



G-TECH 310

SMAW

SUPERAUSTENITIC STEELS
310

DESCRIPTION

Rutile-basic coated electrode for 310 stainless steels

This electrode is used to weld 310 fully austenitic stainless steels. Applications include heat shields, furnace and boiler parts, heat exchanger and ducting for the good resistance to high temperature oxidation of these alloys. Also suitable for dissimilar joints, buffer layers, weld overlay and cryogenic applications. Excellent weldability with a spatter free arc, self-releasing slag producing a very smooth bead appearance.

SPECIFICATIONS

EN ISO 3581-A	E 25 20 R 12	AWS A5.4	E310-16
Shielding	-	Positions	PA, PB, PC, PD, PE, PF
Current	DC+, AC	Packaging Type	Carton box

ASME QUALIFICATIONS

		PREN
F-No (QW432)	5	26.66
A-No (QW442)	-	

CHEM. COMP. %	DEFAULT	MECHANICAL PROPERTIES	MIN. PER STANDARD				PRODUCT
C	0.1	Tensile strength R _m MPa	550				580
Mn	2	Yield strength R _{p0.2} MPa	350				400
Ni	21	Elongation A (L ₀ =5d ₀) %	20				40
Cr	26	Impact Charpy ISO-V	-				70J @ 20°C
P	0.02	Impact Charpy ISO-V	-				-
S	0.01						
		WELDING PARAMETERS	2.5 mm	3.2 mm	4.0 mm	5.0 mm	
Mo	0.2	Ampere	50A - 80A	80A - 110A	110A - 150A	150A - 200A	
Si	0.6	Voltage	-	-	-	-	
Cu	0.1	Packaging	56 pcs/kg	29 pcs/kg	19 pcs/kg	12 pcs/kg	
		Packaging Type	Carton box	Carton box	Carton box	Carton box	

NOTES

Pcs/kg is indicative, actual number may vary ± 5%.





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DESCRIPTION

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APPLICATION

The product is primarily used for welding 25% Cr-20% Ni (310) alloys, which can be wrought or cast, and contain up to 0.25% carbon. To ensure maximum resistance to cracking and microfissures during solidification, the manganese content in the welding metal is increased to 2-5%. The high alloy content of type 310 provides excellent oxidation resistance up to maximum temperatures of about 1200 °C, making it ideal for heat shields, furnace components, and ducts. These consumables are also suitable for mixed welds and dissimilar joints, including those where PWHT application is necessary. However, it is important to consider that the relatively high thermal expansion coefficient may cause thermal fatigue in transition joints subjected to thermal cycling. In such situations, the use of nickel-based consumables is generally recommended. Further applications include cushioned layers and overlays. The fully austenitic welding metal is suitable for specialized applications requiring low magnetic permeability (typically <1.01). Additionally, 310 welding metals intrinsically withstand temperatures down to -196 °C, making them suitable for cryogenic installations. Preheating is not necessary. It is preferable to maintain the interpass temperature below 150 °C and heat input below 1.5 kJ/mm; this is crucial especially for processes with high heat input, such as SAW.

ALLOY TYPE

25%Cr-20%Ni (310) stainless steel.

MICROSTRUCTURE

Fully austenitic.

MATERIALS

EN W. N.: 1.4826 (GX40CrNiSi22-10), 1.4828 (X15CrNiSi2012), 1.4837 (GX40CrNiSi25-12), 1.4840 (GX15CrNi2520), 1.4841 (X15CrNiSi25-21), 1.4846 (X 40 CrNi 25-21), 1.4847 (X 8 CrNiAlTi 20-20), 1.4848 GX40CrNiSi25-20), 1.4335 (X1CrNi25-21), 1.4435 (X2CrNiMo18-14-3), 1.4446 (X1CrNiMoN22-25-3), 1.4547 (X3CrNiMoTi25-25)

ASTM: 310, 310S, CK20, 305, 314, 725LN, 316L

UNS: S31000, S31008, S31050, S31603

