



Material Safety Data Sheet

PRODUCT IDENTITY (As used on the label or friction material)
FA903, FA904, FA906, FA908, DEX101

No. 0209

1. GENERAL INFORMATION

Manufacturer:
Federal-Mogul Friction Products
1 Grizzly Lane
Smithville
Tennessee, 37166.

U.S.A. Contact: Michael J. Campbell
Federal Mogul Friction Products
1 Grizzly Lane
Smithville
Tennessee, 37166.

Information No: 1-800-251-3228 (Ext. 431)
Revised: 26th May 1999
DOT Hazard Code: N/A

2. HAZARDOUS INGREDIENTS AND EXPOSURE LIMITS

Although several of the ingredients used to formulate this product may be hazardous in the raw state, the manufacturing process results in a solid, infusible form, binding or otherwise rendering the mixture inert. We have identified below those hazardous constituents present in quantities greater than 1% (0.1% for carcinogens) that may be released from the product by overheating, burning, machining, abrading, or riveting. The products listed above may, or may not, contain all of the ingredients listed below.

Component	OSHA PEL	ACGIH TLV
Non Vitreous Organic Fibers	2 fibers/cc (respirable)*	N/A
Graphite	2.0 mg/m ³ (respirable)	2.0 mg/m ³ (respirable)
Mineral Wool	1 fiber/cc **	N/A
Silica (Quartz)	0.1 mg/m ³ (respirable)	0.1 mg/m ³ (respirable)
Carbon Black	3.5 mg/m ³	3.5 mg/m ³
Alumina, Barium Sulfate, Calcium Carbonate, Cellulose, Hydrated Lime, Steel Fiber, Whiting, Wollastonite, Nitrile Rubber	10 mg/m ³ (total dust) 5 mg/m ³ (Respirable)	10 mg/m ³ (total dust)

N/A = Not Applicable or Available

- * No OSHA limit has been established for this substance. The limit shown is a recommended limit established by a manufacturer of one such fiber.
- ** No OSHA limit has been established for this substance. The value shown is a proposed limit recommended by the manufacturer's trade association (TIMA). ACGIH lists a TLV Notice of Intended Changes to 1 f/cc
- *** No OSHA limit has been established specifically for this natural substance. The limit shown is for synthetic calcium silicate

3. PHYSICAL AND CHEMICAL CHARACTERISTICS

Boiling Point: N/A **Vapor Density:** N/A **Vapor Pressure:** N/A

Melting Point: N/A **Solubility in water:** Insoluble **Odor:** Cashew
Color: Black **Specific Gravity:** 1.69 - 1.87 g/cc **Form:** Solid
Evaporation Rate: 0

4. FIRE AND EXPLOSION DATA

Auto-ignition Temperature: This product is inherently flame resistant but may ignite at temperatures exceeding 1112°F (600°C) in an oxygen-enriched atmosphere.
Flammable Limits in Air: % in Air by Volume: LEL: N/A UEL: N/A
Extinguisher Media: Use media suitable for surrounding fire.
Special Fire-Fighting Procedure: None.
Unusual Fire and Explosion Hazards: None.

5. PHYSICAL HAZARDS AND REACTIVITY DATA

Stability: Stable at normal temperatures and storage conditions.
Incompatibility: None.
Hazardous Decomposition Products: None
Hazardous Polymerization: Will not polymerize. This product is fully cured in the manufacturing process.

6. HEALTH HAZARDS

Carcinogenicity:	NTP Listed	IARC Listed	NIOSH Listed	OSHA Listed	"Prop 65"
Silica(Quartz)*	Yes	1	Yes	No	Yes
Mineral Wool**	Yes	2B	No	No	No
Carbon Black***	No	2B	No	No	Yes
Alumina, Barium Sulfate, Graphite, Hydrated Lime, Organic Fibers, Steel Fiber, Whiting, Wollastonite, Nitrile Rubber	No	No	No	No	No

- * IARC classifies this chemical "carcinogenic to humans." (Group 1)
- ** IARC classifies man-made mineral fibers (diameter <1 µm) as "possibly carcinogenic to humans." (Group 2B)
ACGIH classifies synthetic vitreous fibers (rock wool fibers) as "animal carcinogen." (TLV-A3)
- *** IARC classifies this chemical as "possibly carcinogenic to humans." (Group 2B)

Symptoms and Effects of Exposure to the Individual Components:

ARAMID FIBERS

Inhalation hazards - Overexposure to respirable fibers by inhalation may cause mild and temporary upper respiratory irritation, with discomfort or cough. Based on animal testing, prolonged and repeated exposure to excessive concentrations of respirable fibers may cause permanent lung injury. **Other hazards** - Skin sensitization has not been observed in human tests. The mechanical action of fibers may

cause slight skin irritation at clothing binding points and mild irritation of the eyes and nasal passages.

GRAPHITE

Inhalation hazards - Acute: exposure may result in cough, dyspnea, black sputum, and fibrosis. Chronic: Prolonged exposure may cause pneumoconiosis. It is reported that diseases of the respiratory and cardiovascular system may be aggravated by exposure.

MAN-MADE MINERAL FIBERS - (MMM - GLASSWOOL, SLAGWOOL, LOOSE WOOL, AND ROCKWOOL)

Inhalation hazards - Exposure to respirable fibers by inhalation may cause temporary upper respiratory irritation, with discomfort and cough. Prolonged exposure may cause chronic lung disease. IARC classifies man-made mineral fibers (diameter <1 μ m) as "possibly carcinogenic to humans." (Group 2B). ACGIH classifies synthetic vitreous fibers (rock wool fibers) as "animal carcinogen" (TLV-A3). **Other hazards** - The mechanical action of fibers may cause skin irritation and irritation of the eyes and nasal passages. Ingestion may cause gastrointestinal irritation, vomiting, and diarrhea.

