiN23-4, 1.4162 X2CrNiMoN21-5-1  
 UNS S32205, S31803, S32304, S32101  
 2205, 2304, LDX 2101<sup>®</sup>, SAF 2205, SAF 2304

## Typical analysis


	C	Si	Mn	Cr	Ni	Mo	N	PRE <sub>N</sub>
wt.-%	0.02	0.8	0.8	23.0	9.5	3.1	0.18	≥ 35

## Mechanical properties of all-weld metal - typical values (min. values)

Condition	Yield strength	Tensile strength R <sub>m</sub>	Elongation A (L <sub>0</sub> =5d <sub>0</sub> )	Impact energy ISO-V KV J			Hardness
	R <sub>p0.2</sub>	MPa	%	20°C	-10°C	-40°C	
u	650 (≥ 450)	840 (≥ 690)	27 (≥ 20)	55	50	40 (≥ 32)	240

u untreated, as-welded

## Operating data

	Polarity	DC+ / AC	Dimension mm	Current A
	Electrode identification	2209-17/2205	2.5 × 300	50 – 80
			3.2 × 350	70 – 110
			4.0 × 350	100 – 160
			5.0 × 350	160 – 220

Suggested heat input is 0.5 – 2.5 kJ/mm, interpass temperature max. 150°C.

Post-weld heat treatment generally not needed. In special cases, solution annealing can be performed at 1100 – 1150°C followed by water quenching.

Metal recovery approximately 110%.

Redrying needed: 350°C for min. 2 h.

## Approvals

TÜV (04486), DNV, Certified by CWB to CSA W48, CE