

# C19005

## STOL® 76M - CuNiSi

Alloy Designation	STOL® 76M
EN	CuNiSi
DIN CEN/TS 13388	
UNS	C19005

Chemical Composition (Balance)		
Weight percentage		
Cu	Rest	%
Ni	1.5	%
Si	0.3	%
Sn	0.1	%
Zn	0.4	%

### Characteristics

**STOL® 76M** is an optimized CuNiSi alloy that can be hardened by cold forming and by precipitation of NiSi-phases during a heat treatment. It has excellent bendability, excellent hot and cold forming properties, a high strength and a good corrosion resistance.

Due to the NiSi-precipitations the relaxation properties, even at temperatures up to 150 °C are excellent. In combination with a tin coating even at temperatures around 150 °C (3.000h) the tin coating does not peel off. The electrical and thermal conductivity is good. Welding, soldering and brazing properties are good too.

### Main Applications

**Automotive:** Switches and Relays, Contacts, Connectors, Terminals , Press fits.

**Electrical:** Switches and Relays, Contacts, Connectors, Terminals, Press fits, Components for the electrical industry, Stamped parts, Semiconductor Components.

### Mechanical Properties (EN 1652)

\* values for stress relieved qualities

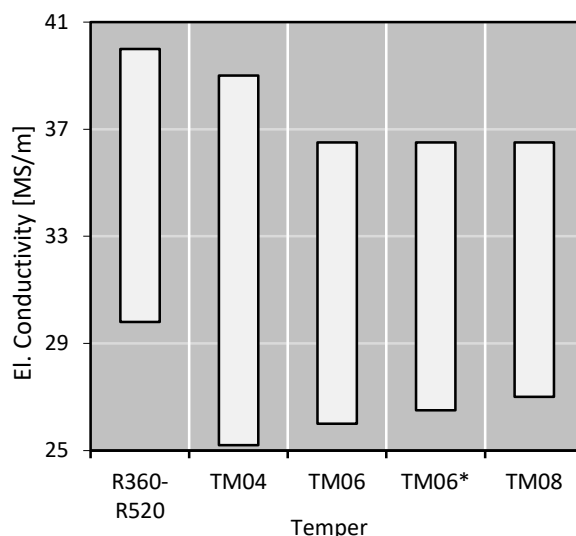
Temper	Temper <small>H.. = Cold worked TM = Mill hardened</small>	Tensile Strength	Yield Strength min.	Elongation min.		Hardness	Bendability 90°	
		Rm MPa	Rp <sub>0.2</sub> Mpa	A <sub>50mm</sub> %	HV only for information	gw rel. Bending Radius R/T Strip Thickness ≤ 0.50mm	bw	
<b>R360</b>	H01 (¼ hard)	360 .. 430	300	12	14 *	100 .. 130	0	0
<b>R410</b>	H02 (½ hard)	410 .. 470	360	9	11 *	125 .. 155	0	0
<b>R460</b>	H03 (¾ hard)	460 .. 520	410	7	9 *	135 .. 165	0.5	1
<b>R520</b>	H06 (extra hard)	520 .. 580	460	5	7 *	145 .. 175	1	2
<b>R530</b>	TM04 (HM)	530 .. 630	430	14		150 .. 190	0	0
<b>R580</b>	TM06 (XHM)	580 .. 650	540	8		170 .. 200	1	1
<b>R580S</b>	TM06 (XHM) bending optimized	580 .. 650	520	9		170 .. 200	0.5	0.5
<b>R620</b>	TM08 (SHM)	620 .. 700	560	7		180 .. 210	1	1.5

### Physical Properties

Typical values in annealed temper at 20 °C

Density		8.92	g/cm <sup>3</sup>
Thermal expansion coefficient	20 .. 300 °C	16.8	10 <sup>-6</sup> /K
Specific heat capacity		0.377	J/(g·K)
Thermal conductivity		250	W/(m·K)
Electrical conductivity	MS/m	33	MS/m
Electrical conductivity	IACS	57	%
Thermal coefficient of electrical resistance	(0 .. 100 °C)	2	10 <sup>-3</sup> /K
Modulus of elasticity	GPa	135	GPa

### Electrical Conductivity



#### Fabrication Properties \*

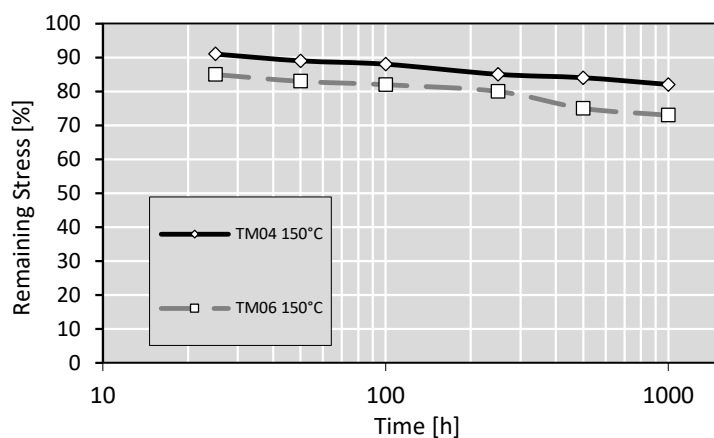
Cold Forming Properties	Excellent
Machinability (Rating 20)	Less suitable
Electroplating Properties	Excellent
Hot Tinning Properties	Excellent
Soft Soldering, Brazing	Excellent
Resistance Welding	Less suitable
Gas Shielded Arc Welding	Excellent
Laser Welding	Fair

\* For more details call our technical service

#### Corrosion Resistance \*

**STOL® 76M** has good corrosion resistance.  
The alloy is insensitive to stress corrosion cracking.

#### Relaxation Properties



Relaxation values give an indication about stress relieve of strip under tension for a certain time and temperature.  
Typical test sample thickness is 0.3 – 0.6 mm.

Initial Stress  
80% von  $R_{p0.2}$   
Parallel Rolling Direction

#### 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  $R_m$ .

#### Available delivery forms \*

- Strips in coils
- Traverse-wound coils with drum weights up to 1.5 t
- TECSTRIP®\_multicoil up to 2.5 t
- Hot-Dip-Tinned strips in thickness range 0.10 up to 1.20 mm

\* For more details call our sales service

Due to continued improvements within our production process, the details stated in our brochure can not be guaranteed. We reserve the right to update or amend our products, without prior notification. We suggest that you obtain confirmation of our product details / specifications prior to committing to specific alloys.