



# G-TECH 405

SMAW

COPPER ALLOYS

CuAl

## DESCRIPTION

### Basic coated Cu-Al bronze electrode

Basic coated electrode for joining and surfacing on aluminum bronzes with up to 10% Al and for dissimilar joints between steels and CuAl-bronzes. Also recommended for overlays on cast iron, steels and copper alloys. Excellent weldability, stable arc, less spatters, easy to remove slag. Ship building, sea water applications, desalination plants, chemical industry, pump parts, which are attacked by salt water (propellers, bearings). It is excellent for cladding components undergoing metal to metal wear and for corrosion resistant surfaces.

## SPECIFICATIONS

AWS A5.6	ECuAl-A2	DIN 1733	EL-CuAl9
Shielding	-	Positions	PA, PB, PC, PD, PF
Current	DC+	Packaging Type	Carton box

## ASME QUALIFICATIONS

F-No (QW432)	36
A-No (QW442)	-

## HARDNESS

170HB

CHEM. COMP. %	DEFAULT	MECHANICAL PROPERTIES	MIN. PER STANDARD	PRODUCT	
Mn	1	Tensile strength R <sub>m</sub> MPa	410	500	
Al	9.1	Yield strength R <sub>p0.2</sub> MPa	-	200	
Fe	0.7	Elongation A (L <sub>0</sub> =5d <sub>0</sub> ) %	20	35	
		Impact Charpy ISO-V	-	-	
		Impact Charpy ISO-V	-	-	
		WELDING PARAMETERS	2.5 mm	3.2 mm	4.0 mm
		Ampere	55A - 60A	80A - 90A	100A - 120A
		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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### APPLICATION

Designed for welding aluminum bronzes with an aluminum content between 5% and 11%, as well as other copper alloys. When used on brass, the weld joint color is similar, and the aluminum in the consumable helps minimize zinc volatilization during welding. It can also be used for overlaying on C-Mn steels and cast iron, providing surfaces that resist wear and corrosion or for connecting these materials to most copper-based alloys. Typical applications include **\*\*corrosion-resistant and non-sparking pumps, ship propellers, machinery components, and heat exchangers used in offshore, marine, and mining environments\*\***.

### ALLOY TYPE

9% Al bronze for welding similar 5-11% Al alloys.

### MICROSTRUCTURE

In the as-welded condition consists of a duplex  $\alpha + \beta$  microstructure.

### MATERIALS

Aluminum bronze. Beryllium copper: Cu+ 0.5-2%Be. Brass: Cu-Zn. Aluminum brass: e.g. Yorkalbro Cu-22%Zn-2%Al. Manganese bronze: Cu + 20-45%Zn + 1-3%Mn. Silicon bronze: Cu + 1-3.5%Si.

**EN W.Nr.:** 2.0916 (CuAl5), 2.0920 (CuAl8), 2.0928 (G-CuAl9), 2.0932 (CuAl8Fe3), 2.0936 (CuAl10Fe3Mn2), 2.0940 (CuAl10Fe2-C), 2.0960 (CuAl9Mn2), 2.0962 (G-CuAl8Mn), 2.0966 (CuAl10Ni5Fe4), 2.0970 (CuAl10Ni3Fe2-C), 2.0978 (CuAl11Ni6Fe5), 2.0980 (CuAl11Fe6Ni6-C)

**UNS:** C61400

### WELDING & PWHT

In the case of aluminum bronze alloys, preheating is not necessary. The maximum interpass temperature should not exceed 200 °C. When welding brass, a preheat of 100-300 °C is recommended for thicker sections, while lower temperatures are indicated for high-zinc brass. Although this wire is suitable for various combinations of copper and iron-based alloys, caution is essential to minimize dilution in the presence of high-chromium alloys, such as stainless steels. The limited tolerance to chromium, resulting from mixing, can cause embrittlement and cracking, especially in bend tests. In such cases, applying a low heat input buttering layer is advantageous.

