

Beryllium Copper Safe Handling Guide

OSHA 29 CFR 1910.1024 Compliance Requirements

Regulatory Reference: OSHA 29 CFR 1910.1024 - Beryllium Standard (General Industry)
Applicable Alloys: C17510, C17500, C17200, and any copper alloy containing ≥0.1% beryllium

- ⚠ HEALTH HAZARD WARNING:**
Beryllium dust and fumes are **TOXIC** and **CARCINOGENIC**.
- Can cause **Chronic Beryllium Disease (CBD)** - an incurable lung condition
 - Can cause **lung cancer**
 - Can cause **beryllium sensitization** - immune system reaction
 - Effects may not appear for years after exposure

EXPOSURE LIMITS (OSHA 29 CFR 1910.1024)

Limit Type	Value	Definition
PEL (TWA)	0.2 µg/m³	8-hour time-weighted average
STEL	2.0 µg/m³	15-minute short-term exposure limit
Action Level	0.1 µg/m³	Triggers additional requirements

OPERATIONS GENERATING BERYLLIUM EXPOSURE

- HIGH-RISK OPERATIONS:**
- Machining (turning, milling, drilling)
 - Grinding and polishing
 - Welding and brazing
 - Cutting with abrasive tools
 - Sandblasting or shot peening
 - EDM (wire cutting)

- LOW-RISK OPERATIONS:**
- Handling solid material
 - Using finished electrodes (no machining)
 - Visual inspection
 - Storage and inventory
 - Packaging for shipment

REQUIRED ENGINEERING CONTROLS

Control	Requirement
Local Exhaust Ventilation	HEPA-filtered exhaust at point of generation. Minimum capture velocity 100-200 ft/min at source.
Enclosures	Enclose machining operations where feasible. Use machine enclosures with negative pressure.
Wet Methods	Use coolant/lubricant during machining to suppress dust. Mist collection required.
HEPA Vacuuming	Clean work areas with HEPA-filtered vacuums only. NO dry sweeping or compressed air.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

PPE Type	Minimum Requirement
Respiratory Protection	NIOSH-approved respirator with P100 or HEPA filters. APF ≥ 10 for exposures up to $2.0 \mu\text{g}/\text{m}^3$.
Protective Clothing	Disposable coveralls or dedicated work clothing. Change before leaving work area.
Gloves	Nitrile or other impervious gloves when handling contaminated materials.
Eye Protection	Safety glasses with side shields. Face shield for grinding/welding.

HYGIENE PRACTICES:

- Wash hands and face before eating, drinking, smoking, or leaving work area
- Do NOT eat, drink, smoke, or apply cosmetics in beryllium work areas
- Shower before leaving facility if significant exposure occurred
- Do NOT take contaminated clothing home - launder on-site or use licensed service

WASTE DISPOSAL REQUIREMENTS

Waste Type	Disposal Method
Machining chips/swarf	Collect in sealed containers. Label as beryllium-containing waste. Dispose via licensed hazardous waste handler.
Coolant/lubricant	Filter and recycle if possible. Contaminated coolant is hazardous waste.
HEPA vacuum bags	Seal in plastic bags. Dispose as hazardous waste.
Disposable PPE	Place in sealed bags. Dispose as hazardous waste if visibly contaminated.

BERYLLIUM-FREE ALTERNATIVE: Consider using C18000 (CuCrNiSi) as a beryllium-free Class 3 alternative. No special handling, ventilation, or disposal requirements. Contact ALCAVIL for application-specific recommendations.

ADDITIONAL OSHA REQUIREMENTS:

- **Exposure assessment** - Initial and periodic air monitoring
- **Medical surveillance** - Annual exams for exposed workers
- **Training** - Annual beryllium hazard training for all affected employees
- **Regulated areas** - Demarcate and restrict access to beryllium work areas
- **Recordkeeping** - Maintain exposure and medical records per OSHA requirements