



DAIKOWT 1021

GTAW

COBALT ALLOYS

Gr. 21

DESCRIPTION

Solid cobalt based wire rod

Grade 21 wire rod provides a low austenitic type deposit with excellent work hardenable, high temperature, strength, and impact resistance. It is a good choice for valve trim and steam and fluid control valve bodies and seals. It bonds well to all weldable steels, including stainless steel.

SPECIFICATIONS

| | | | |
|----------------|------------------------|------------------|----------|
| ISO | - | AWS A5.21 | ERCoCr-E |
| DIN | - | Werkstoff Number | - |
| Certifications | - | Shielding | I1 |
| Positions | PA, PB, PC, PD, PE, PF | Current | DC- |

ASME QUALIFICATIONS

| | |
|--------------|----|
| F-No (QW432) | 71 |
| A-No (QW442) | - |

FERRITE

-

PREN

-

HARDNESS

32HRC - 35HRC

CHEM. COMP. %

DEFAULT

| | |
|----|------|
| C | 0.25 |
| Mn | 0.8 |
| Ni | 2.7 |
| Cr | 28 |
| Mo | 5.4 |
| Si | 1 |
| Fe | 3.9 |
| W | 0.04 |

MECHANICAL PROPERTIES

| | MIN | VARIANT |
|-------------------------------|-----|---------|
| Tensile strength R_m MPa | - | - |
| Yield strength $R_{p0.2}$ MPa | 0 | - |
| Elongation A ($L_0=5d_0$) % | 0 | - |
| Impact Charpy ISO-V | - | - |
| Impact Charpy ISO-V | - | - |

WELDING PARAMETERS

| | 2.4 mm | 5 mm |
|----------------|-----------------|-----------------|
| Ampere | 60A - 90A | 150A - 200A |
| Voltage | - | - |
| Packaging | Ø 2,4÷5,0 mm | Ø 2,4÷5,0 mm |
| Packaging Type | 5kg carton tube | 5kg carton tube |

ANTI-WEAR CHARACTERISTICS

| | |
|---------------|-----------|
| Adhesive wear | ▲ ▲ ▲ ▲ ▲ |
| Abrasive wear | ▲ ▲ ▲ ▲ ▲ |
| Impact | ▲ ▲ ▲ ▲ ▲ |
| Corrosion | ▲ ▲ ▲ ▲ ▲ |
| Heat | ▲ ▲ ▲ ▲ ▲ |

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.

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APPLICATION

This low-carbon cobalt-based alloy type seamlessly blends commendable high-temperature strength with heightened ductility. The enhanced ductility contributes to superior resistance to weld cracking compared to its high-carbon counterparts. It exhibits notable resistance to corrosion, oxidation, and sulfidation, displaying robust resistance to cavitation erosion and better resistance to thermal shock than high-carbon types. While its galling resistance is somewhat lower than high-carbon types, it compensates with superior bed-in properties. This alloy is widely employed for surfacing valves, valve seats, hot shear blades, hot work dies, ingot tong ends, and equipment designed for handling hot steel. It serves as a preferred material for cat cracker slide valves in the petrochemical industry and finds diverse applications across a broad spectrum of industries, including steel, cement, marine, and power generation. While preheating is generally not mandatory, it is advisable for the first layer when deposited on hardenable alloy steels. Interpass control to approximately 200°C maximum is recommended to minimize potential hot cracking in heavy multipass deposits. The deposits exhibit machinability with carbide tools and can be refined through grinding as necessary.

ALLOY TYPE

CoCrMo alloy matrix containing dispersed hard carbides.

MICROSTRUCTURE

In the as-welded condition the microstructure consists of a cobalt based austenite with a number of carbides and other complex phases.

MATERIALS

Used for surfacing mild, low alloy and stainless steels and also for nickel base alloys. Can also be used for the repair of similar base materials (UNS R30021, Stellite 21 - Deloro Stellite) although it is optimized for surfacing not joining.

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