G-TECH 99

SMAW

CAST IRON
Ni CI

DESCRIPTION

Pure nickel basic-graphite coated electrode for cast iron

Basic-graphite special coated electrode with a pure nickel core wire. Suitable for cold welding on grey cast iron, malleable cast iron, and cast steel as well as repair welding on castings showing symptoms of fatigue. Excellent welding properties also for welding with low amperage. Quietly and intensely flowing weld metal, only few spattering, easily removable slag. The weld seam is soft and machinable even in the transitional zone between the seam and the base material.

SPECIFICATIONS

EN ISO 1071	E C Ni-CI 1	**AWS A5.15**	ENi-CI
Shielding	-	**Positions**	PA, PB, PC, PD, PE, PF
Current	DC+	**Packaging Type**	Carton box

HARDNESS

170HB

CHEM. COMP. %	DEFAULT
C	1
Mn	0.2
S	0.02
Si	0.7
Fe	3

MECHANICAL PROPERTIES	MIN. PER STANDARD	PRODUCT
Tensile strength R_m MPa	270	300
Yield strength $R_{p0.2}$ MPa	250	270
Elongation A (L_0=5d_0) %	6	8
Impact Charpy ISO-V	-	-
Impact Charpy ISO-V	-	-

WELDING PARAMETERS	2.5 mm	3.2 mm	4.0 mm
Ampere	70A - 90A	90A - 120A	120A - 140A
Voltage	-	-	-
Packaging	pcs/kg	pcs/kg	pcs/kg
Packaging Type	Carton box	Carton box	Carton box

NOTES

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

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DESCRIPTION

APPLICATION

Pure nickel consumables are particularly suitable for welding and repairing standard-grade gray cast iron and malleable cast iron. They offer low strength deposits that lend themselves to easy machining, even when applied in thin layers. The resistance to work hardening of the diluted weld metal can be advantageous for buttering, before proceeding with filling using more economical NiFe consumables. These consumables are also suitable for joining cast iron to steel, Monel, copper, and similar components where high mechanical strength is not required. Typical components include mechanical cast iron castings such as machine bases, engine blocks, and gear housing, operating under reduced stresses.

ALLOY TYPE

Pure nickel type for welding cast iron.

MICROSTRUCTURE

Austenitic nickel with finely distributed graphite.

MATERIALS

Grey iron.
EN W.Nr.: 1561:2011 Grey cast irons+
ASTM: A159, A319, A126, A48

WELDING & PWHT

Welding of these materials is often performed without preheat; however, for multi-pass deposits or highly restrained joints, preheating up to 150 °C may be necessary. Prior to welding, carefully prepare the surfaces by gouging or grinding, using limited amounts of heat to avoid the propagation of cracks. The area to be welded should be as free as possible from sand, oil, grease, paint, or rust. Preheating can aid in removing impregnated oil from used castings subject to repairs. If proceeding without preheat, it is advisable to minimize the width of the heat-affected zone (HAZ) by using a low heat input and keeping the interpass temperature low. A staggered welding technique can be effective in achieving this result. For welding on thicker or heavily restrained sections, preheating up to 150 °C can be indispensable. A light peening to reduce contraction stresses can be beneficial, but it is important not to compromise the ductility of the weld metal. It is also recommended to butter the joint faces or the sides of the repair cavity before proceeding with filling, regardless of the use of preheat. Upon completion of the welding operations, it is essential to allow for slow cooling of the piece, resorting to insulation if necessary.

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