

SAFETY DATA SHEET
According to 29 CFR 1910.1200 (G)

1. Identification

Product Name: Non-Asbestos Ceramic Brake Pad
Product Edge code: CEN 105XXXXX 15AD5936 FF A16

Product Use Overview: These products are intended for use as automotive or truck friction components and are not considered to be hazardous as sold. The ingredients listed below are bound in a non-friable resin matrix, therefore, personal exposure during the normal handling and use is considered minimal. The warnings expressed on this MSDS have been provided to communicate the hazardous nature associated with exposure to the individual components. We have provided this information regardless of the risk of exposure and have considered this during both normal use and foreseeable misuse. Using good work practices will minimize the risk of adverse health effects from overexposure to the hazardous components. As supplied, this friction material does not require sanding, drilling or other machining operations.

Supplier Details:

CWD LLC
 2112 S. Figueroa St.
 Carson, CA 90745
 Phone: (310) 218-1082

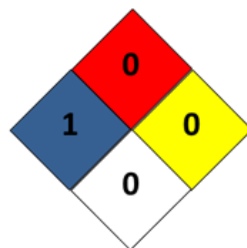
2. Hazards Identification

Classification: Carcinogen Category 1, Specific Target Organ Toxicity – Repeat Exposure Category 1 (lungs and respiratory system), Skin Sensitizer Category 1

Label Elements:



Danger!



NFPA SCALE (0-4)

HEALTH	1
FLAMMABILITY	0
PHYSICAL HAZARD	0
PERSONAL PROTECTION	X

HMIS RATINGS

Hazard Phrases	Precautionary Phrases
May cause an allergic skin reaction May cause cancer by inhalation Causes damage to lungs and respiratory system through prolonged or repeated exposure by inhalation	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust or fume. Wash thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves, clothing, eye protection and face protection. IF ON SKIN: Wash with plenty of water If skin irritation or rash occurs: Get medical attention. Take off contaminated clothing and wash it before reuse. IF exposed or concerned: Get medical attention. Store locked up. Dispose of contents and container in accordance with local, regional and national regulations.

3. Composition/Information on Ingredients

Chemical Name	CAS#	%
	Mixture	Balance
Aramid Pulp	26125-61-1	1-5
Phenolic Resin	9003-35-4	5-10
Mineral Fiber	No Classification	10-15
Calcium hydroxide	1305-62-0	5-10
Brass	No information	5-10
Graphite	7782-42-5	5-10
Barium Sulfate	7727-43-7	25-35
Antimony Trisulfide	1345-04-6	3-10

The exact concentration is being withheld as a trade secret.

Refer to Section 8 for occupational exposure limits.

4. First Aid Measures

Eye: Do not rub eyes. Flush with large amounts of water. Eyelids should be held away from the eyeball to ensure thorough rinsing. If irritation persists or if there is a foreign body in the eye, get medical attention.

Skin: Wash area of contact gently with soap and water. Launder contaminated clothing before reuse. Get medical attention if irritation or rash develops or persists.

Inhalation: If symptoms develop, remove person from source of exposure to fresh air. Get medical attention if irritation persists.

Ingestion: Not an anticipated route of exposure. If swallowed, drink 1 or 2 glasses of water to dilute. Never give anything by mouth to an unconscious or convulsing person. Get medical attention.

Most important symptoms/effects, acute and delayed: Dust may cause mechanical eye and skin irritation and respiratory irritation. May cause skin sensitization. Prolonged inhalation of dusts or fumes may cause lung

damage. Prolonged overexposure to respirable crystalline silica may cause lung disease (silicosis). This product contains crystalline silica, quartz, titanium dioxide, diantimony trioxide and nickel which may cause cancer based on animal studies. Risk of cancer depends on duration and level of exposure.

Indication of immediate medical attention and special treatment: No immediate medical treatment is required.

5: Fire-Fighting Measures

Suitable Extinguishing Media: Use any media suitable for the surrounding fire.

Special protective equipment and precautions for fire-fighters: Firefighters should wear positive pressure self-contained breathing apparatus and full protective clothing for fires involving chemicals.

Specific hazards arising from the chemical: Combustion products from organic resins may include carbon monoxide, carbon dioxide, nitrogen oxides, sulfur dioxide, aldehydes, phenols, cyanide, ammonia and various hydrocarbons.

6: Accidental Release Measures

Personal precautions, protective equipment, and emergency procedures: Wear appropriate protective clothing and equipment to avoid eye and skin contact.

