

## 1. Product and Company Identification

**Material name** FA511  
**Version #** 01  
**Issue date** 14-May-2014  
**Revision date** -  
**Supersedes date** -  
**CAS #** Mixture  
**Product code** 340  
**Product use** Friction material, disc brake pad.  
**Manufacturer information**  
**Manufacturer/Supplier** Federal-Mogul World Headquarters  
 26555 Northwestern Highway  
 Southfield, Michigan 48033  
 USA  
**Contact person:** msds.request@federalmogul.com  
**Emergency Telephone:** 24hr EP (INFOTRAC): 1-800-535-5053  
 International: (001) 352-323-3500

## 2. Hazards Identification

**Physical state** Solid.  
**Appearance** Solid (article).  
**Emergency overview** Low hazard for recommended handling by trained personnel.  
 Dust can be created by the machining of finished products.  
**OSHA regulatory status** Under some use conditions, this material may be considered to be hazardous in accordance with OSHA 29 CFR 1910.1200.  
**Potential health effects**  
**Routes of exposure** Not relevant, due to the form of the product in its manufactured and shipped state.  
**Eyes** Dust may irritate the eyes.  
**Skin** The ingredients may be released as general dust from the product by operations such as overheating, burning, machining, abrading, or riveting. Dust may irritate skin.  
**Inhalation** The ingredients may be released as general dust from the product by operations such as overheating, burning, machining, abrading, or riveting. Dust may irritate the respiratory system. Inhalation may lead to deposition in lung and in sufficient quantities produce baritosis.  
**Ingestion** The ingredients may be released as general dust from the product by operations such as overheating, burning, machining, abrading, or riveting. May cause discomfort if swallowed.  
**Target organs** Eyes. Respiratory system. Skin. Lung.  
**Chronic effects** The ingredients may be released as general dust from the product by operations such as overheating, burning, machining, abrading, or riveting. May cause lung damage.  
**Signs and symptoms** Exposed individuals may experience eye tearing, redness, and discomfort.  
**Potential environmental effects** Not relevant, due to the form of the product in its manufactured and shipped state.

## 3. Composition / Information on Ingredients

Components	CAS #	Percent
Barium sulphate	7727-43-7	30 - 60
Magnesium oxide	1309-48-4	7 - 13
Graphite	7782-42-5	5 - 10
Mica	12001-26-2	3 - 7
Antimony sulfide	1345-04-6	1 - 5
Aramid fiber	26125-61-1	1 - 5

Components	CAS #	Percent
Calcined petroleum coke	64743-05-1	1 - 5
Calcium hydroxide	1305-62-0	1 - 5

**Composition comments** All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

The ingredients may be released as general dust from the product by operations such as overheating, burning, machining, abrading, or riveting. This product contains a variety of ingredients all of which have become part of a bound system both physically and chemically and do not necessarily exhibit the properties of the individual components.

#### 4. First Aid Measures

##### First aid procedures

**Eye contact** Dust in the eyes: Immediately flush with plenty of water for up to 15 minutes. Remove any contact lenses and open eyelids wide apart. Get medical attention if irritation develops and persists.

**Skin contact** Remove contaminated clothing immediately and wash skin with soap and water. Get medical attention if irritation develops and persists.

**Inhalation** Move injured person into fresh air and keep person calm under observation. If necessary, seek hospital and take along these instructions.

**Ingestion** If swallowed, rinse mouth with water (only if the person is conscious). Get medical attention if any discomfort continues.

**Notes to physician** Treat symptomatically.

**General advice** Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

#### 5. Fire Fighting Measures

**Flammable properties** This product is not flammable.

##### Extinguishing media

**Suitable extinguishing media** Use fire-extinguishing media appropriate for surrounding materials.

**Unsuitable extinguishing media** None.

##### Protection of firefighters

**Specific hazards arising from the chemical** By heating and fire, toxic vapors/gases may be formed.

**Protective equipment and precautions for firefighters** Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

**Fire fighting equipment/instructions** Use standard firefighting procedures and consider the hazards of other involved materials.

