

MATERIAL SAFETY DATA SHEET

Section 1: Identification of the mixture and of the company/Undertaking

1.1 Product identifier

CEN 105XXXXX 15AC5936 FF A15

Section 2: Hazards identification

2.1 Emergency danger. Harmful information :

Ingredients	NFPA index		
	Health	Fire	Reaction
1. Aramid pulp	0	1	0
2. Phenolic Resin	2	1	1
3. Coke	1	1	0
4. Mineral fiber	1	0	0
5. Iron oxide	1	0	0
6. Graphite	1	1	0
7. Barium sulfate	1	0	0
8. Antimony trisulfide	2	0	1
9. Other substance	-	-	-

2.2 Eyes hazards

Short term affection: It could be stimulation when contact by dust powder

Long term affection: Not Application

2.3 Skin hazards

Short term affection: It could be stimulation when contact by dust powder

Long term affection: Not Application

2.4 Breathe hazards

Short term affection: It could be stimulation when contact by dust powder

Long term affection: Not Application

2.5 Ingestion hazards

Short term affection: It could be stimulation when contact by dust powder

Long term affection: Not Application

2.6 Carcinogenicity

Ingredients	NFPA index	NTP	IARC	OSHA
1. Aramid pulp		No information	No information	No information
2. Phenolic Resin		No information	No information	No information
3. Coke		No information	No information	No information
4. Mineral fiber		No information	No information	No information
5. Iron oxide		No information	No information	No information
6. Graphite		No information	No information	No information
7. Barium sulfate		No information	No information	No information
8. Antimony trisulfide		No information	No information	No information
9. Other substance		-	-	-

2.7 Label elements Hazard pictograms



Section 3: Composition / Details of Components

3.1 Description: This friction material is a multi-ingredient system with resins and caoutchouc as a binding agent in a cured and vulcanized form.

3.2 Ingredient(s)

Ingredients	CAS No.	Components
1. Aramid pulp	26125-61-1	1 - 3
2. Phenolic Resin	9003-35-4	3 - 10
3. Coke	65996-77-2	10 - 20
4. Mineral fiber	No Classification	3 - 5
5. Iron oxide	1309-37-1	15 - 25
6. Graphite	7782-42-5	5 - 15
7. Barium sulfate	7727-43-7	25 - 40
8. Antimony trisulfide	1345-04-6	3 - 8
9. Other substance	-	-

3.3 Additional notes: Other substance is not application hazardous chemicals, toxic exposure limits, corresponding to the environmental impact.

Section 4: First aid measures

4.1 Description of first aid measures

Eye contact: Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids.

Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Ingestion: Get medical attention immediately.

Skin contact: Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes.

Continue to rinse for at least 10minutes. Get medical attention.

Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus.

If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel.

Section 5: Firefighting measures

5.1 Flash point: No information

5.2 Nature ignition point: No information

5.3 Explosion lower value / Explosion upper value: No information

5.4 The fire Service Act regulation: does not apply

5.5 Suitable extinguishing media: Use dry chemical, CO₂, water spray (fog) or foam.

5.6 Unsuitable extinguishing media: No information

5.7 Hazardous combustion products: No information

Section 6: Accidental release measures

6.1 Protecting for Personal: does not apply

6.2 Protecting for environment: does not apply

6.3 Purification or Remove method: does not apply

Section 7: Handling and storage

7.1 Proactive measures: Put on appropriate personal protective equipment. Do not swallow.

Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist.

7.2 Conditions for safe storage, including any incompatibilities:

Heat prohibition, Caution: Flammables, Avoid direct sunlight, Store in cooling and dry location.

