

Öko-Institut e.V.
Institut für angewandte Ökologie
Postfach 17 71
79017 Freiburg
Hausadresse: Merzhauser Straße 173, 79100 Freiburg

6th November 2019

Contribution to RoHS consultation on Beryllium and its compounds (Not exhaustive)

Beryllium Copper

Use 1

Beryllium Copper remains the industry standard material for sprung loaded electrical contacts due to its unique combination of properties of elasticity, high electrical conductivity, high strength and hardness, thus ensure repeatable long-term reliability.

Image of Contact in carrier tape



Beryllium Copper Contact and Brass Alloy Shell

Contact Number 08 = Standard 6 Finger Contact
Current Rating = 18.00 Amps
Material = Beryllium Copper
Acceptance Range = .084"-.102" (2,134-2,591mm)

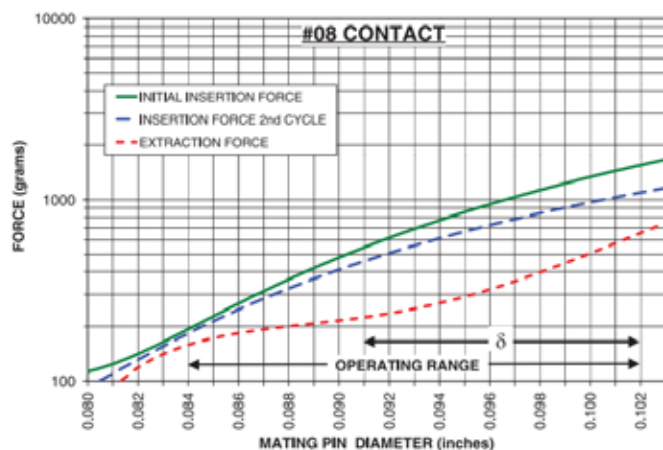
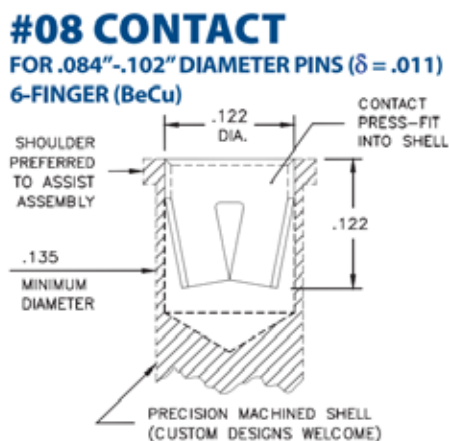
Shell Material Brass Alloy

Packaging Options 43: Packaged in Bulk With Organic Fibre Plug

Lifecycle Active

Design diagram and contact force information

CONTACT:

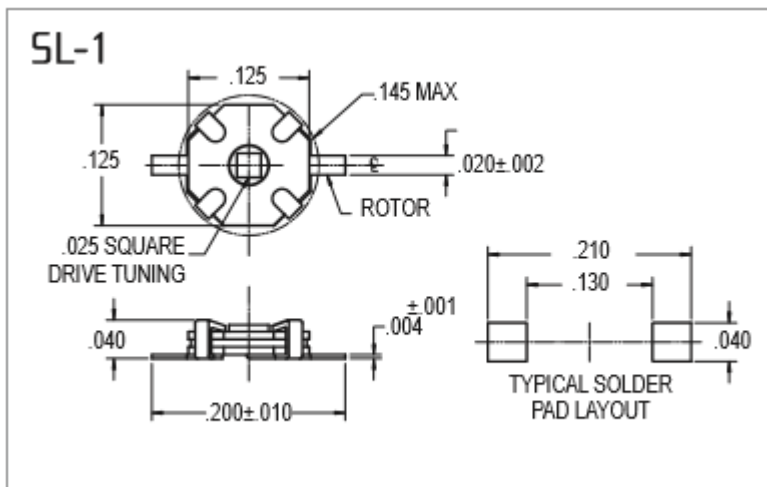


At this time, we are not aware of any alternatives to the commercially available Beryllium Copper clips that we buy and install in our components.

Beryllium Copper sprung loaded electrical contacts been use in some applications, such as those in Exemption 24 "Lead in solders for the soldering to machined through hole discoidal and planar array ceramic multilayer capacitors" to replace Lead containing solders

Use 2

The full material properties were not received prior to the deadline of this consultation, and thus a full assessment could not be report here. However it should be known that Beryllium Copper is used in the Trimmer product line, in product such as Thin-Trim Trimmers.



