

Sterling Silver Material Properties

Sterling Silver is an alloy made of 92.5% pure silver and 7.5% copper. Sterling silver is known for its

- Bright appearance
- Easy to solder
- Association with elegance
- Relatively low cost compared to other precious metals
- Good machinability
- Good conductor of heat and electricity
- Malleable and ductile (ie can be beaten and drawn into a wire)
- Good reflector of light (ie shiny)

Fine silver (99.9% pure) is generally too soft for producing functional objects; therefore, the silver is usually alloyed with copper to give it strength, while at the same time preserving the ductility and beauty of the precious metal.

Some material properties include...

Sterling silver				
Chemical composition: Ag=92.5% Cu=7.5%				
Property	Value in metric unit		Value in US unit	
Density	10.37 *10 ³	kg/m ³	5.47	Troy oz/in ³
Thermal expansion (20 °C)	1.9*10 ⁻⁵	°C ⁻¹	1.06*10 ⁻⁵	in/(in* °F)
Specific heat capacity	245	J/(kg*K)	0.0585	BTU/(lb*°F)
Electrical conductivity (IACS)	96	%	96	%
Tensile strength (annealed)	207	MPa	30000	psi
Yield strength (annealed)	124	MPa	18000	psi
Elongation (annealed)	41	%	41	%
Tensile strength (wire, annealed)	283	MPa	41000	psi
Elongation (wire, annealed)	40	%	40	%
Hardness (wire, annealed)	71	HV	71	HV
Tensile strength (wire, 1/2 hard)	386	MPa	56000	psi
Hardness (wire, 1/2 hard)	95	HV	95	HV
Tensile strength (wire, full hard)	496	MPa	72000	psi
Hardness (wire, full hard)	123	HV	123	HV
Tensile strength (wire, spring hard)	552	MPa	80000	psi
Hardness (wire, spring hard)	140	HV	140	HV
Liquidus temperature	788	°C	1450	°F
Solidus temperature	891	°C	1635	°F

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