

High tensile alloy - CuMgAgP (C15500)



Formally this alloy is referred to as UNS C15500. Most common term is “C155”.

Excellent performance alloy in terms of tensile – to – conductivity relation. In comparison to other copper alloys

Magnesium has been alloyed to increase the strength of the material. At the same time it shows very good conductivity (86% IACS).

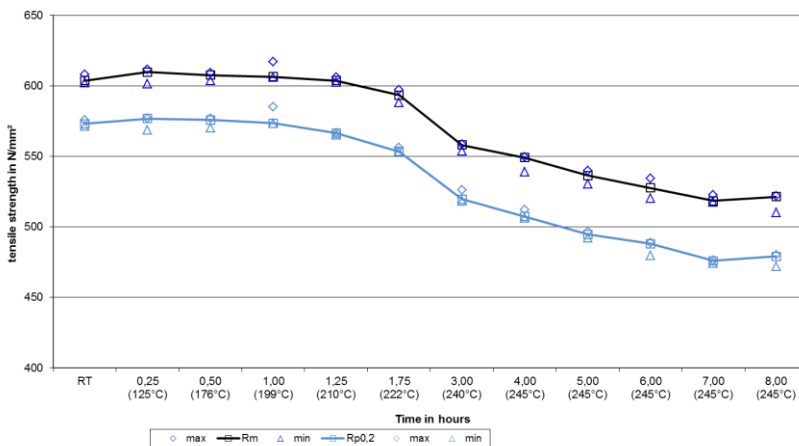
Other properties that are improved by alloying magnesium are wear resistance and temperature stability.

Chemical composition (%)				Dimensions	
Cu	Mg	P	Ag	Thickness	0.006 – 0.100 mm (.00024” – .004”)
min. 99.75	0.08-0.13	0.04-0.08	0.027-0.1	Width*	0.6 – 650 mm (.0024” – 25.6”)

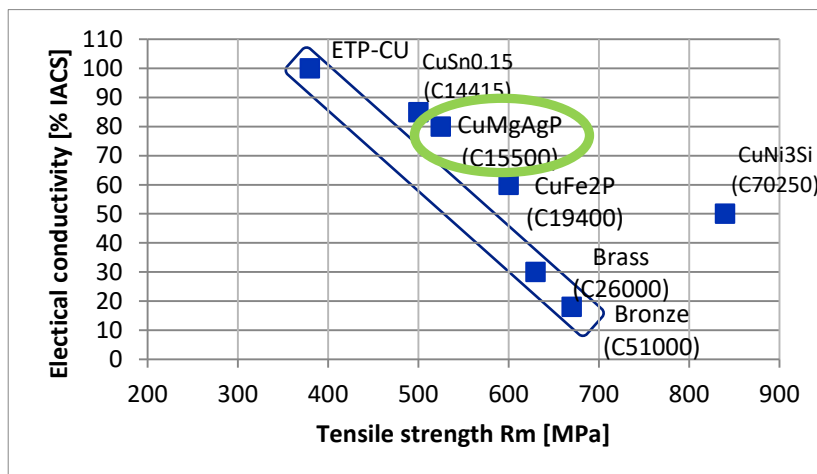
This alloy is in accordance with RoHS 2002/96/CE for electric & electronic equipment’s and 2002/53/CE for automotive industry.

*depending on thickness

Tensile Strength of C155 after elevated temperature test



The alloy can be processed at temperatures up to 250°C and still show an Rm value of at least 500 MPa. (Up to 600 MPa at RT)



Graph showing the position of C155 towards other alloys in terms of tensile strength vs. conductivity.

OTHER PROPERTIES:

CuMgAgP is stable towards natural and industrial environments as well as oceanic atmosphere and plain water. It is also resilient towards alkaline solutions (without oxidizing additives), pure water vapor and non-oxidizing acids.

CuMgAgP can be harmed by solutions containing cyanides, halides or ammoniac; it is not immune to oxidizing acids, damp ammoniac and halide containing gases and hydrogen sulfide.

Main applications			
Electrical	flex. switch parts, contacts, resistors, current bridges, lead frames, conductors in solid state devices, heat sinks, light duty springs, resistance welding electrodes	Battery	Material of choice for Li ION Batteries with LiSi anodes where high tensile strength is required

Benefits of new high tensile foil made by SCHLENK:

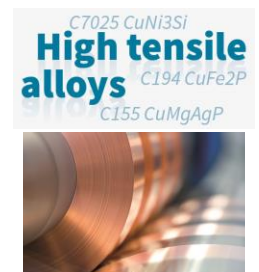
- **Ultrathin foil available:** e.g. 0.010 x 640 mm reduces weight and saves raw material costs
- **Highly precise:** tight thickness tolerances and dimensional accuracy
- **excellent surface quality:** plain, degreased surface
 - **Solvent or electrolytically degreased** to reduce the carbon residue to the lowest level
 - **Different surface passivation layer** to protect the material surface against oxidation

FUTURE DEVELOPMENTS

Schlenk is highly experienced in rolling processes and continuously optimizes the features of rolled foils. Please contact us for future developments.

We offer copper alloys for Li ION application e.g. for LiSi Anode material or others in terms of high tensile strength with reasonable conductivity:

- C7025 / CuNi3Si
- C194 / CuFe2P



RELATED PRODUCTS

Please consider also our material for Li ION application:

- **Aluminum Copper-Clad material** used for tab ribbon and bipolar electrode application and
- **Tab Ribbon** made from Copper, Silver, Nickel and their alloys

For further information please visit our website: www.schlenk.com or contact our Area Sales Manager or your local representative. E-Mail contact: battery@schlenk.com

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