



SAFETY DATA SHEET

1 IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY/UNDERTAKING

Product name: FERODO 3233/1

Product No.: 3233/1

Supplier:

Federal Mogul Friction Products Limited
Hayfield Road, Chapel-en-le-Frith
High Peak, SK23 0JP, UK.
TEL: + 44 1298 811589

Emergency telephone:

24hr EP (INFOTRAC): 1-800-535-5053
International: (001) 352-323-3500

Intended use: Friction material

Contact person: Technical Manager, Railway Division

2 COMPOSITION/INFORMATION ON INGREDIENTS

General information: 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. The ingredients may be released from the product by operations such as overheating, burning, machining, abrading, or riveting.

Chemical name	EC No.	CAS-No.	Concentration *	Classification	Notes
Copper powder	231-159-6	7440-50-8	10 - 15%	-	-
Antimony sulphide	215-713-4	1345-04-6	2 - 5%	Xn;R20	-

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

The full text for all R-Phrases are displayed in section 16.

3 HAZARDS IDENTIFICATION

The product has not been classified as dangerous according to the legislation in force. Dust can be created by the machining of finished products.

Potential health effects

Inhalation: High concentrations of dust may irritate throat and respiratory system and cause coughing.

Eye contact: Dust in the eyes will cause irritation.

Skin contact: Dust may irritate skin.

Ingestion: May cause discomfort if swallowed.

Other health effects: No specific acute or chronic health impact noted, but this chemical may still have adverse impact

on human health, either in general or on certain individuals with pre-existing or latent health problems.

Potential physical / chemical effects: The product is non-combustible.

Environment: None known.

4 FIRST-AID MEASURES

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

Eye contact: Flush thoroughly with water for at least 15 minutes. Dust in the eyes: Make sure to remove any contact lenses from the eyes before rinsing. Get medical attention if irritation persists after washing.

Skin contact: Wash contact areas with soap and water. Get medical attention if irritation develops and persists.

Ingestion: If swallowed, rinse mouth with water (only if the person is conscious).

5 FIRE FIGHTING MEASURES

Extinguishing media: This product is not flammable. Use fire-extinguishing media appropriate for surrounding materials.

Inappropriate extinguishing media: None.

Special fire fighting procedures: Use standard firefighting procedures and consider the hazards of other involved materials.

Unusual fire & explosion hazards: The product is non-combustible. If heated, toxic vapours may be formed.

Hazardous combustion products: Carbon dioxide, Carbon monoxide, Sulfur oxides

Protective measures: Selection of respiratory protection for fire fighting: follow the general fire precautions indicated in the workplace.

6 ACCIDENTAL RELEASE MEASURES

Personal precautions: Avoid dust formation. Avoid inhalation of dust and contact with skin and eyes. Wear necessary protective equipment. See Section 8 for personal protective equipment.

Spill cleanup methods: Collect powder using special dust vacuum cleaner with particle filter or carefully sweep into closed container.

Environmental precautions: Avoid discharge into water courses or onto the ground. Collect and dispose of spillage as indicated in section 13.

Notification procedures: In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

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 minimise dust production. Observe good industrial hygiene practices.

Storage: Store in tightly closed original container. Avoid conditions which create dust. Protect against direct sunlight.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limit values:

Chemical name	Source	Type	Workplace exposure limits	Notes
Copper powder (Inhalable dusts and mists)	EH40/2005	TWA	1 mg/m ³	as Cu
Copper powder (Inhalable dusts and mists)	EH40/2005	STEL	2 mg/m ³	as Cu
Antimony sulphide	EH40/2005	TWA	0.5 mg/m ³	as Sb
Copper powder (Fume.)	EH40/2005	TWA	0.2 mg/m ³	

Engineering controls: Provide adequate ventilation. Observe occupational exposure limits and minimise the risk of inhalation of dust.

Respiratory protection: No protection is ordinarily required under normal conditions of use and with adequate ventilation. During dust-raising work: Use respiratory equipment with particle filter, type P1. Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.

Eye protection: If contact is likely, safety glasses with side shields are recommended.

