DAIKOWM 418

GMAW

NICKEL ALLOYS
Monel 400

DESCRIPTION

Solid wire for welding alloy 400 and similar materials

It is designed to match Monel alloy 400 with raised level of Mn and Ti to suppress hot cracking and porosity. It is suitable for welding Monel 400 to itself and to others Ni-Cu alloys, for example pure nickel and cupronickel. Normally buttering in dissimilar joints and buffer layer in cladding are made with pure nickel or with 625 alloy. Applications include offshore and marine construction, heat exchangers, piping, desalination plant, chemical, petrochemical and power engineering industries.

SPECIFICATIONS

EN ISO 18274	S Ni 4060	**AWS A5.14**	ERNiCu-7
Shielding	I1, I3	**Positions**	PA, PB, PC, PD, PE, PF, PG
Current	DC+	**Packaging Type**	Drums, DIN 760 reel, B300, D200 and D100 spools.

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*	620
Yield strength $R_{p0.2}$ MPa	0	450
Elongation A (L_0=5d_0) %	0	45
Impact Charpy ISO-V	-	60J @ -196°C
Impact Charpy ISO-V	-	-

WELDING PARAMETERS

	1.0 mm	1.2 mm
Ampere	140A - 200A	150A - 210A
Voltage	23V - 27V	25V - 29V
Packaging	Ø 0,8÷1,6mm	Ø 0,8÷1,6mm
Packaging Type	Drums, DIN 760 reel, B300, D200 and D100 spools.	Drums, DIN 760 reel, B300, D200 and D100 spools.

NOTES

* Typical weld metal tensile strength, only as indication.

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)