

KEMPER Special alloys



KHP®102



KEMPER High Performance Alloy KHP®102

KHP®102 belongs to the group of CuNiSi alloys and is particularly suitable for the use in electrical and electronic products. The material is registered in the USA under the UNS number C19010.

The perfect adaption of the single elements results in technical properties which provide an extremely high performance regarding the use in sophisticated components.

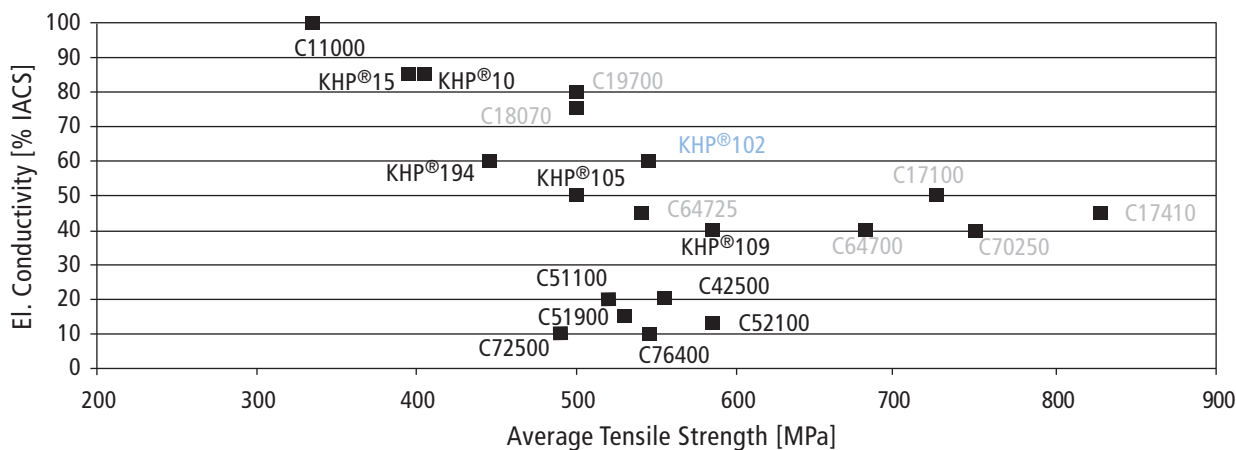
The alloy is characterised by

- high tensile strength
- high electrical conductivity
- very good resistance against stress relaxation under elevated temperature

So the alloy complies with the requirements for the miniaturization in the connector and electronic sector.

The global availability leads to a high security of supply.

Alloys for the Electrical and Electronics Industry



Chemical Composition

Cu	Ni [%]	Si [%]	P [%]
Balance	0,80-1,80	0,15-0,35	0,01-0,05

Processing Information

Weldability	good
Solderability	good
Stress corrosion cracking	none

Physical Properties

	KHP®102
Density	8,9 g/cm ³
Electrical conductivity	35 m/Ω mm ² = 60% IACS ¹⁾²⁾ (29 m/Ω mm ² = 50% IACS ¹⁾²⁾ in temper R580)
Thermal conductivity	260 W/mK (197 W/mK in temper R580)
Coefficient of thermal expansion	17,0 x 10 ⁻⁶ /K
Young's Modulus	127 GPa

¹⁾ IACS = International Annealed Copper Standard

²⁾ reference values at room temperature 20 °C

Mechanical Properties

KHP®102

Temper	Tensile Strength R_m [MPa ¹⁾]	Yield Strength $R_{p0,2}$ [MPa ¹⁾]	Elongation A50 mm [%]	Hardness HV	Bendability			
					90° r/t ²⁾		180° r/t ²⁾	
					GW ³⁾	BW ⁴⁾	GW ³⁾	BW ⁴⁾
R360/H100	360-430	min. 250	min. 12	100-130	0	0	0	0
R410/H130	410-480	min. 360	min. 10	130-150	0	0	0,5	1,5
R460/H140	460-530	min. 430	min. 8	140-160	0,5	1	2	2,5
R520/H150	520-580	min. 490	min. 5	150-170	1	1,5	3,5	4
R580/H175	580-650	min. 540	min. 6	175-205	1,5	2	4,5	5

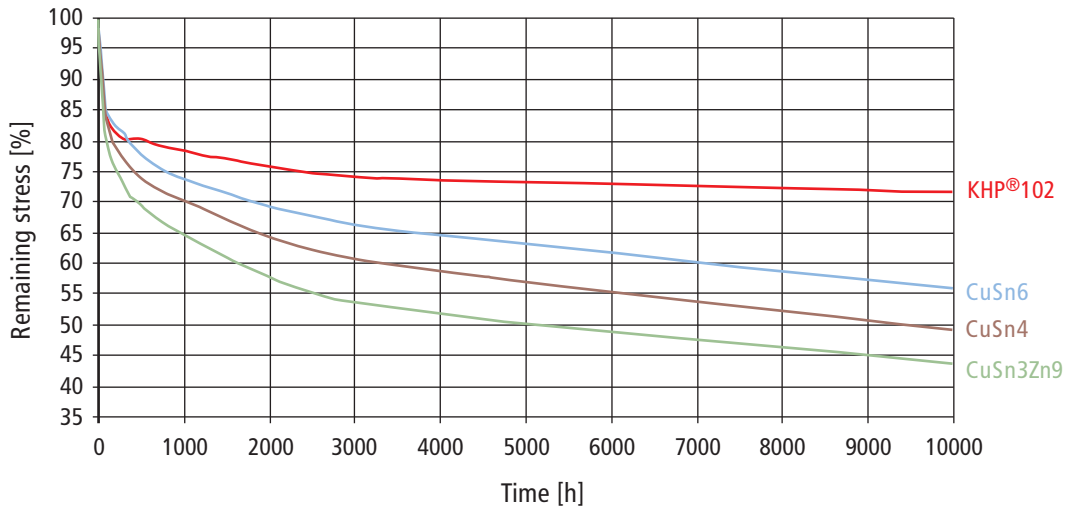
1) 1 MPa = 1 N/mm²

2) r = bending radius, t = strip thickness

3) GW = good way

4) BW = bad way

Stress Relaxation



KHP®102 age hardened,
other alloys stress relieve annealed
Temperature 150 °C
Initial Stress 0,8 x $R_{p0,2}$
Values extrapolated according to
Larson-Miller

Applications

Connector springs, tabs, contact springs, switches, relays, leadframes



Our products are tested, evaluated and subjected to stringent tests in every stage of our production process. KEMPER strips meet the highest technical requirements of the automotive, communications and electrical engineering industries worldwide. We ensure these requirements by our quality management system which is certified per ISO/TS 16949:2002 and DIN EN ISO 9001:2000. At KEMPER quality is an obligation for all our employees, resulting in products which you can lastingly rely on.



Liability: The details in this brochure are exclusively meant for general information only. They correspond to the state of knowledge at the time of issue and cannot replace the examination by our customers. Liability cannot be derived from the information.

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