DAIKOWM CuAl8

GMAW

COPPER ALLOYS
CuAl

DESCRIPTION

Copper-aluminum solid wire

Wire rod for copper alloys welding, especially for aluminum bronze alloys. Suitable also for welding of steel and cast iron, porosity free. Pre-heating is recommended when working with large pieces. Suitable for metal-spraying in wear-resistance surface treatment and for welding galvanized steel sheet. Suitable 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

ISO 24373	S Cu 6100	**AWS A5.7**	ERCuAl-A1
DIN 1733	SG-CuAl8	**Werkstoff Number**	-
Certifications	-	**Shielding**	I1, I3
Positions	PA, PB, PC, PD, PE, PF, PG	**Current**	DC+

ASME QUALIFICATIONS

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

FERRITE

-

PREN

-

HARDNESS

100HB

CHEM. COMP. %

	DEFAULT
Mn	0.003
Ni	0.003
Cr	0.004
Nb	0.003
Al	8.2
V	0.002
P	0.001
Si	0.003
Fe	0.01

MECHANICAL PROPERTIES

	MIN	VARIANT
Tensile strength R_m MPa	380	450
Yield strength $R_{p0.2}$ MPa	-	190
Elongation A (L_0=5d_0) %	0	38
Impact Charpy ISO-V	-	-
Impact Charpy ISO-V	-	-

WELDING PARAMETERS

	1 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.

CuAl

DESCRIPTION

APPLICATION

This welding consumable is designed for welding 5-11% aluminum bronzes and various other copper alloys. In the case of brasses, the weld color closely matches, and the inclusion of aluminum in the filler effectively suppresses zinc volatilization during welding. Moreover, it proves versatile for overlaying carbon-manganese steels and cast irons, providing durable bearing surfaces resistant to wear and corrosion. Additionally, it facilitates the joining of these materials to a wide range of copper-based alloys. Applications for this consumable span a variety of industries, including the manufacturing of corrosion-resistant and spark-resistant pumps, castings, machinery parts, and heat exchangers. Its utility extends to offshore, marine, and mining equipment, where its capability to deliver wear and corrosion resistance makes it an excellent choice for demanding operational 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.

PROPRIETARY: Alloy D (Hastelloy).

WELDING & PWHT

Aluminum bronze alloys do not necessitate preheating, and the maximum interpass temperature should be maintained at 200°C. For welding brass, a preheat ranging from 100-300°C is recommended for thicker sections, with lower preheat temperatures applicable to high-zinc brasses. While the wire is suitable for various dissimilar combinations of copper and ferrous alloys, caution is essential to minimize dilution by high chromium alloys like stainless steels. The limited tolerance to chromium pick-up may lead to embrittlement and cracking, particularly when subjected to bend tests. Employing low heat input buttering proves beneficial in such scenarios.

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