Section 8: Exposure controls/personal protection

8.1 Engineering measures: No information

8.2 Respiratory protection: Use a properly fitted, air-purifying or air-fed respirator.

8.3 Eye protection: Use a properly fitted protecting glasses.

8.4 Hand protection: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. **8.5 Body protection:**

Personal protective equipment of the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

8.6 Cautions: Cleaning hand after working

8.7 Occupational exposure limits

✘**Because there is no data exposure standards for products, constituent data listed.**

Armed pulp

Industrial safety and health acts:

-TWA: Not been enacted

Phenolic Resin

Industrial safety and health acts:

-TWA: Not been enacted

5 mg/m³ OSHA TWA (Respirable dust fraction)

15 mg/m³ OSHA TWA (Total dust)

5mg/m³ ACGIH TWA

5mg/m³ NIOSH Recommended TWA 10 hours

Coke

Industrial safety and health acts:

- TWA: Not been enacted

Mineral fiber

Industrial safety and health acts:

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)

Iron oxide

Industrial safety and health acts:

TWA: 5mg/m³

STEL: - 10 mg/m³ OSHA TWA

5 mg/m³ ACGIH TWA

5 mg/m³ NIOSH recommend TWA 10 hours (total dust)

1.5mg/m³ DFG MAK (inhaled dust fraction)

Graphite

Industrial safety and health acts:

- TWA: 2.5mg/m³

5 mg/m³ OSHA TWA (Respirable dust fraction)

15 mg/m³ OSHA TWA (Total dust)

10 mg/m³ OSHA TWA (Total particulate) (Invalidated by 58 FR 35338, June 30, 1993)

2 mg/m³ ACGIH TWA (Respirable particulate) (All forms except graphite fibers)

1.5 mg/m³ DFG MAK (Respirable dust fraction)

Barium sulfate

Industrial safety and health acts:

- TWA: Not been enacted

5 mg/m³ OSHA TWA (Respirable fraction)

15 mg/m³ OSHA TWA (Total dust)

10 mg/m³ OSHA TWA (Total particulate) (Invalidated by 58 FR35338, June 30, 1993)

10 mg/m³ ACGIH TWA

5 mg/m³ NIOSH Recommended TWA 10 hours (Respirable fraction)

10 mg/m³ NIOSH Recommended TWA 10 hours (Total dust)

4 mg/m³ DFG MAK (Inhaled dust fraction)

1.5 mg/m³ DFG MAK (Respirable dust fraction)

Antimony trisulfide

Industrial safety and health acts:

TWA: 0.5mg/m³

Section 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance: Solid

Color: Dark Gray

Odor: Acrid

pH: No information

Solubility: Insoluble in water

Boiling point and boiling range: Not available

Melting point: Not available

Explosive: Not explosive

Oxidative: Not available

Vapor pressure: Not available

Specific gravity: No information

Partition coefficient: Not available

Decomposition temperature: Not available

Viscosity: Not available

Molecular weight: Not available

Section 10: Stability and reactivity

Chemical stability: The product is stable.

Conditions to avoid: Avoid all possible sources of ignition.

Hazardous decomposition products: Not available

Section 11: Toxicological information

※The material constituent material listed, toxicological impact for the product

Aramid pulp

Information on the likely routes of exposure No information

Health hazard information

Acute toxicity

Epigram ALD / rat: 7500 mg / kg more than

Dermal No information

Inhalation No information

Skin corrosive or irritant none-irritating(rabbit)

Serious eye damage or irritant none-irritating

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.

Phenolic resin

Information on the likely routes of exposure No information

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
Coke	
Information on the likely routes of exposure	irritation
	Nausea, vomiting, diarrhea, mechanical irritation
Health hazard information	
Acute toxicity	
Epigram	No information
Dermal	No information
Inhalation	No information
Skin corrosive or irritant	may cause mild-irritation: people
Serious eye damage or irritant	may cause mild-irritation: people
Respiratory sensitization	No information
Skin sensitization	No information
Germ cell mutagenicity	in Vivo, Cytogenetic assay: negative
Reproduction-toxicity	No information
Particular target organ toxicity (once exposure)	No information
Particular target organ toxicity (repeat exposure)	High concentrations of exposure when Pneumoconiosis, anthracosis,
The possibility of chronic lung disease: people	Absorb harmful
Mineral fiber	No information
Information on the likely routes of exposure	
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

Iron oxide

Information on the likely routes of exposure No information

Health hazard information

Acute toxicity

Epigram LD50 > 10000 mg/kg Rat

※ Reference: IUCLID

Dermal

No information

Inhalation

No information

Skin corrosive or irritant

mild-irritation (human)

※ Reference: IUCLID

Serious eye damage or irritant

corrosiveness i(human)

※ Reference: IUCLID

Respiratory sensitization

No information

Skin sensitization

Non-irritable (guinea pig)

※ Reference: IUCLID

Germ cell mutagenicity

No information

Reproduction-toxicity

No information

Particular target organ toxicity (once exposure) Respiratory irritation

※ Reference: ICSC

Particular target organ toxicity (repeat exposure dust in the long-term or repeated exposure to the lungs causes affected.

