



G-TECH 1021

SMAW

COBALT ALLOYS
Gr. 21

DESCRIPTION

Hardfacing electrode with rutile-basic coating

Rutile-basic coated electrode with good weldability, easy to remove slag. It is used for surfacings subjected to light to medium abrasion, violent mechanical shocks, severe thermal shocks, severe erosion and corrosion, cavitation, high temperatures up to 1000°C, metallic friction, compression. The deposit has the property of hardening in operation. It is widely used in hot stamping and forging, for reloading forging dies and all types of tools that work at high temperatures and subject to shocks and pressures.

SPECIFICATIONS

AWS A5.13	ECoCr-E	DIN 8555	E 20-UM-300-CTZ
Shielding	-	Positions	PA, PB, PC, PD, PF
Current	DC+	Packaging Type	Carton box

ASME QUALIFICATIONS

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

HARDNESS

28HRC - 32HRC

CHEM. COMP. %

	DEFAULT
C	0.25
Mn	0.8
Ni	2.8
Cr	28
Mo	5.5
Si	0.8
Fe	2.5
W	0.05

WELDING PARAMETERS

	2.5 mm	3.2 mm	4.0 mm
Ampere	80A - 120A	100A - 140A	150A - 200A
Voltage	-	-	-
Packaging	pcs/kg	pcs/kg	pcs/kg
Packaging Type	Carton box	Carton box	Carton box

ANTI-WEAR CHARACTERISTICS

Adhesive wear	▲ ▲ ▲ ▲ ▲
Abrasive wear	▲ ▲ ▲ ▲ ▲
Impact	▲ ▲ ▲ ▲ ▲
Corrosion	▲ ▲ ▲ ▲ ▲
Heat	▲ ▲ ▲ ▲ ▲

NOTES

Pcs/kg is indicative, actual number may vary ± 5%.



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APPLICATION

The Gr. 21 subfamily, cobalt-based with a low carbon content, offers an excellent combination of high-temperature resistance and high ductility. These characteristics provide greater resistance to cracking during welding compared to high carbon content types. The material possesses excellent resistance to corrosion, oxidation, and sulfurization, along with good resistance to cavitation erosion. It's particularly effective against thermal shocks, outperforming high carbon types in such contexts. Although its resistance to adhesive wear is lower than that of high carbon types, its shock-absorbing properties are significantly superior. Gr. 21 is widely used for overlaying on valve fittings and valve seats, hot cutting blades, punches and dies, ingot gripper ends, and hot steel handling equipment. Gate valves in catalytic crackers of the petrochemical industry represent a prime application. It is also employed across various sectors, including steel mills, cement plants, marine industry, and power generation. Although preheating is not strictly necessary, it is advisable for the first layer on hardenable alloy steels. Interpass control up to 200 °C is suggested to minimize the risk of hot cracking in multi-pass deposits. The deposits can be machined with carbide tools and can be finished by grinding if 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.

