



718

DESCRIPTION

NICKEL ALLOYS

718

APPLICATION

The subfamily 718 is specifically designed for welding the base metal alloy 718, ensuring exceptional corrosion resistance under various environmental conditions. The weld metal can be subjected to age-hardening treatment, thus granting it considerable mechanical properties that are closely influenced by post weld heat treatment (PWHT). It is commonly employed in tungsten arc welding processes of Cr-Ni-Nb-Mo alloys, as the use of high heat input processes like GMAW can often cause microfissures. This alloy finds its main application in welding high-strength aerospace components, liquid fuel rocket parts, rings, casings, and various formed sheet elements for gas turbine engines used in land-based vehicles and aircraft, as well as in cryogenic tanks. It is also utilized for fasteners, instrumentation components, and for cladding and overlay of parts in the oil and gas industry. The temperature range of use spans from -250 °C to 700 °C.

ALLOY TYPE

The nominal composition (wt. %) of filler metal of this classification is 52 Ni, 18 Fe, 19 Cr, 5 Nb plus Ta, 3 Mo, and 1 Ti.

MICROSTRUCTURE

Fully austenitic microstructure with Nb- and Ti-rich carbides.

MATERIALS

Suitable for welding Cr-Ni-Nb-Mo alloy and 718, 706, and X-750 alloys.

EN W.Nr.: 2.4668 (NiCr19Fe19Nb5Mo3), 2.4669 (NiCr15Fe7TiAl)

ASTM: B637, 5589

UNS: N07718, N09706, N07750

WELDING & PWHT

Before performing welding or heating any nickel-based alloy, it is essential to thoroughly clean the base metal. Oil, grease, paints, lubricants, marking pencils, temperature-indicating materials, thread compounds, and other similar materials may contain sulfur or lead, which can cause cracking or embrittlement of the base or filler metal during welding or heating. Welding of nickel-based and fully austenitic steels requires particular attention to minimize heat input, interpass temperature, and dilution with the base metal. It is advisable to maintain a low heat input, with a maximum of 1.5 kJ/mm, and an interpass temperature not exceeding 100 °C.

