



# Specification Sheet

Last Modified: May 27, 2017

## C77000

Nickel Silver, 55-18

### Chemical Composition

(%max., unless shown as range or min.)

	Cu <sup>(1)</sup>	Fe	Pb	Mn	Ni <sup>(2)</sup>	Zn
<b>Min./Max.</b>	53.5-56.5	0.25	0.05	0.5	16.5-19.5	Rem.
<b>Nominal</b>	55	-	-	-	18	27

(1) Cu value includes Ag.

(2) Ni value includes Co.

Note: Cu + Sum of Named Elements, 99.5% min.

### Applicable Specifications

Product	Specification
Bar	ASTM B122, B151 SAE J463, J461
Plate	ASTM B122
Rod	ASTM B151 SAE J463, J461
Sheet	ASTM B122 SAE J463, J461
Strip	ASTM B122 SAE J461, J463
Wire	ASTM B206

### Common Fabrication Processes

No information available.

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## Fabrication Properties

Joining Technique	Suitability
Soldering	Excellent
Brazing	Excellent
Oxyacetylene Welding	Good
Gas Shielded Arc Welding	Fair
Coated Metal Arc Welding	Not Recommended
Spot Weld	Good
Seam Weld	Fair
Butt Weld	Good
Capacity for Being Cold Worked	Good
Capacity for Being Hot Formed	Poor
Machinability Rating	30

## Thermal Properties

Treatment	Temp./Time – US	Temp./Time – SI
Stress Temperature		
Solution Minimum		
Solution Maximum		
Solution Time		
Solution Medium	None	
Precipitation Value		
Precipitation Time		
Precipitation Medium	None	
Annealing Minimum	1100	594
Annealing Maximum	1500	816
Annealing Time		
Hot Works Minimum		
Hot Works Maximum		



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## Mechanical Properties (Measured at Room Temperature, 68°F (20°C))

Temper	Section Size	Cold Work	Typ/Min	Temp	Tensile Strength		Yield Strength (0.5% ext. under load)		Yield Strength (0.05% offset)		EI	Rockwell Hardness				Vickers Hardness		Brinell Hardness		Shear Strength	Fatigue Strength	Izod Impact Strength
					F	ksi	ksi	ksi	ksi	%		B	C	F	30T	500	500	3000	ksi			
	in.	%		F	ksi	ksi	ksi	ksi	ksi	%										ksi	ksi	ft-lb
	mm.			C	MPa	MPa	MPa	MPa	MPa											MPa	MPa	J
<b>Flat Products</b>																						
H06	0.04	0	TYP	68	108	90	-	-	2	96	-	-	80	-	-	-	-	-	-	-	-	0
	1			20	745	621	-	-	2	96	-	-	80	-	-	-	-	-	-	-	-	0
OS035	0.04	0	TYP	68	60	27	-	-	40	55	-	90	-	-	-	-	-	-	-	-	-	0
	1			20	414	186	-	-	40	55	-	90	-	-	-	-	-	-	-	-	-	0
H04	0.04	0	TYP	68	100	85	-	-	3	91	-	-	77	-	-	-	-	-	-	-	-	0
	1			20	689	586	-	-	3	91	-	-	77	-	-	-	-	-	-	-	-	0
<b>Wire</b>																						
H04	0.08	68	TYP	68	145	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	0
	2			20	1000	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	0
<b>Flat Products</b>																						
H08	0.04	0	TYP	68	115	-	-	-	2	99	-	-	81	-	-	-	-	-	-	-	-	0
	1			20	793	-	-	-	2	99	-	-	81	-	-	-	-	-	-	-	-	0
<b>Wire</b>																						
OS035	0.08	0	TYP	68	60	-	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	0
	2			20	414	-	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	0

\*Fatigue Strength:  $100 \times 10^6$  cycles, unless indicated as [N] $\times 10^6$ .

## Physical Properties

Property	US Customary	Metric
Melting Point - Liquidus	1930 F	1054 C
Density	0.314 lb/in <sup>3</sup> at 68 F	8.69 gm/cm <sup>3</sup> @ 20 C
Specific Gravity	8.7	8.7
Electrical Resistivity	189 ohms-cmil/ft @ 68 F	31.42 microhm-cm @ 20 C
Electrical Conductivity	5.50 %IACS @ 68 F	0.032 MegaSiemens/cm @ 20 C
Thermal Conductivity	17 Btu · ft/(hr · ft <sup>2</sup> · °F) at 68F	29.4 W/m · °K at 20 C
Coefficient of Thermal Expansion	9.30 · 10 <sup>-6</sup> per °F (68-572 F)	16.7 · 10 <sup>-6</sup> per °C (20-300 C)
Specific Heat Capacity	0.090 Btu/lb/°F at 68 F	377.1 J/kg · °K at 293 K
Modulus of Elasticity in Tension	18000 ksi	124000 MPa
Modulus of Rigidity	6800 ksi	46880 MPa

## Temper Most Commonly Used

Flat Products	
STRIP, ROLLED	H04, H06, H08
WIRE, ROLLED	H08

Other	
ROD	H02
WIRE	H08



## Typical Uses

### Electrical

Resistance Wire, Springs

### Industrial

Optical Goods

## Casting Characteristics

No casting characteristics for this alloy.

### Automotive

Tanks, Radiator Cores

### Builders Hardware

Push Plates, Locks, Kick Plates, Hinges, Finish Hardware, Stencils