Hand protection: Gloves are recommended for prolonged use. Suitable gloves can be recommended by the glove supplier.

Skin protection: No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact. If prolonged or repeated contact is likely, chemical resistant clothing is recommended.

Hygiene measures: 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.

Environmental exposure controls: Environmental manager must be informed of all major spillages.

9 PHYSICAL AND CHEMICAL PROPERTIES

Physical state: Solid

Colour: Brown to black

Odour: Characteristic

Odour threshold: Not applicable

pH: No data available

Melting point: Not applicable

Freezing point: Not applicable

Boiling Point: No data available.
Relative density: 2.25 (20°C)
Vapour pressure: Not applicable
Vapour density (air=1): No data available.
Evaporation rate: Not applicable
Solubility in water: Insoluble
Solubility (other): Not applicable
Partition coefficient (n-octanol/water): No data available.
Viscosity: Not applicable
Flash point: No data available.
Autoignition temperature: Not applicable
Flammability limit - lower(%): Not applicable
Flammability limit - upper (%): Not applicable

10	STABILITY AND REACTIVITY
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Stability: Material is stable under normal conditions.

Conditions to avoid: Heat

Incompatible materials: Strong oxidising agents.

Hazardous decomposition products:

At elevated temperatures:	Sulfur oxides
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Possibility of hazardous reactions: Will not occur.

11	TOXICOLOGICAL INFORMATION
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Specified substance(s)

Acute toxicity:

Chemical name	Test results
Antimony sulphide	Oral LD50 (Rat): 2001 mg/kg
Antimony sulphide	Dermal LD50 (Rat): 2001 mg/kg
Antimony sulphide	Inhalation LC50 (4 hour(s), Rat): 5.04 mg/l

Inhalation: High concentrations of dust may irritate throat and respiratory system and cause coughing. May cause mild to severe lung damage.

Eye contact: Dust may irritate the eyes. Exposed may experience eye tearing, redness, and discomfort.

Skin contact: Mildly irritating to skin with prolonged exposure.

Ingestion: May cause discomfort if swallowed.

Sensitisation: No data available.

Listed carcinogens:

Chemical name	IARC	NTP	OSHA	ACGIH
Antimony sulphide	3	Not listed	Not listed	Not listed

IARC: 1 = Carcinogenic to Humans; 2A = Probably Carcinogenic to Humans; 2B = Possibly Carcinogenic to Humans; 3 = Not classifiable as to carcinogenicity to humans; 4 = Probably not carcinogenic to humans; Not listed = Not evaluated by IARC.
ACGIH: A1 = Confirmed Human Carcinogen; A2 = Suspected Human Carcinogen; A3 = Confirmed Animal Carcinogen; A4 = Not classifiable as a human carcinogen; A5 = Not suspected to be a human carcinogen; Not listed = Not evaluated by ACGIH.

Mutagenesis: No data available.

Reproductive toxicity: No data available.

Other effects: No specific acute or chronic health impact noted, but this chemical may still have adverse impact on human health, either in general or on certain individuals with pre-existing or latent health problems.

12	ECOLOGICAL INFORMATION
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Ecotoxicity: There are no data on the ecotoxicity of this product.

Mobility: The product is insoluble in water and will sediment in water systems.

Persistence and degradability: The product contains inorganic compounds which are not biodegradable.

Bioaccumulation potential: No data available.

13	DISPOSAL CONSIDERATIONS
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General information: Dispose of waste and residues in accordance with local authority requirements.

Disposal methods: 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.

European waste codes

Unused product: 16 03 03*

Container: 15 01 02

14	TRANSPORT INFORMATION
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ADR/RID Not regulated.

IMDG Not regulated.

IATA Not regulated.

15	REGULATORY INFORMATION
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The product has not been classified as dangerous according to the legislation in force.

16	OTHER INFORMATION
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Wording of the R-phrases in sections 2 and 3: R20; Harmful by inhalation.

Issued by: Federal Mogul Friction Products Limited

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SDS No.: 3233/1

Disclaimer: The information provided on this data sheet was abstracted from supplier 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.