**Hazardous combustion products** Carbon dioxide. Carbon monoxide.

**General fire hazards** This product is not flammable. Will burn if involved in a fire.

#### 6. Accidental Release Measures

**Personal precautions** Use explosion-proof electrical equipment if airborne dust levels are high. Avoid dust formation. Avoid inhalation of dust and contact with skin and eyes. Wear necessary protective equipment. See Section 8 of the MSDS for Personal Protective Equipment.

**Environmental precautions** Avoid discharge into drains, water courses or onto the ground. Collect and dispose of spillage as indicated in Section 13 of the MSDS.

**Methods for containment** In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

**Methods for cleaning up** Collect powder using special dust vacuum cleaner with particle filter or carefully sweep into closed container. Do not vacuum clean unless vacuum cleaners are equipped with HEPA filter. For waste disposal, see Section 13 of the MSDS.

## 7. Handling and Storage

### Handling

Provide adequate ventilation. Avoid dust formation. Avoid inhalation of dust and contact with skin and eyes. Use work methods which minimize dust production. See Section 8 of the MSDS for Personal Protective Equipment. Observe good industrial hygiene practices.

### Storage

Store in tightly closed original container. Avoid conditions which create dust. Protect against direct sunlight. Store away from incompatible materials.

## 8. Exposure Controls / Personal Protection

### Occupational exposure limits

#### ACGIH

Components	Type	Value	Form
Calcined petroleum coke (CAS 64743-05-1)	TWA	3 mg/m <sup>3</sup>	Respirable fraction.
		10 mg/m <sup>3</sup>	Total dust.

#### US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Antimony sulfide (CAS 1345-04-6)	TWA	0.5 mg/m <sup>3</sup>	
Barium sulphate (CAS 7727-43-7)	TWA	10 mg/m <sup>3</sup>	
Calcium hydroxide (CAS 1305-62-0)	TWA	5 mg/m <sup>3</sup>	
Graphite (CAS 7782-42-5)	TWA	2 mg/m <sup>3</sup>	Respirable fraction.
Magnesium oxide (CAS 1309-48-4)	TWA	10 mg/m <sup>3</sup>	Inhalable fraction.
Mica (CAS 12001-26-2)	TWA	3 mg/m <sup>3</sup>	Respirable fraction.

#### U.S. - OSHA

Components	Type	Value	Form
Calcined petroleum coke (CAS 64743-05-1)	PEL	5 mg/m <sup>3</sup>	Respirable fraction.
		15 mg/m <sup>3</sup>	Total dust.

#### US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
Antimony sulfide (CAS 1345-04-6)	PEL	0.5 mg/m <sup>3</sup>	
Barium sulphate (CAS 7727-43-7)	PEL	5 mg/m <sup>3</sup>	Respirable fraction.
		15 mg/m <sup>3</sup>	Total dust.
Calcium hydroxide (CAS 1305-62-0)	PEL	5 mg/m <sup>3</sup>	Respirable fraction.
		15 mg/m <sup>3</sup>	Total dust.
Graphite (CAS 7782-42-5)	PEL	5 mg/m <sup>3</sup>	Respirable fraction.
		15 mg/m <sup>3</sup>	Total dust.
Magnesium oxide (CAS 1309-48-4)	PEL	15 mg/m <sup>3</sup>	Total particulate.

#### US. OSHA Table Z-3 (29 CFR 1910.1000)

Components	Type	Value
Graphite (CAS 7782-42-5)	TWA	15 millions of particle
Mica (CAS 12001-26-2)	TWA	20 mppcf

#### Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Components	Type	Value	Form
Antimony sulfide (CAS 1345-04-6)	TWA	0.5 mg/m <sup>3</sup>	
Barium sulphate (CAS 7727-43-7)	TWA	10 mg/m <sup>3</sup>	

**Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)**

Components	Type	Value	Form
Calcium hydroxide (CAS 1305-62-0)	TWA	5 mg/m <sup>3</sup>	
Graphite (CAS 7782-42-5)	TWA	2 mg/m <sup>3</sup>	Respirable.
Magnesium oxide (CAS 1309-48-4)	TWA	10 mg/m <sup>3</sup>	Fume.
Mica (CAS 12001-26-2)	TWA	3 mg/m <sup>3</sup>	Respirable.

**Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)**

Components	Type	Value	Form
Antimony sulfide (CAS 1345-04-6)	TWA	0.5 mg/m <sup>3</sup>	
Barium sulphate (CAS 7727-43-7)	TWA	3 mg/m <sup>3</sup>	Respirable fraction.
		10 mg/m <sup>3</sup>	Total dust.
Calcium hydroxide (CAS 1305-62-0)	TWA	5 mg/m <sup>3</sup>	
Graphite (CAS 7782-42-5)	TWA	2 mg/m <sup>3</sup>	Respirable.
Magnesium oxide (CAS 1309-48-4)	STEL	10 mg/m <sup>3</sup>	Respirable dust and/or fume.
	TWA	3 mg/m <sup>3</sup>	Respirable dust and/or fume.
		10 mg/m <sup>3</sup>	Inhalable fume.
Mica (CAS 12001-26-2)	TWA	3 mg/m <sup>3</sup>	Respirable.

**Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)**

Components	Type	Value	Form
Antimony sulfide (CAS 1345-04-6)	TWA	0.5 mg/m <sup>3</sup>	
Barium sulphate (CAS 7727-43-7)	TWA	10 mg/m <sup>3</sup>	
Calcium hydroxide (CAS 1305-62-0)	TWA	5 mg/m <sup>3</sup>	
Graphite (CAS 7782-42-5)	TWA	2 mg/m <sup>3</sup>	Respirable fraction.
Magnesium oxide (CAS 1309-48-4)	TWA	10 mg/m <sup>3</sup>	Inhalable fraction.
Mica (CAS 12001-26-2)	TWA	3 mg/m <sup>3</sup>	Respirable fraction.

**Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)**

Components	Type	Value	Form
Antimony sulfide (CAS 1345-04-6)	TWA	0.5 mg/m <sup>3</sup>	
Barium sulphate (CAS 7727-43-7)	TWA	10 mg/m <sup>3</sup>	
Calcium hydroxide (CAS 1305-62-0)	TWA	5 mg/m <sup>3</sup>	
Graphite (CAS 7782-42-5)	TWA	2 mg/m <sup>3</sup>	Respirable fraction.
Magnesium oxide (CAS 1309-48-4)	TWA	10 mg/m <sup>3</sup>	Inhalable fraction.
Mica (CAS 12001-26-2)	TWA	3 mg/m <sup>3</sup>	Respirable fraction.

**Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)**

Components	Type	Value	Form
Antimony sulfide (CAS 1345-04-6)	TWA	0.5 mg/m <sup>3</sup>	
Barium sulphate (CAS 7727-43-7)	TWA	5 mg/m <sup>3</sup>	Respirable dust.
		10 mg/m <sup>3</sup>	Total dust.
Calcium hydroxide (CAS 1305-62-0)	TWA	5 mg/m <sup>3</sup>	
Graphite (CAS 7782-42-5)	TWA	2 mg/m <sup>3</sup>	Respirable dust.

**Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)**

Components	Type	Value	Form
Magnesium oxide (CAS 1309-48-4)	TWA	10 mg/m3	Fume.
Mica (CAS 12001-26-2)	TWA	3 mg/m3	Respirable dust.

**Mexico. Occupational Exposure Limit Values**

Components	Type	Value	Form
Antimony sulfide (CAS 1345-04-6)	TWA	0.5 mg/m3	
Calcium hydroxide (CAS 1305-62-0)	TWA	5 mg/m3	
Graphite (CAS 7782-42-5)	TWA	10 mg/m3	
Magnesium oxide (CAS 1309-48-4)	TWA	10 mg/m3	Fume.
Mica (CAS 12001-26-2)	TWA	3 mg/m3	

**Engineering controls** Use explosion-proof electrical equipment if airborne dust levels are high. Provide adequate ventilation. Observe Occupational Exposure Limits and minimize the risk of inhalation of dust.

