DAIKOWS 1Ni

SAW

CRYOGENIC STEELS
1Ni

DESCRIPTION

Solid wire for welding 1%Ni steel

Submerged arc wire designed for welding low-alloy steels with 1% Ni and fine grain steel as well as for low temperature applications. Suitable for the construction of offshore platforms, pressure vessels and pipelines and also for welding higher strength steel structures where PWHT is impracticable but toughness and crack resistance are required.

SPECIFICATIONS

EN ISO 14171-A	S2Ni1	**AWS A5.23**	ENi1
Shielding	DAIKOFLUX 493-W	**Positions**	PA, PB, PC
Current	DC/AC	**Packaging Type**	K415 spool and drums.

ASME QUALIFICATIONS

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

CHEM. COMP. %	DEFAULT
Mn	1
Ni	1
P	0.01
S	0.01
Mo	0.03
Si	0.15
Cu	0.15

MECHANICAL PROPERTIES	PRODUCT
Tensile strength R_m MPa	580
Yield strength $R_{p0.2}$ MPa	500
Elongation A (L_0=5d_0) %	24
Impact Charpy ISO-V	50J @ -60°C

WELDING PARAMETERS	2.4 mm	3.2 mm	4.0 mm
Ampere	300A - 410A	430A - 530A	480A - 580A
Voltage	26V - 30V	27V - 31V	27V - 32V
Packaging	Ø 2,0÷4,0mm	Ø 2,0÷4,0mm	Ø 2,0÷4,0mm
Packaging Type	K415 spool and drums.	K415 spool and drums.	K415 spool and drums.

NOTES

SAW mechanical properties depend on wire/flux combination, refer to flux TDS.

1Ni

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