# CuCrSiTi
# C18070
# STOL® 75

KME

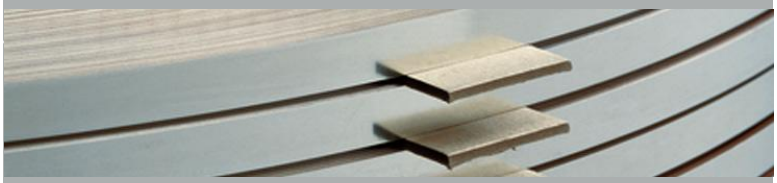
## Industrial Rolled

| Alloy Designation | STOL® 75 |
|---|---|
| EN | - |
| DIN CEN/TS 13388 | - |
| UNS | C18070 |

| Chemical Composition<br>Weight percentage | | |
|---|---|---|
| Cu | Rest | % |
| Cr | 0.3 | % |
| Si | 0.2 | % |
| Ti | 0.1 | % |

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

**High Performance STOL® Alloys**



We have developed a wide range of high performance copper alloys with excellent properties regarding conductivity, strength, corrosion behaviour, bendability and relaxation properties. STOL® alloys are the first choice materials for high-end applications and products.

**Characteristics**

STOL® 75 is a CuCrSiTi alloy that can be hardened by cold forming and by precipitation during a heat treatment. This alloy provides a good combination of high electrical conductivity, good strength, good bendability, excellent hot and cold forming properties and a good corrosion resistance.

Due to the Precipitations the relaxation properties, even at temperatures up to 200°C are excellent.

**Main Applications**

**Automotive** Switches and Relays, Contacts, Connectors, Terminals, Press fits, Hybrid Cars

**Electrical** Switches and Relays, Contacts, Connectors, Terminals, Press fits, Components for the electrical industry, Stamped parts, Semiconductor Components, Junction Boxes, Photovoltaic Systems

**Preferred Applications**

| Spring Contact | Switches and Relays | High Temperature Range >150°C | Current Carrying Capacity | Press fits |
|---|---|---|---|---|
| xx | xx | xx | xx | xx |

x = well suited xx = particularly well suited

| Physical Properties<br>Typical values in annealed temper at 20 °C | | | |
|---|---|---|---|
| Density | | 8.9 | g/cm³ |
| Thermal expansion coefficient | 20 .. 300 °C | 18 | $10^{-6}$/K |
| Specific heat capacity | | 0.38 | J/(g·K) |
| Thermal conductivity | | 310 | W/(m·K) |
| Electrical conductivity | (1 MS/m = 1 m/(Ω mm²) | 45 | MS/m |
| Electrical conductivity | (IACS) | 78 | % |
| Thermal coefficient of electrical resistance | (0 .. 100 °C) | 3 | $10^{-3}$/K |
| Modulus of elasticity | (1 GPa = 1 kN/mm²) cold formed | 135 | GPa |

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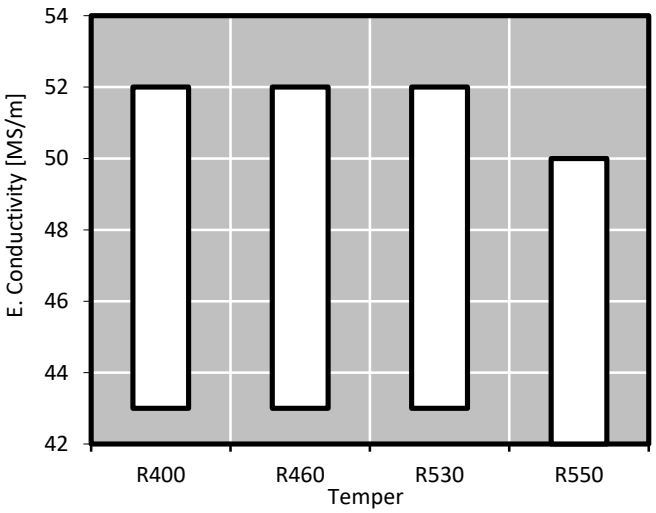
| Mechanical Properties | | | | |
|---|---|---|---|---|
| **Temper** | **Tensile Strength Rm** | **Yield Strength Minimum $Rp_{0.2}$** | **Elongation Minimum $A_{50mm}$** | **Hardness HV *** |
| | MPa | MPa | % | HV |
| **R400** | 400 .. 480 | 300 | 8 | 120 .. 150 |
| **R460** | 460 .. 560 | 400 | 9 | 140 .. 170 |
| **R530** | 530 .. 610 | 460 | 10 | 150 .. 190 |
| **R550** | 550 .. 630 | 520 | 10 | 150 .. 190 |

*only for information

## Electrical Conductivity




Electrical conductivity is strongly influenced by chemical composition. A high level of cold deformation and small grain size decrease the electrical conductivity moderately. Minimum conductivity level can be specified.

| Fabrication Properties* | |
|---|---|
| Cold Forming Properties | Good |
| Machinability (Rating 20) | Less suitable |
| Electroplating Properties | Good |
| Hot Tinning Properties | Good |
| Soft Soldering, Brazing | Good |
| Resistance Welding | Less suitable |
| Gas Shielded Welding | Excellent |
| Laser Welding | Fair |

* For more details call our technical service

**Corrosion Resistance***

STOL® 75 is resistant to pure water vapour and non oxidizing acids and alkalis as well as neutral saline solutions.
The material is insensitive to stress corrosion cracking.