※ Reference: ICSC

Absorb harmful

No information

Graphite

Information on the likely routes of exposure Irritation, loss of appetite, chest pain, shortness of Breathe.

Headache, lung disorders, heart problems,

Cancer stimulation. Allergic reaction to stimuli

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

Barium sulfate

Information on the likely routes of exposure	No information
Health hazard information	
Acute toxicity	
Epigram	LD50 > 3000 mg/kg Rat ※ Reference: (IUCRID)

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	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)	No information
Absorb harmful	No information

Antimony trisulfide

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

Health hazard information	
Acute toxicity	
Epigram	LD50 2000 mg/kg Rat
Dermal	LD50 2000 mg/kg Rat
Inhalation	LC50 5.04 mg/l 4hr 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)	No information
Absorb harmful	No information

Section 12: Ecological information

※The material constituent material listed, Environmental impact for the product

Aramid pulp	
Eco toxicity	
Fish	No information
Shellfish	No information
Bird	No information
Persistence and degradability	
Persistence	No information
Degradability	No information
Bio concentration	
Condensability	No information
Biodegradable	No information
Mobility in soil	No information
Other adverse effects	No information
Phenolic resin	
Eco toxicity	
Fish	No information
Shellfish	No information
Bird	No information
Persistence and degradability	
Persistence	No information
Degradability	No information
Bio concentration	
condensability	No information
Biodegradable	No information
Mobility in soil	No information

Other adverse effects	No information
Coke	
Eco toxicity	
Fish	No information
Shellfish	No information
Bird	No information
Persistence and degradability	
Persistence	No information
Degradability	No information
Bio concentration	
condensability	No information
Biodegradable	No information
Mobility in soil	No information
Other adverse effects	No information
Mineral fiber	
Eco toxicity	
Fish	No information
Shellfish	No information
Bird	No information
Persistence and degradability	
Persistence	No information
Degradability	No information
Bio concentration	
condensability	No information
Biodegradable	No information
Mobility in soil	No information
Other adverse effects	No information
Iron oxide	
Eco toxicity	
Fish	No information
Shellfish	No information
Bird	No information
Persistence and degradability	
Persistence	log Know 0.97 (estimates)
	※ Reference: QSAR
Degradability	No information

Bio concentration	
condensability	No information
Biodegradable	No information
Mobility in soil	No information
Other adverse effects	No information
Graphite	
Eco toxicity	
Fish	No information
Shellfish	No information
Bird	No information
Persistence and degradability	
Persistence	Not applicable
Degradability	No information
Bio concentration	
condensability	No information
Biodegradable	No information
Mobility in soil	No information
Other adverse effects	No information
Barium sulfate	
Eco toxicity	
Fish	No information
Shellfish	EC50 32 mg/l 48 hr Daphnia magna ※ Reference : ECOTOX
Bird	EC50 1890.263 mg/l 96 hr. ※ Reference: ECOSAR
Persistence and degradability	
Persistence	log Know 0.63
Degradability	No information
Bio concentration	
condensability	BCF 3.162
Biodegradable	No information
Mobility in soil	No information
Other adverse effects	No information
Antimony trisulfide	
Eco toxicity	
Fish	No information
Shellfish	No information

Bird	No information
Persistence and degradability	
Persistence	No information
Degradability	No information
Bio concentration	
condensability	No information
Biodegradable	No information
Mobility in soil	No information
Other adverse effects	No information

Section 13: Disposal considerations

Waste Management Act: Not designated waste

Product methods of disposal: The generation of waste should be avoided or minimized wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant.

Dispose of surplus and non-recyclable products via a licensed waste disposal contractor.

Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

Precautions: Disposal precautions is work wear and personal protection targets equipment.

Section 14: Transport information

Dangerous shipping transportation and store regulation restrict: None specified

Transport precautions: Heat prohibit

International Air Transport Association (IATA) regulations: None specified

Section 15: Regulatory information

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