

Copper and Copper Alloys

CW024A Sheet and Plate

Description

Copper has been mined for over 5000 years and can be found in its elemental form as well as in minerals such as cuprite, malachite, azurite, chalcopyrite, and bornite. It is also frequently obtained as a by-product of silver production.

Copper is renowned as the second-best conductor of electricity after silver. It possesses a yellow-gold color that can be polished to a bright metallic luster. Copper is tough, ductile, and malleable. It has a distinct taste and an unusual smell.

Copper is highly resistant to corrosion in most atmospheric conditions, including marine and industrial environments. However, it is susceptible to corrosion by oxidizing acids, halogens, sulphides, and ammonia-based solutions.

C106/CW024A is a phosphorus-deoxidized, non-arsenical copper with a purity of 99.9%.

Common applications for C106 include use in refrigeration systems, gutters, roofing, gas plants, hydraulic, air, and oil lines, air conditioning and refrigeration systems, heater units, burner tubes, and consumer plumbing pipes and fittings.

Designations

C106/CW024A Copper can be associated with the following designations, although it may not be an exact equivalent:

- UNS C12200
- ISO Cu-DHP

Machinability

The machinability of alloy CZ121/CW614N is excellent. It has a machinability rating of 100 and is the standard against which the machinability of other alloys is measured.

Supplied Forms

C106/CW024A is typically supplied in the form of round tubes, half-hard sheets, and soft sheets. It is also available as sheets, tubes, and plates.

Corrosion Resistance

The corrosion resistance of C106/CW024A is typically rated as good or excellent in most environments and atmospheres, with the exception of those containing ammonia ions, in which it may not perform as well.

Cold Working

C106/CW024A exhibits an excellent response to cold working, making it well-suited for processes that involve cold working, such as bending, shaping, or forming.

Hot Working

The hot forgeability of C106/CW024A is rated at 65, which is slightly lower compared to brass rated at 100. When performing hot working processes with C106/CW024A, it is recommended to maintain temperatures between 760 and 870°C for optimal results.

Machinability

C106/CW024A has a machinability rating of 20, while Brass CZ121/CW614N is rated at 100. This indicates that CZ121 has significantly better machinability compared to C106/CW024A.

Weldability

The deoxidation of C106/CW024A is beneficial for enhancing embrittlement resistance during welding.

When it comes to joining methods for C106/CW024A:

Brazing and soldering are both rated as excellent. Gas shielded arc welding is also rated as excellent. Oxyacetylene welding and butt welding are rated as good.

However, certain welding methods are not recommended for C106/CW024A, including coated metal arc welding, spot welding, and seam welding.

Heat Treatment

Solution treatment or annealing of C106/CW024A can be accomplished by rapidly cooling the material after it has been heated to a temperature within the range of 370-650°C. This process is used to achieve the desired material properties.

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Chemical Composition

EN 1652:1997. CW024A

| Element | % Present |
|----------------|------------|
| Others (Total) | 0.0 - 0.10 |
| Copper (Cu) | Balance |

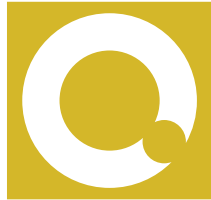
Physical Properties

| Property | Value |
|------------------------|-------------------------------|
| Density | 8.92 g/cm ³ |
| Melting Point | 1083 °C |
| Thermal Expansion | 16.9 x10 ⁻⁶ /K |
| Modulus of Elasticity | 117 GPa |
| Thermal Conductivity | 391.2 W/m.K |
| Electrical Resistivity | 0.0203 x10 ⁻⁶ Ω .m |

Mechanical Properties

Mechanical properties vary widely according to condition (soft/half hard/etc)

| Property | Value |
|-------------------|--------------|
| Proof Stress | 50-340 MPa |
| Tensile Strength | 200-360 MPa |
| Elongation A50 mm | 50-5 % |
| Hardness Vickers | 40 to 110 HV |



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Datasheet Update: 17/10/23

Disclaimer

This data serves as an indicative reference and should not be used as a substitute for the full specification. Mechanical properties can vary significantly depending on the temper, product, and its dimensions. All the information provided is based on our current knowledge and is given in good faith. The company bears no responsibility for any actions taken by third parties based on this information.

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