DAIKOFCW 1Ni

FCAW

CRYOGENIC STEELS
1Ni

DESCRIPTION

Rutile-cored flux wire for all positions

Rutile-cored flux wire, suitable for welding and cladding in all positions thanks to its fast-freezing slag. Designed for low-alloy steels containing 1% Ni and fine-grain steels used down to -60 °C, it is ideal for offshore structures, pipelines, and pressure vessels, even where post-weld heat treatment (PWHT) is not feasible. It ensures excellent wetting behavior and smooth, well-profiled weld beads. A single current/voltage setting can be used for all welding positions. The fast-freezing slag enables deposition rates up to three times higher than those achievable with any other manual arc welding process.

SPECIFICATIONS

EN ISO 17632-A	T 46 6 1Ni P M21 2 H5	**AWS A5.29**	E81T1-Ni1M H4
Shielding	M21	**Positions**	PA, PB, PC, PD, PE, PF, PG
Current	DC+		

ASME QUALIFICATIONS

F-No (QW432)	5
A-No (QW442)	10

CHEM. COMP. %

C	0.06
Mn	1.2
Ni	0.95
P	0.02
S	0.02
Mo	0.05
Si	0.45
Cu	0.15

MECHANICAL PROPERTIES

	MIN. PER STANDARD	PRODUCT
Tensile strength R_m MPa	550	570
Yield strength $R_{p0.2}$ MPa	500	500
Elongation A (L_0=5d_0) %	17	22
Impact Charpy ISO-V	47J @ -60°C	50J @ -60°C
Impact Charpy ISO-V	-	-

WELDING PARAMETERS

	1.2 mm	1.6 mm
Ampere	100A - 300A	160A - 420A
Voltage	16V - 28V	31V - 35V
Packaging	Ø 1,2÷1,6mm	Ø 1,2÷1,6mm
Packaging Type	BS300 spool	BS300 spool

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