

=====

MATERIAL SAFETY DATA SHEET

Effective Date: January 2006

Code: Brake Lining Material

Page:1

=====

Section 1 - PRODUCT AND COMPANY IDENTIFICATION

=====

PRODUCT: Asbestos Free Ceramic Disc Brake Lining Material

IDENTIFY BY EDGE CODE: CMX739GG, CMX741GG, CMX745FG, CMX745GG

MANUFACTURER:

Akebono Corporation (North America)

ADDRESS:

34385 West Twelve Mile Road
Farmington Hills, MI 48331

TELEPHON NO.:
248-489-7400

SUPPLIER'S NAME:

Rayloc
Division of Genuine Parts Company
3100 Windy Hill Road
Atlanta, GA 30339

Revision Date: Nov. 1, 2012

PREPARED BY: Research & Development Department

=====

Section 2 - COMPOSITION/INFORMATION ON INGREDIENTS

=====

Ingredient	C.A.S. No.
Antimony Trisulfide	1345-04-6
Barium Sulfate	7727-43-7
Calcium Hydroxide	1305-62-0
Calcium Silicate	1344-95-2
Cashew Polymer Particle	68602-89-1
Copper	7440-50-8
Graphite	7782-42-5
Kevlar	26125-61-1
Iron Oxide	12227-89-3
Mica	12001-26-2
Paraffinic Distillate	64742-04-7
Phenolic Resin	37337-65-8
Viterous silicate fibers (soluble amorphous wool)	287922-11-6

Zink 7440-66-6

OHSA Status: The friction material product identified in this sheet meets

Zirconium Silicate 14940-68-2

the OSHA definition of an "article" and is not considered hazardous under normal handling and use. Certain activities such as machining and/or grinding may release dusts and other particles and cause this article to be treated as a "hazardous material" under the OSHA Hazard Communication Standard.

=====

Section 3 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Brake pads are not normally considered hazardous; however, toxic and irritating materials may be released in a fire.

HEALTH HAZARDS (ACUTE AND CHRONIC)

The health hazards for eyes and inhalation described below are primarily associated with dusts that may be generated during machining and other mechanical operations. Normal use of this product is not anticipated to result in a health hazard.

Ingestion: Not an anticipated route of entry.

Eyes: Dusts, if generated may cause irritation.

Skin: Some persons may be sensitive to partially cured phenolic resins or cashew resins and develop dermatitis-type reactions (irritation) similar to poison ivy. Inhalation: Dusts, if generated, may cause respiratory irritation to nose, throat and possibly lungs. Chronic Continued inhalation of dusts from friction materials is considered harmful to respiratory.

Effects: tract and lungs.

Ingredients found on one of the OSHA designated carcinogen lists are listed below. Ingredient Name NTP Status IARC Status OSHA List No ingredients listed in this section

Section 4 - FIRST AID MEASURES

****If any of the symptoms persist, seek medical attention immediately.****

SKIN: Wash skin with soap and water after handling parts. Seek medical attention for persistent irritation.

EYES: Flush eyes for 15 minutes with cool running water if dust becomes embedded. Seek medical attention if reddening persists.

INHALATION: Remove affected person to fresh air.

INGESTION: Not an anticipated route of entry.

ADVICE TO PHYSICIAN: No specialized first aid or medical treatment procedures are required.

Section 5 - FIREFIGHTING MEASURES

FLASH POINT (Method): N/A Flammable Limits: LEL: N/A UEL: N/A

EXTINGUISHING MEDIA: Water, Fog, Foam or Dry Chemical

UNUSUAL FIRE AND EXPLOSION HAZARDS: Toxic and irritating materials may be released in a fire. Wear self-contained breathing apparatus in case dusts are formed during a structural fire Product must exceed 750°F (400°C) for combustion to occur..

=====
Section 6 - ENVIRONMENTAL RELEASE MEASURES
=====

Release of the finished form of product into the environment poses no hazard.
Store in any suitable area away from strong acids and alkalis.

=====
Section 7 - HANDLING AND STORAGE
=====

=====
Section 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION
=====

PERSONAL PROTECTIVE EQUIPMENT

SKIN PROTECTION:

Gloves are recommended when handling or removing brake parts.

EYE PROTECTION:

Safety glasses are adequate for all uses.

RESPIRATORY PROTECTION:

Respiratory protection may be required if dusts are created and the ingredient exposures exceed their respective exposure limits. Use of NIOSH approved air purifying respirators is recommended.

Self contained breathing apparatus is recommended in case dusts are formed during a structural fire.

VENTILATION:

(During all operations which might generate dust including grinding and drilling)

Local Exhaust: Preferred

Mechanical (General): Not applicable

INGREDIENT EXPOSURE LIMITS:

The following ingredients have established exposure limits.