Environmental hazards: Avoid release to the environment. Report spill as required by local and federal regulations.

Methods and materials for containment and cleaning up: Pick up large pieces. Use HEPA vacuum to clean up any dust. Wet dust with water where sweeping is necessary. Personal safety and exposure recommendations described elsewhere in this data sheet apply to exposure during clean-up of spilled material. Refer to Section 13 for disposal considerations.

7. Handling and Storage

Precautions for safe handling: Avoid generating dust. Do not breathe dust. Do not grind, sand, drill or machine these parts. Follow good housekeeping to prevent accumulation of dust on floors, machinery and equipment. Do not dry-sweep dust. Wet dust with water before sweeping or use a HEPA vacuum to collect dust and clean equipment. Do not use compressed air for cleaning. Wash thoroughly after work using soap and water.

These products do not contain asbestos, however, the OSHA Asbestos Standard (29CFR 1910.1001) Appendix F, "Work Practices and Engineering Controls for Automotive Brake and Clutch Inspection, Disassembly, Repair and Assembly", contains guidance on minimizing employee exposure during brake operations.

Conditions for safe storage, including any incompatibilities: Keep product dry.

8. Exposure Controls Personal Protection

Exposure guidelines:

Hazardous Components	Exposure Limits
Non-hazardous ingredients	None Established
Armed Pulp	TWA: Not been enacted Dupont enactment 2 fibers/cc(respirable) 5 mg/m3 (non-fibrous particulate/ non-respirable fibers) This material was OSHA regulatory provisions has not been established. This material was enacted by the manufacturing company DuPont
Phenolic Resin	TWA: Not been enacted

Mineral Fiber	TWA: 10 mg/m3 STEL: 15mg/m3 OSHA TWA (Total dust) (PNOR) (Particulates Not Otherwise Regulated) 5mg/m3 OSHA TWA (Respirable fraction) (PNOR) (Particulates Not Otherwise Regulated) 50mppcf OSHA TWA (Total dust) (PNOR) (Particulates Not Otherwise Regulated) 15mppcf OSHA TWA (Respirable fraction) (PNOR) (Particulates Not Otherwise Regulated) 1 fibers/cc ACGIH TWA (More than 5m length of the fiber, less than 3m the diameter of the fiber) 5mg/m3 NIOSH Recommended TWA 10hours (Total dust) 3fibers/cc NIOSH Recommended TWA 10hours (More than 10 μm length of the fiber; less than 3.5 μm diameter of the fiber)
Calcium Hydroxide	TWA: 5 mg/m3 STEL: 5 mg/m3 OSHA TWA (Respirable dust fraction) 15 mg/m3 OSHA TWA (Total dust) 5 mg/m3 ACGIH TWA 5 mg/m3 NIOSH Recommended TWA 10 hours

Iron Oxide	TWA: 5mg/m ³ STEL: - 10 mg/m ³ OSHA TWA 5 mg/m ³ ACGIH TWA 5 mg/m ³ NIOSH recommend TWA 10 hours (total dust) 1.5mg/m ³ DFG MAK (inhaled dust fraction)
Graphite	TWA: 2.5mg/m ³ 5 mg/m ³ OSHA TWA (Respirable dust fraction) 15 mg/m ³ OSHA TWA (Total dust) 10 mg/m ³ OSHA TWA (Total particulate) (Invalidated by 58 FR 35338, June 30, 1993) 2mg/m ³ ACGIH TWA (Respirable particulate) (All forms except graphite fibers) 1.5mg/m ³ DFG MAK (Respirable dust fraction)
Barium Sulfate	5 mg/m ³ OSHA TWA (Respirable fraction) 15 mg/m ³ OSHA TWA (Total dust) 10 mg/m ³ OSHA TWA (Total particulate) (Invalidated by 58 FR35338, June 30, 1993) 10 mg/m ³ ACGIH TWA 5 mg/m ³ NIOSH Recommended TWA 10 hours (Respirable fraction) 10 mg/m ³ NIOSH Recommended TWA 10 hours (Total dust) 4 mg/m ³ DFG MAK (Inhaled dust fraction) 1.5 mg/m ³ DFG MAK (Respirable dust fraction)
Brass	No information
Antimony Trisulfide	TWA: 0.5mg/m ³

Appropriate engineering controls: Use with adequate local exhaust ventilation and dust collection as necessary to maintain the concentration of airborne dust below the exposure limits.

