G-TECH 385B

SMAW

SUPERAUSTENITIC STEELS
904L

DESCRIPTION

Basic coated electrode to match fully austenitic alloy 904L

This electrode is used for welding of 904L alloy and gives fully austenitic weld metal with good resistance to corrosion in inorganic and organic acids. Typical applications include tanks and vessels, piping, cast pumps, valves and other components used in fertiliser, phosphoric, sulphuric and acetic plants, and in salt and seawater environments. It also used in some offshore applications. Ease of slag removal reduces post-welding cleaning operations to a minimum.

SPECIFICATIONS

EN ISO 3581-A	E 20 25 5 Cu N LB 62	**AWS A5.4**	E385-15
Shielding	-	**Positions**	PA, PB, PC, PD, PE, PF
Current	DC+;	**Packaging Type**	Carton box

ASME QUALIFICATIONS

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

PREN

38.12

CHEM. COMP. %	DEFAULT
C	0.03
Mn	2
Ni	25
Cr	21
N	0.08
Nb	0.05
P	0.02
S	0.005
Mo	4.8
Si	0.4
Cu	1.8

MECHANICAL PROPERTIES	MIN. PER STANDARD	PRODUCT
Tensile strength R_m MPa	510	660
Yield strength $R_{p0.2}$ MPa	320	410
Elongation A (L_0=5d_0) %	25	35
Impact Charpy ISO-V	-	50J @ -196°C
Impact Charpy ISO-V	-	-

WELDING PARAMETERS	2.5 mm	3.2 mm	4.0 mm	5.0 mm
Ampere	50A - 80A	80A - 110A	110A - 150A	150A - 200A
Voltage	-	-	-	-
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%.

V 01/2024

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904L

DESCRIPTION

APPLICATION

This consumable is designed to provide a fully austenitic low-carbon weld metal, enriched with molybdenum and copper. It is renowned for its excellent corrosion resistance in acidic environments, such as sulfuric and phosphoric, as well as in other types of both inorganic and organic acids. However, it is not the ideal choice for environments with concentrated nitric acid. For applications requiring chloride pitting resistance, the use of nickel-based over-alloyed weld metals, such as Alloy 625, is recommended. It is the preferred weld metal for certain low-alloy austenitics, such as Creusot UHB 34L and UHB 734L, especially when used with wet-process phosphoric acid. Typical applications include tanks and process vessels, piping systems, agitators, and rotors, as well as cast pumps and valves used for the production of fertilizers, phosphoric, sulfuric, and acetic acid. It is also suitable for brackish and marine environments and in some offshore applications, such as overlays on mild and low-alloy steels. No preheat or post-weld heat treatment (PWHT) is necessary; however, it is essential to control the interpass temperature up to a maximum of 150 °C, paying particular attention to the heat input, especially when using large diameter SMAW electrodes.

ALLOY TYPE

904L is a nominally 20%Cr-25%Ni-5%Mo-2%Cu alloy with good corrosion resistance.

MICROSTRUCTURE

In the as-welded condition the weld metal microstructure is fully austenitic.

MATERIALS

Suitable for copper-free variants of the listed alloys and also to overmatch leaner alloys such as 317L, 317LN, 317LM, 317LMN, 1.4439, 1.4440 and S31726.

EN W.Nr.: 1.4505 (X4NiCrMoCuNb20-18-2), 1.4506 (X5NiCrMoCuTi 20-18), 1.4536 (GX2NiCrMoCuN25-20), 1.4539 (X1CrNiMoCuN25-20-5), 1.4585 (G-X7CrNiMoCuNb1818), 1.4500 (G-X7NiCrMoCuNb2520)

ASTM: N08904

PROPRIETARY: Uddelholm 904L (voestalpine), 2RK65 (Sandvik), Cronifer 1925LC (VDM), 254SLX (Outokumpu), Uranus® B6, B6M (Industeel)

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