

SAFETY PRACTICES FOR ELECTRICAL DISCHARGE MACHINING COPPER BERYLLIUM

SF5 - Version 3, March, 2018

Copper beryllium (CuBe), in solid form and as contained in finished products, presents no special health risks. Most manufacturing operations, conducted properly on well-maintained equipment, are capable of safely processing copper beryllium-containing materials. However, like many industrial materials, copper beryllium may present a health risk if handled improperly. The inhalation of dust, mist or fume containing beryllium can cause a serious lung condition in some individuals. The degree of hazard varies, depending on the form of the product, how it is processed and handled, as well as the amount of beryllium in the product. Read the product specific Safety Data Sheet (SDS) for additional environmental, health and safety information before working with copper beryllium alloys.

In addition, processing copper beryllium alloys shall be conducted in accordance with the Beryllium Standard for General Industry (29 CFR 1910.1024) established by the Occupational Safety and Health Administration (OSHA) which includes a Permissible Exposure Limits (PEL) of 0.2 microgram beryllium per cubic meter ($0.2 \mu\text{g}/\text{m}^3$) as an 8-hour Time Weighted Average (TWA), a Short-Term Exposure Limit (STEL) of $2.0 \mu\text{g}/\text{m}^3$ determined over a 15-minute sampling period and ancillary requirements prompted at an Action Level (AL) of $0.1 \mu\text{g}/\text{m}^3$ or other specified situations.

The Electrical Discharge Machining (EDM) process generates fine particulate which can be a hazard if inhaled. The machining action takes place in a dielectric fluid which serves to control the spark, cool the work and flush the machining swarf from the machining area. The particulate accumulates in a sump for eventual disposal. The dielectric fluid should be filtered to minimize build-up in the solution.

While most of the swarf is contained in the dielectric fluid, a small fraction may become airborne if the operation of the EDM equipment produces a fine mist. In this case, ventilation must be provided above the fluid to insure capture of the mist.

Disposal of fine scrap or sludge must be done carefully. While the dust is considered non-hazardous for landfill disposal, it must be packaged and handled in a manner that prevents it from becoming airborne during collection and disposal. Particulate from the sump presents minimal hazard if it is kept wet during removal and disposal. Do not allow particulate to be handled dry as this increases the risk of airborne generation. Ventilation must be provided if the particulate is handled in a manner that causes airborne generation. Where adequate ventilation is not possible, respiratory protection must be provided.

For information on ventilation systems suitable for particulate-generating operations, consult Materion Brush Inc.'s Safety Facts, "Ventilation of Operations Generating Beryllium Particulate" (SF9).



SAFETY FACTS



ADDITIONAL INFORMATION

The information contained in this Safety Facts applies only to the subject referenced in the title. Read the SDS specific to the products in use at your facility for more detailed environmental, health and safety guidance. SDSs can be obtained by contacting the Materion Brush Inc. Product Safety Hotline at (800) 862-4118 or visit our website at www.materion.com.

Additional information can also be obtained by contacting a Materion Brush Inc. Sales Representative or:

Product Stewardship Department
Materion Brush Inc.
6070 Parkland Boulevard
Mayfield Heights, Ohio 44124
(800) 862-4118