Individual protection measures, such as personal protective equipment (PPE)

Respiratory Protection: If the concentrations exceed the Threshold Limit Values (TLV), a NIOSH approved particulate respirator appropriate for the exposure levels should be worn. Select based on consideration of the airborne workplace concentrations and duration of exposure. Select and use respirators in accordance with 29 CFR 1910.134, ANSI Z88.2, the NIOSH Respirator Decision Logic and good industrial hygiene practice. For firefighting, use self-contained breathing apparatus.

Skin Protection: Gloves recommended for handling brake parts.

Eye Protection: Safety glasses recommended.

Other: Wear protective clothing as needed to avoid skin contact.

9. Physical and Chemical Properties

Appearance (physical state, color, etc.): Metallic parts with gray friction material.

Odor: No odor

Odor threshold: Not applicable	pH: Not applicable
Melting point/freezing point: Not applicable	Boiling point: Not applicable
Flash point: Not applicable	Evaporation rate: Not applicable
Flammability (solid, gas): Not flammable	
Flammable limits: LEL: Not applicable	UEL: Not applicable
Vapor pressure: Not applicable	Vapor density:
Relative density: 2.2 – 3.55 g/cc	Solubility(ies): Insoluble
Partition coefficient: n-octanol/water: Not applicable	Auto-ignition temperature: Not applicable
Decomposition temperature: Not applicable	Viscosity: Not applicable

10. Stability and Reactivity

Reactivity: Not expected to be reactive under normal conditions of use.

Chemical stability: Stable.

Possibility of hazardous reactions: None known.

Conditions to avoid: None known.

Incompatible materials: None known.

Hazardous decomposition products: Combustion products from organic resins may include carbon monoxide, carbon dioxide, nitrogen oxides, sulfur dioxide, aldehydes, phenols, cyanide, ammonia and various hydrocarbons.

11. Toxicological Information

Eye Contact: Dust from product may cause abrasive irritation and conjunctivitis.

Skin Contact: Prolonged contact with dust from product may cause irritation, dermatitis and sensitization.

Inhalation: Inhalation of dust may cause irritation to the nose, throat and upper respiratory tract with coughing and shortness of breath.

Ingestion: Not a normal route of exposure. Swallowing large amounts of dust may cause overexposure to antimony with symptoms including gastrointestinal irritation, sores in the mouth and nose, headache, dizziness, weight loss and acute congestion of the heart, liver and kidneys.

Chronic Health Effects: Inhalation of excessive concentrations of any dust, including dust from this material, may cause lung injury. Prolonged overexposure to respirable crystalline silica may cause lung disease (silicosis) and increase the risk of lung cancer. Overexposure to antimony may cause degenerative changes of the liver and kidneys. Prolonged inhalation of nickel dust or fumes may cause perforation of the nasal septum and lung damage.

Carcinogenicity: This material is not listed as a carcinogenicity by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP), or the Occupational Safety and Health Administration (OSHA).

Acute Toxicity Values: No acute toxicity data for the product.

1) Aramid pulp

- A. Information on the likely routes of exposure No information
- B. Health hazard information

Acute toxicity

Epigram		ALD / rat: 7500 mg / kg more than	
		No information	
Dermal		No information	
		none-irritating(rabbit)	
Inhalation		none-irritating	
Skin corrosive or irritant	Not applicable	Serious eye damage or	
irritant	Not applicable	Respiratory sensitization	Not applicable
Skin sensitization		Not applicable	
Germ cell mutagenicity	Not applicable	Reproduction-toxicity	Not applicable
Particular target organ toxicity (once exposure)	Not applicable		
Particular target organ toxicity (repeat exposure)	Not applicable		
Absorb harmful		To the inhalation of high concentrations of respirable particulate in the lungs can cause severe damage.	

* OSHA for this material to limit the provision has been established is not.

Limit the amount recommended in Korea toward manufacturing company DuPont (Dupont) was enacted by.

2) Mineral fiber

- A. Information on the likely routes of exposure
- B. Health hazard information

Acute toxicity

- Epigram
- Dermal
- Inhalation

Skin corrosive or irritant
 Serious eye damage or irritant
 Respiratory sensitization
 Skin sensitization
 Germ cell mutagenicity
 Reproduction-toxicity
 Particular target organ toxicity (once exposure)
 Particular target organ toxicity (repeat exposure)
 Absorb harmful

3) Phenolic resin

- A. Information on the likely routes of exposure No information
- B. Health hazard information

