DAIKOWT 1Ni

GTAW

CRYOGENIC STEELS
1Ni

DESCRIPTION

Rod for welding 1% Ni steels

Solid rod designed for welding low-alloy steels with 1% Ni and fine-grain steels also used for low-temperature applications. Suitable for the construction of offshore platforms, pressure vessels and pipelines, as well as for welding high-strength steel structures where PWHT is impractical, yet toughness and fracture resistance are still required.

SPECIFICATIONS

EN ISO 14341-A	W 46 5 M21 3Ni1	**AWS A5.28**	ER80S-Ni1
Shielding	I1	**Positions**	PA, PB, PC, PD, PE, PF
Current	DC-	**Packaging Type**	5kg carton tube

ASME QUALIFICATIONS

F-No (QW432)	6
A-No (QW442)	10

CHEM. COMP. %	DEFAULT
C	0.1
Mn	1.1
Ni	1
P	0.01
S	0.01
Mo	0.02
Si	0.6
Cu	0.12

MECHANICAL PROPERTIES	MIN. PER STANDARD	PRODUCT
Tensile strength R_m MPa	550	590
Yield strength $R_{p0.2}$ MPa	460	500
Elongation A (L_0=5d_0) %	24	25
Impact Charpy ISO-V	47J @ -50°C	120J @ -50°C
Impact Charpy ISO-V	-	-

WELDING PARAMETERS	1.6 mm	2.4 mm
Ampere	95A - 135A	145A - 205A
Voltage	-	-
Packaging	Ø 1,2÷3,2mm	Ø 1,2÷3,2mm
Packaging Type	5kg carton tube	5kg carton tube

DAIKO

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DESCRIPTION

APPLICATION

Designed for welding high-strength steel structures where post-weld heat treatment (PWHT) is not feasible, this material ensures a high level of toughness and crack resistance. The inclusion of approximately 1% Nickel (Ni) contributes to the refinement of the microstructure, offering better tolerance to procedural variations compared to unalloyed Carbon-Manganese (CM-N) welding metals. Additionally, Nickel enhances weather resistance and optimizes the electrochemical balance between the base metal and the weld metal, minimizing corrosion in the weld zone, particularly under marine conditions. In offshore oil field applications and acidic environments, a maximum content of 1.0% Ni is often required in accordance with the NACE MR0175 standard. This material is especially suitable when design specifications demand toughness tests on high-strength low-alloy steels at temperatures as low as -50°C, as in the case of offshore constructions, pipelines, and pressure vessels. The need for preheating varies depending on the grade and thickness of the base material.

ALLOY TYPE

Low alloy steel alloyed with nominally 1%Ni for improved toughness. Actual Ni content is kept below 1% to ensure conformance with NACE MR0175.

MICROSTRUCTURE

In the as-welded condition the microstructure is ferritic with a component of acicular ferrite for optimum toughness.

MATERIALS

Low temperature applications, fine-grained steels that contain 1 % Nickel.
EN W.Nr.: S460N (1.8901), S355N (1.0545), S460NL (1.8903), S460QL (1.8906)
ASTM: A333 & A334 gr. 6, A350 gr. LF2 & LF5, A352 gr. LCB & LCC (cast), A572 gr.50
API: 5L X65