

Alloy Designation	
EN	Cu-DHP (SF-Cu)
DIN CEN/TS 13388	CW024A
JIS	C 1220
UNS*	C12200

* Unified Numbering System (USA)

Chemical Composition	
Weight percentage in %	
Cu	≥ 99.90
P	0.015 – 0.040

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

Copper Rolled Products

<p>We produce a vast assortment of copper rolled products that vary in chemical composition, size and format, all suited to the many types of final processing. KME can offer various types of copper rolled products to its industrial customers, all with a minimum 99.9% purity:</p>

Characteristics
<p>Cu-DHP is a phosphorus-deoxidized copper with a limited, high amount of residual Phosphorus. It has excellent welding and soldering properties and is resistant against hydrogen embrittlement. It can be deformed excellent, either hot or cold.</p>

Main Applications
<p>Architecture Downspouts, Gutters, Flashing, Roofing Building Heater Units, Condenser Sheets Consumer Air Conditioners, Refrigerators Electrical Wire Connectors, Heater Elements Industrial Construction, Rotating Bands, Kettles, Anodes for Electroplating, Heat Exchanger Shells, Oil Coolers in Airplanes, Tanks, Casting Molds, LP Gas Service, Medical Gas- Oxygen, Plating Anodes, Plating Racks, Plating Hangers, Marine Oil Coolers</p>

Preferred Applications					
Apparatus Industry	Pipelines	Mineral Insulated Cables	Strip for Plating	Heat Exchanger	Transistors
xx	xx	xx	xx	xx	xx

x = well suited xx = particularly well suited

Physical Properties		
Typical values in annealed temper at 20 °C (Just for information)		
Density	8.9	g/cm ³
Thermal expansion coefficient	-191 - 16 °C	14.1
	20 – 300 °C	17.6
Specific Heat Capacity	0.386	J/(g K)
Thermal Conductivity	330	W/(m K)
Electrical conductivity (1 MS/m = 1 m/(Ω mm ²))	≥ 47	MS/m
Electrical conductivity	81	IACS %
Thermal coefficient of electrical resistance (0 – 300 °C)	3.4	10 ⁻³ /K
Modulus of elasticity (1 GPa = 1 kN/mm ²)	132	GPa

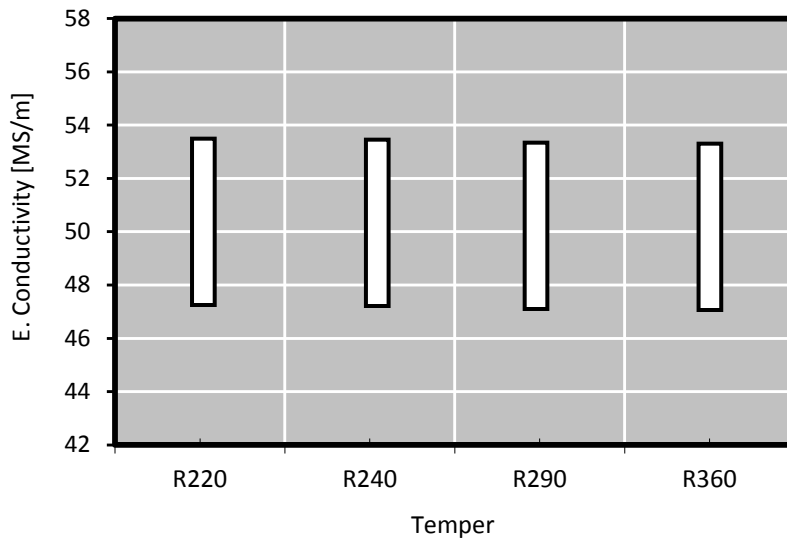


Mechanical Properties (According EN 1652)

Temper	Tensile Strength	Yield Strength	Elongation	Hardness
	Rm	Rp _{0.2} Minimum	A _{50mm} Minimum	HV**
	MPa	MPa	%	HV
R220	220 .. 260	< 140*	33	40 .. 65
R240	240 .. 300	180	8	65 .. 95
R290	290 .. 360	250	4	90 .. 110
R360	≥ 360	320	2	≥ 110

* only information. ** only for reference.