Acute toxicity

Epigram	LD50 > 5000 mg/kg Rat
	※ Reference : TOMES;RTECS
Dermal	LD50 > 2000 mg/kg
	※ Reference : TOMES;RTECS
Inhalation	No information
Skin corrosive or irritant	Irritating skin
Serious eye damage or irritant	Irritating eye
Respiratory sensitization	No information
Skin sensitization	No information
Germ cell mutagenicity	No information
Reproduction-toxicity	No information
Particular target organ toxicity (once exposure)	Inhalation irritating airway
Particular target organ toxicity (repeat exposure)	No information
Absorb harmful	No information

4) Barium sulfate

- A. Information on the likely routes of exposure No information
- B. Health hazard information

Acute toxicity

Epigram	LD50 > 3000 mg/kg Rat
	※ Reference: (IUCLID)
Dermal	No information
Inhalation	No information
Skin corrosive or irritant	People in the none irritation
Serious eye damage or irritant	People in the mild irritation.
Respiratory sensitization	No information
Skin sensitization	
Germ cell mutagenicity	
Reproduction-toxicity	No information
Particular target organ toxicity (once exposure)	No information
Particular target organ toxicity (repeat exposure)	No information
Absorb harmful	No information

5) Calcium hydroxide

A. Information on the likely routes of exposure May cause burns.

B. Health hazard information

Acute toxicity

Epigram		LD50 7340 mg/kg Rat
Dermal	No information	Inhalation No information
Skin corrosive or irritant		Non-irritating (rabbit), Irritating in the middle of the body, including the eyes, airway
Serious eye damage or irritant		Severe irritation (10mg, rabbit), corrosive to the eyes of man and rabbit
Respiratory sensitization information	No information	Skin sensitization No
Germ cell mutagenicity	No information	Reproduction-toxicity No information
Particular target organ toxicity (once exposure)		Causes pulmonary edema by stimulating the human respiratory tract, airway
Particular target organ toxicity (repeat exposure)		That affect the lungs of people
Absorb harmful		No information

6) Brass

- No Information

7) Antimony trisulfide

A. Information on the likely routes of exposure Irritation, difficulty in breathing, dizziness, stethemia
It can cause blood disorder
Change the blood pressure, nausea, diarrhea
dyspnoea, internal hemorrhage, disorder kindly
disorder liver, be able to coma

B. Health hazard information

Acute toxicity

Epigram	LD50 2000 mg/kg Rat
Dermal	LD50 2000 mg/kg Rat
Inhalation	LC50 5.04 mg/ℓ 4 hr Rat
Skin corrosive or irritant	No information
Serious eye damage or irritant	No information
Respiratory sensitization	No information
Skin sensitization	No information
Germ cell mutagenicity	No information
Reproduction-toxicity	No information
Particular target organ toxicity (once exposure)	No information
Particular target organ toxicity (repeat exposure)	
Absorb harmful	

8) Graphite

A. Information on the likely routes of exposure Irritation, loss of appetite, chest pain, shortness of breath, Headache, lung disorders, heart problems, Cancer stimulation. Allergic reaction to stimuli

B. Health hazard information

Acute toxicity

Epigram No information Dermal No information Inhalation
No information

Skin corrosive or irritant No information Serious eye damage or irritant
No information Respiratory sensitization No information Skin
sensitization No information

Germ cell mutagenicity No information Reproduction-toxicity No information

Particular target organ toxicity (once exposure) No information

Particular target organ toxicity (repeat exposure) May affect the long-term dust exposure in the lungs

※ Reference : ICSC

Absorb harmful No information

12. Ecological Information

Ecotoxicity: No toxicity data for the product.

1) Aramid pulp

A. Ecotoxicity

Fish No information

Shellfish No information

Bird No information

B. Persistence and degradability information

Persistence No information

Degradability No information

C. Bioconcentration information

Condensability No information

Biodegradable No information

D. Mobility in soil No information

E. Other adverse effects No information

2) Mineral fiber

A. Ecotoxicity

Fish No information

Shellfish	No information
Bird	No information
B. Persistence and degradability	
Persistence	No information
Degradability	No information
C. Bioconcentration	
Condenasability	
Biodegradable	
D. Mobility in soil	No information
E. Other adverse effects	No information

3) Phenolic resin

A. Ecotoxicity	
Fish	No information
Shellfish	No information
Bird	No information
B. Persistence and degradability	
Persistence	No information
Degradability	No information
C. Bioconcentration	
Condenasability	No information
Biodegradable	No information
D. Mobility in soil	No information
E. Other adverse effects	No information