RoHS ✓ (Pb)		RANGE PF	MIN Q @100MHZ
9702-0	9702-0SL-1	0.5 TO 2.5	>3000
9702-1	9702-1SL-1	1.0 TO 5.0	>1000
9702-2	9702-2SL-1	2.5 TO 10.0	>1000
9702-4	9702-4SL-1	3.0 TO 12.0	>500
9702-6	9702-6SL-1	8.0 TO 25.0	>300
9702-8	9702-8SL-1	5.0 TO 15.0	>750
9702-9	9702-9SL-1	7.0 TO 18.0	>500

Beryllium Oxide

Use 1

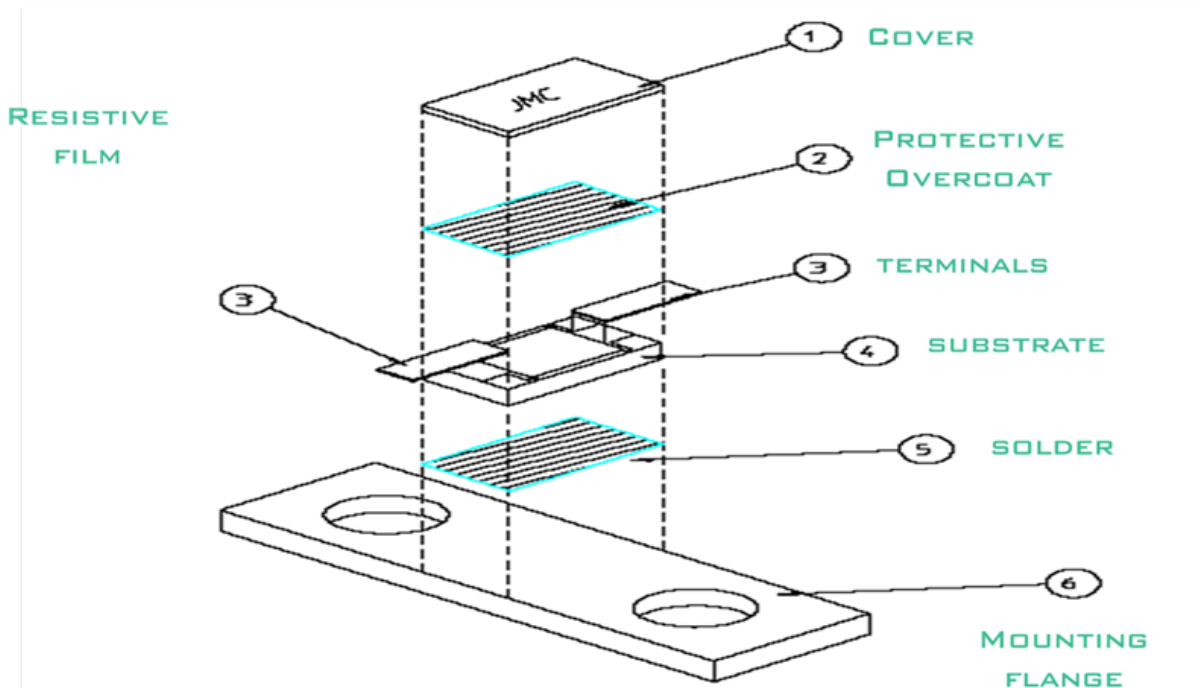
Beryllium Oxide is used in "Resistive Product" is essential due to its high thermal conductivity when compared to other materials such as AlN or Alumina. The BeO is item 4 in the diagram below, it is the substrate on to which the metal pattern is printed, it must be highly electrically insulating but thermally conductive.

BeO 325W/m K

AlN 180 W/m K

Alumina 35 W/m K (99.5% purity)

Without the BeO we would not be able to meet existing power specifications in the same form factor.



About Knowles Precision Devices

As a division of Knowles Corporation, Knowles Precision Devices (KPD), focuses on production of a wide variety of highly engineered Capacitors and Microwave to Millimeter Wave components for use in critical applications in military, medical, electric vehicle, and 5G market segments. Radar, pacemakers, MRI equipment, satellites, airplanes, electric vehicles and mobile phone base stations are just a few of the places you will find our products. Our products can be found in every corner of the world, from 8000ft below the earth's surface to orbiting 254 miles above us on the ISS.

We are a Specialty Components manufacturer, which means we choose to take on the complex challenges that come with High Reliability, High Temperature, High Performance and High Frequency solutions. This is built on our commitment to innovation, whether it be our ongoing creativity in manufacturing high performance multi-layer ceramic capacitors, or our unique ceramic formulations that allow us to provide the highest performance-for-footprint mmWave filters available.

Contact details for Öko-Institut e.V.

Sean England

[Product Compliance Manager](#)

Knowles Precision Devices

O: +44 1603 723368

Sean.England@knowles.com