



# DAIKO 190

SMAW

NICKEL ALLOYS  
Monel 400

## DESCRIPTION

### Nickel-copper electrode for Monel alloy 400

It has raised levels of Mn and Ti to avoid hot cracking and porosity. In addition to welding the parent metal alloy 400, it also used for surfacing of steel. The weld metal is resistant to corrosion by seawater, salt and reducing acids. Dissimilar welding applications include joint between Monel alloys and carbon steels, copper and copper-nickel alloys. Applications include offshore and marine construction, heat exchangers, piping, desalination plant, chemical, petrochemical and power engineering industries.

## SPECIFICATIONS

ISO 14172	E Ni 4060	AWS A5.11	ENiCu-7
DIN	-	Werkstoff Number	-
Certifications	-	Shielding	-
Positions	PA, PB, PC, PD, PE, PF	Current	DC+

## ASME QUALIFICATIONS

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

## FERRITE

FERRITE	-
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## PREN

PREN	-
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## HARDNESS

HARDNESS	-
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## CHEM. COMP. %

CHEM. COMP. %	DEFAULT
C	0.07
Mn	3.5
Ni	64
Al	0.05
P	0.005
S	0.005
Si	0.8
Cu	30
Fe	1
Ti	0.9

## MECHANICAL PROPERTIES

	MIN	VARIANT
Tensile strength $R_m$ MPa	480	620
Yield strength $R_{p0.2}$ MPa	200	350
Elongation A ( $L_0=5d_0$ ) %	27	45
Impact Charpy ISO-V	-	60J @ -196°C
Impact Charpy ISO-V	-	-

## WELDING PARAMETERS

	2.5 mm	3.2 mm	4 mm	
Ampere	50A - 80A	80A - 110A	110A - 150A	150A -
Voltage	-	-	-	-
Packaging	60 pcs/kg	29 pcs/kg	19 pcs/kg	13 pcs/kg
Packaging Type	Carton box and tube.	Carton box and tube.	Carton box and tube.	Carton box and tube.

V 01/2024



The information in this datasheet is the result of detailed research and is considered accurate as of the publication date. However, we cannot guarantee its complete accuracy, and it is subject to change without notice. Actual results may vary due to many factors like welding procedures, material composition, temperature conditions, bevel configuration, and specific manufacturing techniques. We accept no liability for any errors or omissions in this datasheet. For the most current information, please visit [www.daikowelding.com](http://www.daikowelding.com).





# Monel 400

DESCRIPTION

NICKEL ALLOYS

Monel 400

## APPLICATION

Weld metal derived from Monel alloy 400, enhanced with elevated levels of Mn and Ti to counteract hot cracking and porosity, employed for welding alloy 400 and similar materials within the Ni-Cu alloy system, such as pure nickel and cupronickel. While welds in alloy K500 are acceptable, they fail to match the strength of this precipitation-hardened alloy. Castings of alloy 400 with 1.5% Si or higher are prone to HAZ cracking. In dissimilar joints involving alloy 400 and other alloys or steels, sensitivity to dilution by Fe (20-30%) or Cr (3-6%) can result in diminished ductility in the weld metal near the fusion boundary. Direct welds to mild or low alloy steels are satisfactory with dilution control, although ERNiCr-3 wire is preferable and necessary for stainless and higher chromium alloys. Alloy 400 boasts a beneficial combination of strength, thermal conductivity, and resistance to corrosion by seawater, inorganic salts, sulphuric and hydrofluoric acids, hydrogen fluoride, and alkalis. Its applications encompass heat exchangers, piping, vessels, and evaporators in the offshore, marine, chemical, petrochemical, and power engineering industries. No preheat is required, and a maximum interpass temperature should be maintained at 150°C

## ALLOY TYPE

Nickel-copper alloy based on alloy 400 with raised 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).