**Personal protective equipment**

**Eye / face protection** Wear approved safety goggles.

**Skin protection** Wear protective gloves (i.e. latex, nitrile). Wear suitable protective clothing. Suitable gloves can be recommended by the glove supplier.

**Respiratory protection** If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. During dust-raising work: In the United States of America, if respirators are used, a program should be instituted to assure compliance with OSHA Standard 1910.134. Respirator type: Any powered, air-purifying respirator with a high-efficiency particulate filter.

**General hygiene considerations** Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

**9. Physical & Chemical Properties**

<b>Appearance</b>	Solid (article).
<b>Physical state</b>	Solid.
<b>Form</b>	Solid (Disc pad).
<b>Color</b>	Gray.
<b>Odor</b>	None.
<b>Odor threshold</b>	Not applicable.
<b>pH</b>	Not applicable.
<b>Vapor pressure</b>	Not applicable.
<b>Vapor density</b>	Not applicable.
<b>Boiling point</b>	Not applicable.
<b>Melting point/Freezing point</b>	Not applicable.
<b>Solubility (water)</b>	Not available.
<b>Specific gravity</b>	2 - 3 (20 °C)
<b>Flash point</b>	Not applicable.
<b>Flammability limits in air, upper, % by volume</b>	Not applicable.
<b>Flammability limits in air, lower, % by volume</b>	Not applicable.
<b>Auto-ignition temperature</b>	Not applicable.

**10. Chemical Stability & Reactivity Information**

<b>Chemical stability</b>	Material is stable under normal conditions.
<b>Conditions to avoid</b>	None known.
<b>Incompatible materials</b>	None.

**Hazardous decomposition products** Carbon dioxide. Carbon monoxide.

**Possibility of hazardous reactions** Will not occur.

## 11. Toxicological Information

### Toxicological data

Components	Species	Test Results
Calcium hydroxide (CAS 1305-62-0)		
<b>Acute</b>		
<i>Oral</i>		
LD50	Rat	7340 mg/kg
<b>Sensitization</b>	Not a skin sensitizer.	
<b>Acute effects</b>	The ingredients may be released as general dust from the product by operations such as overheating, burning, machining, abrading, or riveting. Dust may cause eye, skin and respiratory tract irritation. Inhalation may lead to deposition in lung and in sufficient quantities produce baritosis.	
<b>Chronic effects</b>	The ingredients may be released as general dust from the product by operations such as overheating, burning, machining, abrading, or riveting. May cause lung damage.	
<b>Carcinogenicity</b>	Not classified.	
<b>ACGIH Carcinogens</b>		
Magnesium oxide (CAS 1309-48-4)	A4 Not classifiable as a human carcinogen.	
<b>IARC Monographs. Overall Evaluation of Carcinogenicity</b>		
Antimony sulfide (CAS 1345-04-6)	3 Not classifiable as to carcinogenicity to humans.	
Aramid fiber (CAS 26125-61-1)	3 Not classifiable as to carcinogenicity to humans.	
<b>Mutagenicity</b>	No data available.	
<b>Reproductive effects</b>	No data available.	
<b>Symptoms and target organs</b>	Exposed individuals may experience eye tearing, redness, and discomfort.	

## 12. Ecological Information

### Ecotoxicological data

Components	Species	Test Results
Barium sulphate (CAS 7727-43-7)		
<b>Aquatic</b>		
Crustacea	EC50 Tubificid worm (Tubifex tubifex)	28.61 - 38.03 mg/l, 48 hours
Calcium hydroxide (CAS 1305-62-0)		
<b>Aquatic</b>		
Fish	LC50 Zambezi barbel (Clarias gariepinus)	33.8844 mg/l, 96 hours
<b>Ecotoxicity</b>	Not relevant, due to the form of the product in its manufactured and shipped state.	
<b>Persistence and degradability</b>	The product contains inorganic compounds which are not biodegradable.	
<b>Bioaccumulation / Accumulation</b>	No data available.	
<b>Mobility in environmental media</b>	The product is insoluble in water and will sediment in water systems.	

