C19005

6.1. STOL® 76M - CuNiSi

KME
ENGINEERING COPPER SOLUTIONS

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 H.. = Cold worked TM = Mill hardened	Tensile Strength Rm MPa	Yield Strength min. $Rp_{0.2}$ Mpa	Elongation min. A_{50mm} %	Hardness HV only for information	Bendability 90° gw / bw rel. Bending Radius R/T Strip Thickness ≤ 0.50mm
R360	H01 (¼ hard)	360 .. 430	300	12 14 *	100 .. 130	0 / 0
R410	H02 (½ hard)	410 .. 470	360	9 11 *	125 .. 155	0 / 0
R460	H03 (¾ hard)	460 .. 520	410	7 9 *	135 .. 165	0.5 / 1
R520	H06 (extra hard)	520 .. 580	460	5 7 *	145 .. 175	1 / 2
R530	TM04 (HM)	530 .. 630	430	14	150 .. 190	0 / 0
R580	TM06 (XHM)	580 .. 650	540	8	170 .. 200	1 / 1
R580S	TM06 (XHM) bending optimized	580 .. 650	520	9	170 .. 200	0.5 / 0.5
R620	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/cm³
Thermal expansion coefficient	20 .. 300 °C	16.8	10^{-6}/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^{-3}/K
Modulus of elasticity	GPa	135	GPa

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