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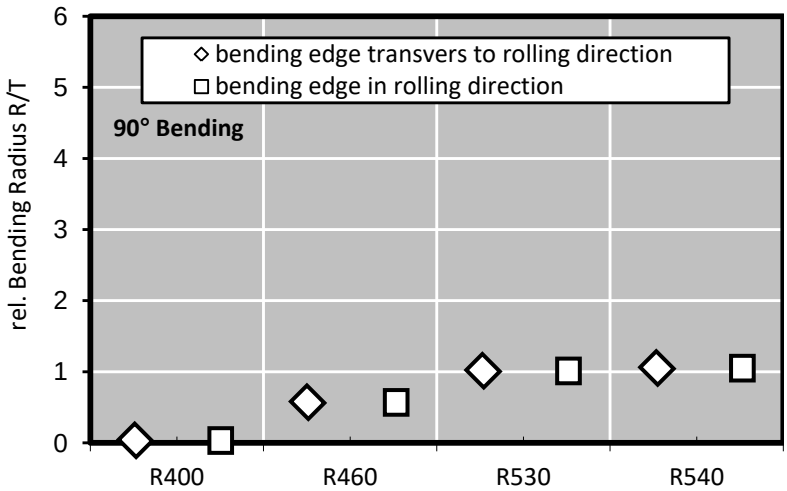
## Bending Properties  Thickness: ≤ 0.5 mm

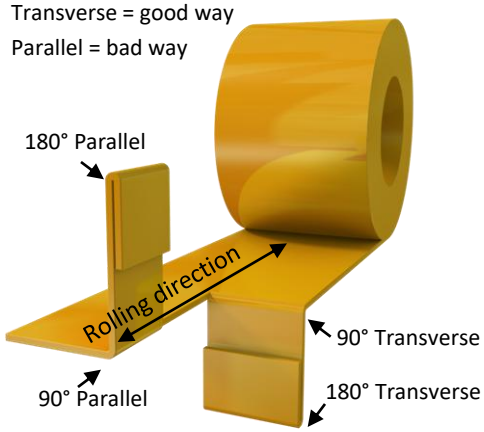



Bending test according to EN ISO 7438 is done with 10 mm wide samples. Smaller samples in general – as well as lower thickness – allow a lower bending radius without cracks. If needed we supply bending optimized temper classes that far exceed standard quality.

Please take care when comparing with ASTM E 290 results, there the bend definition direction is contradictory.

### Bending Definition

Transverse = good way
Parallel = bad way




### Minimum Bending Radius Calculation

To find out the minimum possible bending radius take the R/T value from the list.

Example: R/T = 0.5 and thickness 0.3 mm

Minimum radius = (R/T) x thickness

= 0.5 x 0.3 mm = 0.15 mm

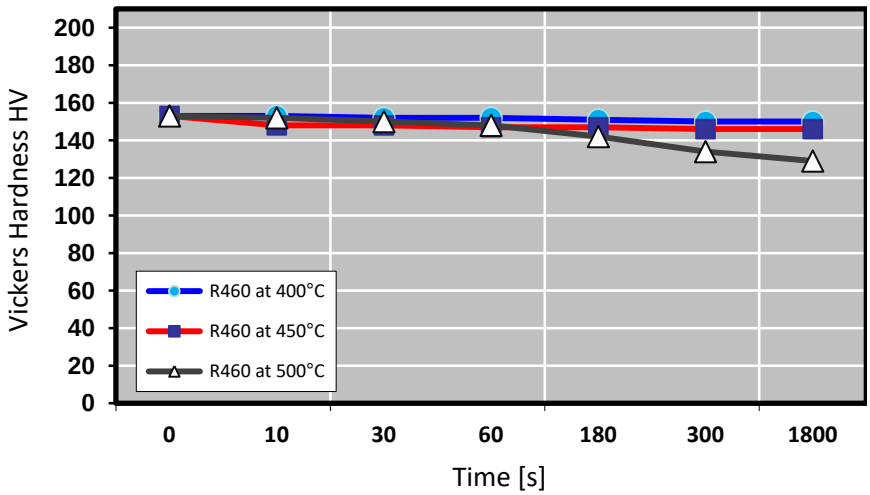
**Bending Properties ***

| Temper | Thickness Range | Bending 90° | |
|---|---|---|---|
| | | Trans-vers | Parallel |
| | mm | R/T | R/T |
| **R400** | ≤ 0.5 | 0 | 0 |
| **R460** | ≤ 0.5 | 0,5 | 0,5 |
| **R530** | ≤ 0.5 | 1 | 1 |
| **R550** | ≤ 0.5 | 1 | 1 |

* Measured at sample width 10 mm according to EN 1654

Possible bending radius = (R/T) x thickness

## Softening Resistance




After short time heat treatment Vickers Hardness is measured. The diagram shows typical values.

## Bend Fatigue (at room temperature)

The fatigue strength gives an indication about the resistance to variations in applied tension. It is measured under symmetrical alternating load. The maximum bending load for $10^7$ load cycles without crack is measured. Dependent on the temper class it is approximately 1/3 of the tensile strength Rm.

| Standards for copper and copper alloys | |
|---|---|
| EN 1652 | Plate, sheet, strip and circles for general purposes |
| EN 1654 | Strip for springs and connectors |
| EN 1758 | Strip for lead frames |
| EN 13148 | Hot-dip tinned strip |
| EN 13599 | Copper plate, sheet and strip for electrical purposes |
| EN 14436 | Electrolytically tinned strip |