## 13. Disposal Considerations

<b>Disposal instructions</b>	Disposal recommendations are based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.
<b>Waste from residues / unused products</b>	Dispose of waste and residues in accordance with local authority requirements.
<b>Contaminated packaging</b>	Since emptied containers retain product residue, follow label warnings even after container is emptied.

## 14. Transport Information

### DOT

Not regulated as a hazardous material by DOT.

### IATA

Not regulated as dangerous goods.

### IMDG

Not regulated as dangerous goods.

### TDG

Not regulated as dangerous goods.

## 15. Regulatory Information

**US federal regulations** Under some use conditions, this material may be considered to be hazardous in accordance with OSHA 29 CFR 1910.1200.

### TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

### Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Antimony sulfide (CAS 1345-04-6)

### US EPCRA (SARA Title III) Section 313 - Toxic Chemical: De minimis concentration

Antimony sulfide (CAS 1345-04-6) 1.0 % N010

### US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Listed substance

Antimony sulfide (CAS 1345-04-6) N010 Listed.

### CERCLA (Superfund) reportable quantity (lbs) (40 CFR 302.4)

Barium sulphate: 1000

### Superfund Amendments and Reauthorization Act of 1986 (SARA)

**Hazard categories** Immediate Hazard - No  
Delayed Hazard - No  
Fire Hazard - No  
Pressure Hazard - No  
Reactivity Hazard - No

### SARA 302 Extremely hazardous substance

Not listed.

**SARA 311/312 Hazardous chemical** No

**Drug Enforcement Administration (DEA) (21 CFR 1308.11-15)** Not controlled

**Canadian regulations** This product has been classified according to the hazard criteria of the Canadian Controlled Products Regulations, Section 33, and the MSDS contains all required information.

**WHMIS status** Non-controlled

### Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

\*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

**State regulations** This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

### US - California Hazardous Substances (Director's): Listed substance

Antimony sulfide (CAS 1345-04-6)	Listed.
Calcium hydroxide (CAS 1305-62-0)	Listed.
Graphite (CAS 7782-42-5)	Listed.
Magnesium oxide (CAS 1309-48-4)	Listed.
Mica (CAS 12001-26-2)	Listed.

### US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

Not listed.

### US. Massachusetts RTK - Substance List

Barium sulphate (CAS 7727-43-7)	Listed.
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Calcium hydroxide (CAS 1305-62-0) Listed.  
Graphite (CAS 7782-42-5) Listed.  
Magnesium oxide (CAS 1309-48-4) Listed.  
Mica (CAS 12001-26-2) Listed.

**US. New Jersey Worker and Community Right-to-Know Act**

Antimony sulfide (CAS 1345-04-6)  
Barium sulphate (CAS 7727-43-7)  
Calcium hydroxide (CAS 1305-62-0)  
Graphite (CAS 7782-42-5)  
Magnesium oxide (CAS 1309-48-4)  
Mica (CAS 12001-26-2)

**US. Pennsylvania Worker and Community Right-to-Know Law**

Barium sulphate (CAS 7727-43-7)  
Calcium hydroxide (CAS 1305-62-0)  
Graphite (CAS 7782-42-5)  
Magnesium oxide (CAS 1309-48-4)  
Mica (CAS 12001-26-2)

**16. Other Information**

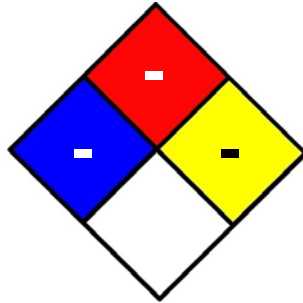
**Further information**

HMIS® is a registered trade and service mark of the NPCA.  
Dash “-“next to each of the entries for the HMIS and NFPA ratings indicates Not Applicable.

**HMIS® ratings**

Health: -  
Flammability: -  
Physical hazard: -

**NFPA Ratings**



**Disclaimer**

The information provided on this data sheet was abstracted from supplier material safety data sheets and standard references in occupational health and toxicology. Federal-Mogul makes no representation or warranty with respect to the information obtained from such references. The information is however, as of the date provided, true and accurate to the best of Federal-Mogul's knowledge, and should be used to make an independent determination of the methods to safeguard workers and the environment.