

Material Safety Data Sheet
(Complies with 29 CFR 1910.1200)

| Section I | | | |
|-----------------|--|----------------|----------|
| Manufacturer | Carlisle Brake & Friction 920 Lake Road Medina, Ohio 44256 | | |
| Emergency Phone | 330-725-4941 | Effective Date | 5-Jun-86 |
| Chemical Name | Friction Material | Revision Date | 5-Jan-15 |
| Tradename | Sintered Friction Material | | |
| Category | Inorganic- 790A | | |

| Section II-Hazardous Ingredients/Identity | | | | |
|---|---------------------------|-------------------|-------------|-----------|
| Component | OSHA-PEL (mg/m3) | ACGIH-TLV (mg/m3) | % | CAS No. |
| Copper | 1.0 | 1.0 | Proprietary | 7440-50-8 |
| Phosphorous | 0.1 | 0.1 | Proprietary | 7723-14-0 |
| Carbon | Total=15.0 Resp.= 5.0 | 10.0 | Proprietary | 7782-42-5 |
| Silicon Dioxide | 0.1*(Respirable fraction) | 0.1* | Proprietary | 7782-42-5 |
| Iron | Total=15.0 Resp.= 5.0 | 10.0 | Proprietary | 7439-89-6 |
| Lead | 0.05 | 0.15 | Proprietary | 7439-92-1 |
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| Section III Physical Characteristics | | | |
|--------------------------------------|-----------|-------------------------------|------------------------|
| Boiling Point | Cu-4680 F | Sp.Gr. (H ₂ O = 1) | Cu-8.9 |
| Vapor Press (mm Hg) | N/A | Solubility in Water | Not soluble |
| Reactivity in Water | N/A | Vapor Density | N/A |
| Melting Point | N/A | Color | Reddish colored powder |
| Appearance/Odor | Odorless | | |

| Section IV-Fire and Explosion Data | | | |
|------------------------------------|--|-----------------------------|---|
| Flashpoint | N/A | Method Used | N/A |
| Flammable Limits (LEL/UEL) | N/A | Special Fire Fighting Proc. | None |
| Auto Ignition Temperature | Cu-Above 1290 F 700 C | Extinguishing Media | Graphite, dolomite, NaCl, CO ₂ , foam, dry chemical |
| Unusual Fire and Explosion Hazards | Copper powder below 50 µm size range is classified as weakly explosive material. When present as a dust cloud, will not explode readily in air. Not easily ignited. | | |

| Section V-Reactivity Data | |
|-------------------------------------|--------------------------|
| Stability | Stable |
| Incompatibility(Materials to Avoid) | N/A |
| Hazardous Decomposition Products | N/A |
| Hazardous Polymerization | Will not occur. |
| Conditions to Avoid | Strong oxidizing agents. |

Section VI -Health Hazards

Effects of Overexposure:

- a) Chronic exposure to carbon as graphite dust can cause fibrosis, emphysema and corpulmale.
 - b) Inhalation of high concentrations of copper dust may cause intense sneezing, nausea, weakness, and fever, hemolysis of red blood cells, deposition of hemofuscin in the liver and possible injury to lung cells.
 - c) Exposure to respirable crystalline quartz may cause delayed (chronic) lung disease (silicosis); acute or rapidly developing silicosis may occur in a short period of time in heavy exposure. Silicosis is a form of disabling pulmonary fibrosis which can be progressive and may lead to death. Crystalline quartz is listed by the IARC as a Group 2A (known carcinogen); and determined by the NTP as an anticipated human carcinogen.
 - d) Lead can cause sperm malformation, central nervous system disorders, peripheral neuropathy, gastro intestinal disturbances, kidney damage, and anemia. Lead exposure has been reported to reduce mental ability and has been linked to birth defects. Lead is listed by IARC as Group 2B, possibly carcinogenic to humans and is also listed as a carcinogen by the EPA.
 - e) Iron can cause coughing, slight upper respiratory irritation, and a metallic taste in the mouth.
- Skin: Repeated exposure to copper (as salts) may casue dermatitis.

Emergency Procedures

- Eye Contact: Copper may cause conjunctivitis or ulceration and turbidity of the cornea. In case of contact, immediately flush with water for 15 min. including under the eyelids. Seek medical help if material cannot be adequately removed from the eye.
- Skin Contact: Wash thoroughly with soap and water.
- Inhalation: Following exposure to a large amount of dust, remove from exposure. If breathing has stopped, perform artificial respiration. Contact a physician.
- Ingestion: Under normal conditions of industrial use, ingestion is not expected to occur.

Section VII- Spill/Leak Procedures

| | |
|------------------------|--|
| Handling, Storage | N/A |
| DOT Shipping Rules | Non-hazardous as "article", no special precautions. |
| Spill/Leak | Preferably vacuum to clean up. Avoid dusting. Wear respirator. |
| Waste Disposal Methods | Check with local counsel for applicable laws/regulations. |

Section VIII-Special Protection/Control Methods

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|------------------------------------|---|
| Respiratory Protection/Ventilation | Use a NIOSH approved respirator with appropriate filters when exposed to brake wear products. Use exhaust venhilation to keep exposure below exposure limits. |
| Protective Gloves | Recommended, particularly if sensitive skin. |
| Eye Protection | Recommended. |
| Other Protective Equipment | Long sleeve shirts recommended. |

Section IX- Special Precautions

Store inside dry area. Temperature 0-100F.

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