DAIKOWT 418

GTAW

NICKEL ALLOYS
Monel 400

DESCRIPTION

Welding rod for alloy 400 and similar materials

Welding rod for Monel 400 alloy, enriched with Mn and Ti to prevent hot cracking and porosity. Essential for the homologous welding of Monel 400, other Ni-Cu alloys, pure nickel, and cupronickel. For dissimilar joints and claddings, a pure nickel or alloy 625 cushion layer is recommended. Perfect for offshore and naval constructions, heat exchangers, pipelines, desalination plants, chemical and petrochemical plants, and the energy sector.

SPECIFICATIONS

EN ISO 18274	S Ni 4060	**AWS A5.14**	ERNiCu-7
Shielding	I1	**Positions**	PA, PB, PC, PD, PE, PF
Current	DC-	**Packaging Type**	5kg carton tube

ASME QUALIFICATIONS

F-No (QW432)	42
A-No (QW442)	-

CHEM. COMP. %	DEFAULT
C	0.03
Mn	3.2
Ni	64
Al	0.1
P	0.005
S	0.005
Si	0.2
Cu	29
Fe	1
Ti	2.2

MECHANICAL PROPERTIES	MIN. PER STANDARD	PRODUCT
Tensile strength R_m MPa	480*	740
Yield strength $R_{p0.2}$ MPa	0	500
Elongation A (L_0=5d_0) %	0	43
Impact Charpy ISO-V	-	100J @ -196°C
Impact Charpy ISO-V	-	-

WELDING PARAMETERS	1.6 mm	2.4 mm
Ampere	80A - 120A	130A - 160A
Voltage	10V - 13V	14V - 18V
Packaging	Ø 1,0÷4,0mm	Ø 1,0÷4,0mm
Packaging Type	5kg carton tube	5kg carton tube

DAIKO

Monel 400

DESCRIPTION

APPLICATION

The weld metal based on Monel 400 alloy is characterized by high levels of Mn and Ti, a crucial element in preventing hot cracking and porosity. It is suitable for welding the 400 alloy and similar base materials, as well as other components in the Ni-Cu alloy system, such as pure nickel and cupronickel. Although welds with the K500 alloy are satisfactory, they don't match the strength of the precipitation-hardened alloy. Additionally, 400 alloy castings with a Si content of 1.5% or higher may exhibit crack susceptibility in the heat-affected zone (HAZ). In dissimilar joints between the 400 alloy and other alloys or steels, dilution with Fe (20-30%) or Cr (3-6%) can reduce the ductility of the weld metal near the fusion zone boundary. Direct welds on mild or low-alloy steels are satisfactory if dilution is controlled; however, for stainless steels and alloys with higher chromium content, the use of ERNiCr-3 wire is preferable and sometimes necessary. The 400 alloy offers a favorable combination of mechanical strength, thermal conductivity, and corrosion resistance in marine environments, inorganic salts, sulfuric and hydrofluoric acids, hydrogen fluoride, and alkalis. Typical applications include **heat exchangers, piping, vessels, and evaporators** in offshore, marine, chemical, petrochemical, and power engineering sectors. No preheating is required, while interpass control is paramount.

ALLOY TYPE

Nickel-copper alloy based on alloy 400 with increased levels of manganese and titanium to suppress hot cracking and porosity.

MICROSTRUCTURE

Solid solution, single phase alloy, slightly ferromagnetic near room temperature.

MATERIALS

EN W.Nr.: 2.4360, 2.4361, 2.4365
ASTM: A494 M-35-1, A494 M-35-2
UNS: N04400, N04405, N05500
PROPRIETARY: Monel® Alloy 400, R405, K500 (Special Metals), Nicorros (VDM)