SILICA DUST

Inhalation hazards - Acute: Exposure to silica dust may cause paroxysmal coughing, wheezing, dyspnea and upper respiratory tract irritation. Chronic: Prolonged exposure to silica dust may cause silicosis. Quartz has been classified by IARC as "carcinogenic to humans." (Group 1) **Other hazards** - Eye or skin contact can cause temporary discomfort and irritation.

CARBON BLACK

Inhalation hazards - Should be treated as a nuisance dust. Exposure may cause temporary upper respiratory tract discomfort. IARC classifies carbon black as "possibly carcinogenic to humans." (Group 2B).

NITRILE RUBBER

Inhalation hazards - Gases and fumes from thermal processing or decomposition of this product may cause irritation of respiratory tract, skin and eyes. **Other hazards** - Eyes - may cause eye irritation if material introduced into the eye. Eyes may feel scratchy, become red, and tear.

ALUMINA

Inhalation hazards - Exposure to alumina may cause coughing, shortness of breath. Chronic: Prolonged exposure may affect breathing capacity. **Other hazards** - Ingestion is not recommended but no adverse effects have been reported. Alumina is not known to be absorbed through the skin, but contact may cause abrasion. Dust may irritate eyes.

BARIUM SULFATE

Inhalation hazards - Should be treated as a nuisance dust. Exposure to Barium Sulfate may cause paroxysmal coughing, wheezing, difficult breathing and upper respiratory tract irritation. **Other hazards** - No adverse effects have been reported from ingestion. Eye contact may cause temporary discomfort and irritation.

CELLULOSE

A non-toxic, fibrous flock, practically odorless. **Inhalation hazard** - Acute: dryness of nose, eye irritation, and nasal obstruction. Chronic: no data available.

HYDRATED LIME

Inhalation hazards - Dust may cause irritation of nasal and respiratory passages. **Other hazards** - Lime is a strong eye irritant, and may cause corrosive damage and blindness. Exposure to dust may cause severe skin irritation, drying and burning, particularly with damaged skin. Swallowing of excessive amounts may damage mucous membranes of digestive system. There are no known chronic

hazards.

STEEL FIBER

An odorless gray metal containing iron, manganese, silicon and copper. **Inhalation hazard - Acute:** metal fume fever with symptoms of chills, fever, cough, muscle aches and difficulty in breathing from manganese; silicon can cause respiratory tract irritation; copper can cause irritation of eyes, nose, throat and lungs with possibility of metal fume fever, chills, nausea, fever, dry throat, cough, metallic taste. **Chronic:** repeated exposure to iron over time may cause lung changes, benign pneumoconiosis; cumulative central nervous system and lung damage may occur with manganese as well as insomnia, malaise and asthenia; may cause irritation of the lungs and discoloration of the skin and hair.

WHITING (CALCIUM CARBONATE)

A white, finely pulverized powder with no odor, containing 85-88% calcium carbonate; 10-13% magnesium carbonate; and <1% crystalline silica. **Inhalation hazard -** Limestone dust is considered a nuisance dust. Prolonged exposure may cause irritation to throat and lungs. Silica content is not considered high enough to cause silicosis unless exposures are extremely high and prolonged. **Other hazards -** May cause irritation to eyes and skin.

WOLLASTONITE

A non-metallic mineral powder, white in color with a faint odor. **Inhalation hazard -** long term cumulative inhalation of heavy concentrations may cause restriction of the large airways. **Other hazards -** May cause minor skin irritation.

EMERGENCY AND FIRST AID PROCEDURES:

Inhalation: Move to fresh air. Obtain medical attention.

Eyes: Flush with water to remove particulate. Obtain medical attention.

Skin: Wash thoroughly with soap and water. If persistent irritation develops, obtain medical attention.

Ingestion: Obtain medical attention.

7. SPECIAL PRECAUTIONS AND SPILL / LEAK PROCEDURES

Handling and Storage: Shipping and storage may result in accumulation of dust in shipping containers. If this occurs, dispose of the container in an airtight polyethylene bag (see disposal instructions below) or remove dust by vacuuming or wet mopping. Vacuums used for this purpose should be equipped with HEPA filters. Do not use compressed air to blow dust from storage containers.

Release or Spill: If a release of dust occurs during machining, abrading, or riveting, remove dust by vacuuming or wet mopping. Vacuums used for this purpose should be equipped with HEPA filters. Do not use compressed air to blow dust from the workplace.

Waste Disposal: Federal and state law regulates disposal of solid waste. Waste should be placed in airtight containers, and disposed of properly. Contact local regulatory agency for guidance.

8. PERSONAL PROTECTION AND CONTROL

Respiratory Protection: Use NIOSH-approved respirator if exposure to dust, vapors, or fumes in concentrations exceeding PEL's or TLV's is possible. (See 29 CFR 1910.134 for respiratory

protection standards)

Ventilation: Any operations which may produce dust, including machining, grinding, riveting, or abrading of this product, should be adequately exhausted to prevent inhalation of dust.

Personal Protective Equipment: Suitable respiratory protection should be worn if dust exposure is possible. All regulations and safe practices related to the use of respiratory protection must be observed. Refer to OSHA standards and NIOSH guidelines. If skin irritation occurs, gloves and other protective garments may be worn.

The information and recommendations set forth herein are taken from sources believed to be accurate as of the date of revision. Federal-Mogul makes no warranty with respect to the accuracy of the information or the suitability of the recommendations, and assumes no liability, including direct, incidental or consequential damages for any reliance thereon.

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