5) Barium sulfate

A. Ecotoxicity	
Fish	No information
Shellfish	EC50 32 mg /ℓ 48 hr Daphnia magna ※ Reference : ECOTOX
Bird	EC50 1890.263 mg/ℓ 96 hr ※ Reference: ECOSAR
B. Persistence and degradability	
Persistence	log Kow 0.63
Degradability	No information
C. Bioconcentration	
Condenasability	BCF 3.162
Biodegradable	No information
D. Mobility in soil	No information
E. Other adverse effects	No information

6) Calcium hydroxide

A. Ecotoxicity	
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Fish	LC50 33.884 mg/ℓ 96 hr
Shellfish	No information
Bird	No information
B. Persistence and degradability	
Persistence	No information
Degradability	No information
C. Bioconcentration	
Condenasability	No information
Biodegradable	No information
D. Mobility in soil	
E. Other adverse effects	

6) Brass

- No Information

7) Antimony trisulfide

A. Ecotoxicity	
Fish	No information
Shellfish	No information
Bird	No information
B. Persistence and degradability	
Persistence	No information
Degradability	No information
C. Bioconcentration	
Condenasability	No information
Biodegradable	No information
D. Mobility in soil	
E. Other adverse effects	

8) Graphite

A. Ecotoxicity	
Fish	No information
Shellfish	No information
Bird	No information
B. Persistence and degradability	
Persistence	Not applicable
Degradability	No information
C. Bioconcentration	
Condenasability	No information
Biodegradable	No information
D. Mobility in soil	
E. Other adverse effects	

This product is not anticipated to have an adverse effect on the environment.

Persistence and degradability: Biodegradation is not applicable to inorganic substances. **Bioaccumulative potential:** Bioaccumulation is not expected. **Mobility in soil:** No data available.

Other adverse effects: No data available.

13. Disposal Consideration

Landfill in compliance with all applicable Federal, state and local regulations.

14. Transport Information

	UN Number	Proper shipping name	Hazard Class	Packing Group	Environmental Hazard
DOT	None	Not Regulated	None	None	Not applicable
TDG	None	Not Regulated	None	None	Not applicable
IMDG	None	Not Regulated	None	None	Not applicable
IATA	None	Not Regulated	None	None	Not applicable

Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code): Not applicable – product is transported only in packaged form.

Special precautions: None known

15. Regulatory Information

U.S. REGULATIONS:

Comprehensive Environmental Response and Liability Act of 1980 (CERCLA) Reportable Quantity: This product is not subject to CERCLA reporting requirements; however, many states have more stringent release reporting requirements. Report spills required under federal, state and local regulations.

Toxic Substances Control Act (TSCA): Manufactured articles are not subject to TSCA. These products are manufactured with chemicals listed on the TSCA inventory.

Superfund Amendments and Reauthorization Act (SARA) Title III Information:

SARA Section 311/312 Hazard Categories: Delayed Health

This product contains the following toxic chemical(s) subject to reporting requirements of SARA Section 313:

Index	Industrial safety and health acts	Toxic chemicals control acts	Safety control of dangerous substances acts	Waste management act
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1. Aramid pulp	No information	No information	No information	Specified waste
2. Mineral fiber	Exposure limits set material	No information	No information	No information
3. Phenolic Resin	No information	No information	No information	No information
4. Barium sulfate	No information	No information	No information	Specified waste
5. Calcium hydroxide	Exposure limits set material	No information	No information	Specified waste
6. Brass	No information	No information	No information	No information
7. Antimony trisulfide	Working Environment Measurement substances, Managed hazardous substances, Exposure limits set material, Special health diagnostic substances	No information	No information	Specified waste
8. Graphite	Working Environment Measurement substances, Exposure limits set material, Special health diagnostic substances	No information	No information	Specified waste
9. Other substance	-	-	-	-

INTERNATIONAL REGULATIONS:

Canadian Environmental Protection Act: Manufactured articles are exempt from notification requirements under CEPA.

16. Other Information

NFPA Ratings: Health: 1 Flammability: 0 Instability: 0

HMIS Ratings: Health: 1* Flammability: 0 Physical Hazard: 0 *Chronic Health Hazard

The information herein is believed to be accurate, however, no representation or warranty as to its accuracy. The data is furnished gratuitously and independently of any sale of the product, and only for customer investigation and independent verification. In no event be responsible for any damages of whatever nature directly or indirectly resulting from the publication or use of or reliance upon data. Contained herein. No express or implied warranty of any kind, including warranties of merchantability or fitness for use, with respect to the product or to the data herein is made hereunder.