DAIKOWM CuAl9Fe

GMAW

COPPER ALLOYS
CuAl

DESCRIPTION

Copper-aluminum solid wire

Wire rod for welding copper-aluminum, copper-silicon, copper-manganese, some copper-nickel alloys, cast irons, tool steels and galvanized sheets. Used in welding high-strength brass to guarantee a deposit of material with similar proper-ties of the base material. Pre-heating is recommended on large pieces. Used in shipbuilding industry for pumps, propellers and valves when a high sea water corrosion resistance is required as well as in automotive industry in galvanized sheet welding and in construction industry where high mechanical properties are required.

SPECIFICATIONS

EN ISO 24373	S Cu 6180	**AWS A5.7**	ERCuAl-A2
DIN 1733	SG-CuAl10Fe	**Shielding**	I1, I3
Positions	PA, PB, PC, PD, PE, PF, PG	**Current**	DC+
Packaging Type	Drums, B300, D200 and D100 spools.		

ASME QUALIFICATIONS

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

HARDNESS

140HB

CHEM. COMP. %

	DEFAULT
Mn	0.003
Ni	0.002
Cr	0.004
Nb	0.005
Al	9.1
V	0.002
P	0.002
Si	0.003
Fe	0.9

MECHANICAL PROPERTIES

	MIN. PER STANDARD	PRODUCT
Tensile strength R_m MPa	415	500
Yield strength $R_{p0.2}$ MPa	-	200
Elongation A (L_0=5d_0) %	0	32
Impact Charpy ISO-V	-	-
Impact Charpy ISO-V	-	-

WELDING PARAMETERS

	1.0 mm	1.2 mm
Ampere	130A - 200A	185A - 245A
Voltage	24V - 28V	26V - 30V
Packaging	Ø 0,8÷1,6mm	Ø 0,8÷1,6mm
Packaging Type	Drums, B300, D200 and D100 spools.	Drums, B300, D200 and D100 spools.

DAIKO

CuAl

DESCRIPTION

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.