

C19720

CuFeMgP

Alloy C19720 was developed by modifying the chemistry of C19700 in order to achieve improved reliability at elevated temperatures. It provides high conductivity and mechanical and physical properties identical to C19700. C19720 is an ideal fit for multi-mating connectors in automotive power distribution where high current-carrying capability and good strength are required.

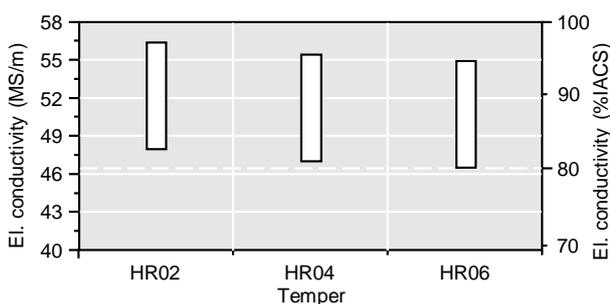
Chemical composition (Reference)	
Fe	0.3 %
Mg	0.1 %
P	0.1 %
Cu	balance

Physical properties (Reference values at room temperature)		
Electrical conductivity	49 MS/m	85 %IACS
Thermal conductivity	320 W/(m·K)	185 Btu·ft/(ft ² ·h·°F)
Coefficient of electrical resistance*	3.1 10 ⁻³ /K	1.7 10 ⁻³ /°F
Coefficient of thermal expansion*	17.3 10 ⁻⁶ /K	9.6 10 ⁻⁶ /°F
Density	8.84 g/cm ³	0.319 lb/in ³
Modulus of elasticity	118 GPa	17,200 ksi
Specific heat	0.377 J/(g·K)	0.090 Btu/(lb·°F)
Poisson's ratio	0.34	0.34

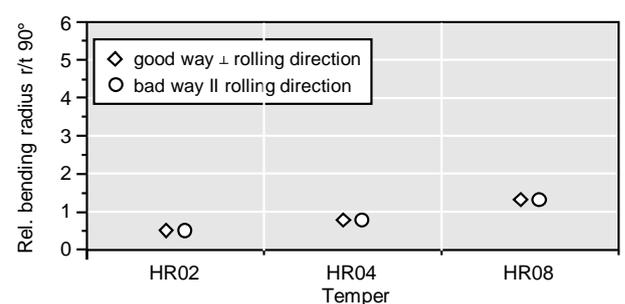
* Between 0 and 300 °C

Mechanical properties (values in brackets are for information only)					
Temper	Tensile strength R _m		Yield strength R _{p0.2}		Elongation A ₅₀ / A _{2"} %
	MPa	ksi	MPa	ksi	
HR02	365-435	53-63	(330)	(48)	(17)
HR04	415-480	60-70	(415)	(60)	(7)
HR06	460-505	67-73	(460)	(67)	(6)

Electrical conductivity



Bendability* (Strip thickness t ≤ 0.4 mm)

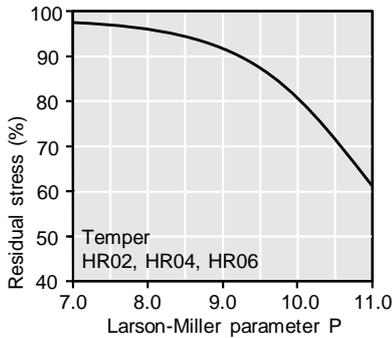


* Typical 90° bend formability. Data for reference only

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Thermal stress relaxation



Stress remaining after thermal relaxation as a function of Larson-Miller parameter P

(F. R. Larson, J. Miller, Trans ASME74 (1952) 765–775) given by:
 $P = (20 + \log(t)) \cdot (T + 273) \cdot 0.001$.

Time t in hours, temperature T in °C.

Example: P = 9 is equivalent to 1,000 h/118 °C.

Measured on stress-relief annealed specimens parallel to rolling direction.

Total stress relaxation depends on the applied stress level.

Furthermore, it is increased to some extent by cold deformation.

Fatigue strength

The fatigue strength is defined as the maximum bending stress amplitude which a material withstands for 10^7 load cycles under symmetrical alternate load without breaking. It is dependent on the temper tested and is about 1/3 of the tensile strength R_m .

Types and formats available

- Standard coils with outside diameters up to 1,400 mm
- Traverse-wound coils with drum weights up to 1.5 t
- Multicoil up to 5 t
- Hot-dip tinned strip
- Contour-milled strip

Dimensions available

- Strip thickness from 0.10 mm, thinner gauges on request
- Strip width from 3 mm, however min. 10 x strip thickness

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