



DAIKOWT 657

GTAW

NICKEL ALLOYS
50/50Nb

DESCRIPTION

Solid rod 55% nickel and 44% chromium alloys

The weld metal matches Alloy 657 and has exceptional resistance to corrosion. It is suitable for the overlaying of carbon steels and stainless steels to provide a nickel-chromium alloy corrosion resistant surface. The high chromium level provides excellent resistance to high temperature corrosion between 800 and 950°C, including fuel-ash atmospheres containing sulphur and vanadium. It is used in a wide range of components in oil-fired furnaces and boilers such as tube sheets, tube hangers, supports and spacers in ships, power stations, refineries, and petrochemical plants.

SPECIFICATIONS

ISO 18274	S Ni6072 (NiCr44Ti)	AWS A5.14	ERNiCr-4
DIN	-	Werkstoff Number	-
Certifications	-	Shielding	11
Positions	PA, PB, PC, PD, PE, PF	Current	DC-

ASME QUALIFICATIONS

F-No (QW432)	43
A-No (QW442)	-

FERRITE

-

PREN

44

HARDNESS

-

CHEM. COMP. %

DEFAULT

C	0.01
Mn	0.1
Ni	55
Cr	44
P	0.002
S	0.002
Si	0.1
Cu	0.2
Fe	0.2
Ti	0.6

MECHANICAL PROPERTIES

	MIN	VARIANT
Tensile strength R_m MPa	690*	740
Yield strength $R_{p0.2}$ MPa	0	420
Elongation A ($L_0=5d_0$) %	0	30
Impact Charpy ISO-V	-	130J @ 20°C
Impact Charpy ISO-V	-	110J @ -50°C

WELDING PARAMETERS

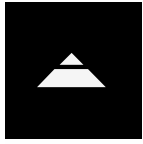
	1.6 mm	2.4 mm
Ampere	80A - 120A	130A - 160A
Voltage	10V - 13V	14V - 18V
Packaging	Ø 1,0÷4,0mm	Ø 1,0÷4,0mm
Packaging Type	5kg carton tube	5kg carton tube

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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.





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APPLICATION

Formulated for compatibility with alloy IN-657, these consumables are also well-suited for welding the titanium-bearing wrought version, IN-671. Alloy 657, renowned for its elevated chromium content, exhibits exceptional resistance to hot corrosion (800-950°C). This resistance is particularly effective against fuel ash containing vanadium pentoxide and alkali metal sulfates, emanating from the combustion of low-grade heavy fuel oils. IN-657 castings find extensive applications in oil-fired furnaces and boilers, playing crucial roles in various components like tube sheets, tube hangers, supports, and spacers. These components are vital in diverse settings, including ships, power stations, refineries, and petrochemical plants. The alloy's composition carefully balances chromium, niobium, carbon, and nitrogen to reduce sensitivities to solidification and cold cracking. Maintaining low levels of carbon and nitrogen is crucial, with precautions like minimizing arc length to avoid nitrogen pickup. Preheating is typically necessary, ranging from 150-200°C for 10mm thickness, 200-250°C for most applications, and up to 450°C for the thickest sections. It is imperative to manage interpass temperatures and facilitate a slow cooling process.

ALLOY TYPE

50Cr-50Ni alloy for high temperature corrosion resistance.

MICROSTRUCTURE

Cr-rich alpha phase (bcc) and a Ni-rich gamma phase (fcc). The precise structure depends on thermal cycle and effects on the control of weld metal cracking.

MATERIALS

EN W.Nr.: 2.4678, 2.4680, 2.4813.

ASTM: A560 gr. 50Cr-50Ni-Cb.

PROPRIETARY: IN-657, IN-671 (Inco Alloy Products), Paralloy N50W (Doncasters Paralloy), 50-50 Cb (Duraloy).