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*

Capacity for Being Cold Worked	Excellent
Capacity for Being Hot Worked at 750 -950°C	Good
Machinability (Rating 20)	Less suitable
Capacity for Being Electroplated	Excellent
Capacity for Being Hot-Dip Tinned	Excellent
Soft soldering	Excellent
Resistance Welding	Less suitable
Gas Shielded Arc Welding	Excellent
Laser Welding	Good
Soft annealing	250 - 500°C
Stress relaxation annealing	150 – 200°C

Corrosion Resistance*

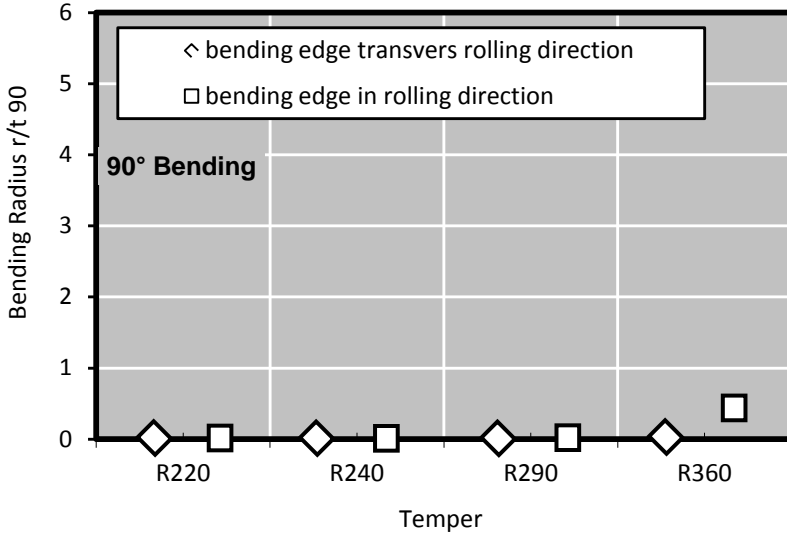
Water (industrial and drinking): up to flow rate of 1,5 – 2 m/s
Pure water vapour
Industrial atmosphere: under formation of dark green protective layers.
Non oxidizing acids
Alkalis: With the exception of ammonia and cyanide-containing compounds
Neutral saline solutions
Biological properties: ?
Household compatibility: ?

* For more details call our technical service

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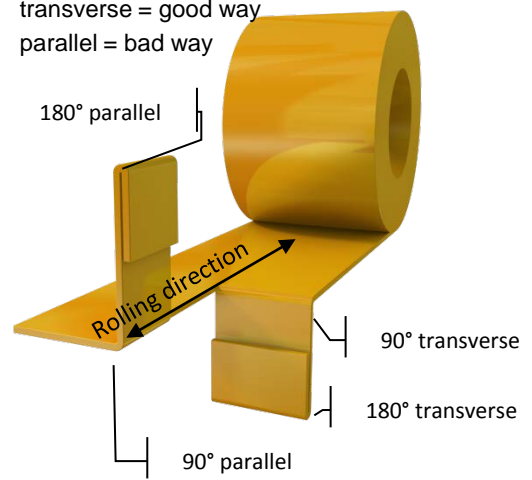
Bending Properties Thickness: ≤ 0.5 mm



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

Bending Definition

transverse = good way
parallel = bad way



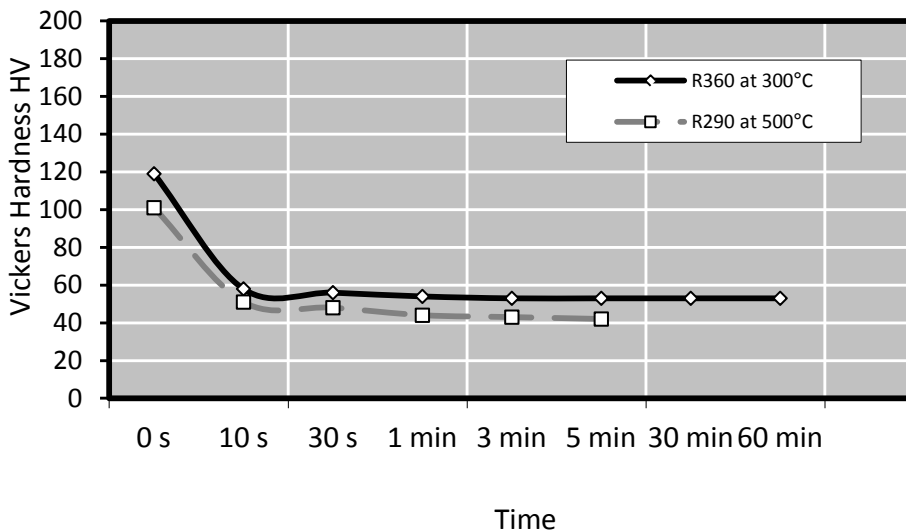
Bending Properties*

Temper	Thickness Range	Bending 90°		Bending 180°	
		Transversers	Parallel	Transversers	Parallel
	mm	R/T	R/T	R/T	R/T
R220	≤ 0.5	0	0		
R240	≤ 0.5	0	0		
R290	≤ 0.5	0	0		
R360	≤ 0.5	0	0.5		

* Measured at sample width 10 mm according EN 1654

Possible bending radius = R/T * thickness

Softening Resistance



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