Engineered Materials Solutions
Wickeder Group

CONFLEX Conducting Spring Materials — Data Sheet - CONFLEX 316

Product Overview

Conflex conducting spring materials offer cost and performance advantages over traditional current-carrying spring materials, such as solid copper, beryllium copper, and phosphor bronze, by combining the strength and spring properties of steel with the conductivity of copper. Virtually any combination of strength, elasticity, and conductivity is achievable with the proper material selection and placement in the clad composite. Typical applications include electrical contact blades, carrier strips, switch components, sliding contact fingers, pressure diaphragms, grounding strips, terminals, fuse clips and many other applications requiring structural strength combined with electrical and thermal conductivity.

Product Description

EMS Material Designation	**CONFLEX 316**
Composition	**Copper / 1065 Steel / Copper**
Ratio	**5 / 90 / 5**

Chemical Composition

UNS	Grade Eur	Chemistry (%)
C10200	OF-Cu	Cu+Ag 99.95 min., O 0.0010 max.
G10650	DIN 1.123	C 0.60-0.70, Mn 0.60-0.90, P 0.04 max., S 0.05 max.

Physical Properties	ENGLISH		METRIC	
Density	0.287	lb / in^3	7.94	g / cm^3
Electrical Conductivity	16	%IACS	0.093	µS / cm
Electrical Resistivity	64.8	cir mil ohm / ft	10.8	µohms-cm
Modulus of Elasticity	25,000	Kpsi	172	GPa
Coefficient of Thermal Expansion	7.20	µin / in-°F	13.0	µm / m-°C
Maximum Service Temperature	200 - 300	°F	93 - 150	°C

Mechanical Properties (Typical) (Annealed) See table for other tempers	ENGLISH		METRIC	
Yield Strength 0.2%offset	64	Kpsi	441	MPa
Tensile Strength	75	Kpsi	517	MPa
Elongation 2" gage length	30	%	30	%
Hardness (Steel layer)	170	HV	87	Rockwell B

Formability

The high carbon steel core produces a clad composite with good formabilty and excellent spring properties.

Engineered Materials Solutions
Wickeder Group

CONFLEX Conducting Spring Materials — Data Sheet - CONFLEX 316

Process Design

CONFLEX is typically provided fully annealed or with a cold rolled temper. If a heat treated temper is required, it is normal to perform this after parts fabrication. Standard heat treatment procedure is to anneal the product between 1,500 - 1,550 °F (815 - 840 °C) for 2 - 5 minutes, quench, and then heat treat for 30 minutes at the target tempering temperature.

System	Components	Ratio	Condition	Tensile Strength		0.2% Yield Strength		Elongation	Hardness (Steel)	
				KPsi	MPa	KPsi	MPa	(% in 2")	Vickers	Rockwell
Conflex 316	OF Copper 1065 Steel OF Copper	5% 90% 5%	Annealed	75	517	64	441	30	170	B87
			21% Cold Work Temper	107	738	97	669	8	257	C24
			37% Cold Work Temper	130	896	119	820	6	302	C30
			60% Cold Work Temper	153	1055	143	986	3	340	C35
			Heat Treat Temper, 900°F	165	1138	145	1000	7	390	C40
			Heat Treat Temper, 700°F	210	1448	190	1310	6	485	C48
			Heat Treat Temper, 500°F	240	1655	220	1517	4	610	C56

Availability

Gauge	0.0030 - 0.0600 inches (0.08 - 1.5 mm)
Width	Widths up to 20 inches (508 mm) available.
Ratio	Others available upon request
Surface	Bright (polished) or matte
Temper	Annealed, cold rolled, and heat treated tempers available.
Form	Coils or sheets

Contact

For additional information, please contact:

EMS North American Sales	*Dan Risner*	*1-508-212-9308*
EMS Europe	*James Craggs*	*+44 (0)7799 358 150*
EMS Asia	*CW Kong*	*+86-(514) 8891 6888*
EMS Corporate		*1-508-342-2100*

Revision 8/18/2014