Ingredient	C.A.S. No.	OSHA	ACGIH
Antimony Trisulfide (as Sb)	1345-04-6	PEL 0.5 mg/m3 (TWA)	TLV 0.5 mg/m3 (TWA)
Barium Sulfate	7727-43-7	15 mg/m3 (TWA)	10 mg/m3 (TWA)
total dust		5 mg/m3 (TWA)	
respirable fraction			
Calcium Hydroxide	1305-62-0	15 mg/m3 (TWA)	5 mg/m3 (TWA)
Total dust		5 mg/m3 (TWA)	
respirable fraction			
Calcium Silicate	1344-95-2	15 mg/m3 (TWA)	10 mg/m3 (TWA)
total dust		5 mg/m3 (TWA)	
respirable fraction			

Copper (dusts and mists as Cu)	7440-50-8	1 mg/m3 (TWA)	1 mg/m3 (TWA)
Graphite	7782-42-5	15 mppcf (TWA)	2 mg/m3 (TWA)
Iron Oxide (dust & fume)	12227-89-3	10 mg/m3 (TWA)	5 mg/m3 (TWA)
Mica	12001-26-2	20 mppcf (TWA)	3 mg/m3 (TWA)
Viterous silicate fibers total dust	287922-11-6	15 mg/m3 (TWA)	1 fiber/cc (TWA)
Respirable fraction		5 mg/m3 (TWA)	

Ingredient	C.A.S. No.	OSHA	ACGIH
Zirconium Silicate (as Zr)	14940-68-2	PEL 5 mg/m3 (TWA)	TLV 5 mg/m3 (TWA) 10 mg/m3 (STEL)

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point	N/A	Specific Gravity	2.0 - 3.0
Vapor Pressure (mm Hg)	N/A	Melting Point	N/D
Vapor Density (air=1)	N/A	Evaporation Rate	N/A
Solubility in Water	None		
Appearance and Odor	Solid, odorless, gray color		

Section 10 - STABILITY AND REACTIVITY

Unstable: Stability
Condition to Avoid: None Known
Stable: X

Incompatibility (Materials to Avoid): Avoid contact with strong acids and strong oxidizers
Hazardous Decomposition or By-products:
Incomplete combustion will create carbon monoxide and carbon dioxide.
May Occur:
Hazardous Condition to Avoid: None Known
Polymerization Will Not Occur: X

Section 11 - TOXICOLOGICAL INFORMATION

See Section 3 "Hazards Identification". Ingredient-specific data for this article is not presented.

Section 12 - ECOLOGICAL INFORMATION

=====

No information provided. Product is an article.

=====

Section 13 - DISPOSAL CONSIDERATIONS

=====

RCRA : Is the unused product a RCRA Hazardous waste if discarded? No If yes, the RCRA ID number is:

OTHER DISPOSAL CONSIDERATIONS:

Dispose in accordance to all applicable federal, state and local regulations. The information offered here is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method.

=====

Section 14 - TRANSPORT INFORMATION

=====

This product is not a hazardous material as defined in 49 CFR 172.101 by the U.S. Department of Transportation. Proper Shipping Name Brake Pads Hazard Class Number and Description Not Applicable UN Identification Number Not Applicable Packing Group Not Applicable DOT Label(s) Required Not Applicable Emergency Response Guide Number Not Applicable Marine Pollutant Not Applicable

=====

Section 15 - REGULATORY INFORMATION

=====

This information must be included in all MSDSs that are copied and distributed with these materials.

Toxic Substances Control Act (TSCA):

All the raw materials are listed in the TSCA chemical substance inventory.

SARA 311:

The SARA 311 hazard class is: None (as shipped)

SARA 313: This product contains certain toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning Community Right-To-Know Act of 1988 and 40 CFR 372:

Ingredient C.A.S. No. Weight % in this Product

Antimony Trisulfide (as Antimony compounds) 1345-04-6 1% - 5%

Copper 7440-50-8 10% - 20%

Zinc 7440-66-6 <1% (below de minimus reporting levels)

Reportable Quantities and Threshold Planning Quantities (RQs and TPQs)

The following ingredients have CERCLA/SARA RQs and/or TPQs

Ingredient RQ TPQ

Copper 5000 lbs. None

State Right to Know Lists

The following ingredients appear on various state Right-to-Know lists.

(Other listings under various state health and environmental regulations

may exist.)

Ingredient	States
Antimony Trisulfide (or as antimony compounds)	CA, MI, MN, NJ, NY, PA
Barium Sulfate	MA, MN, PA
Calcium Hydroxide	CA, MA, MN, PA
Calcium Silicate	MA, MN, PA, RI
Copper	CA, MA, MI, MN, NJ, PA
Graphite	CA, MA, MN, PA, RI
Mica	CA, MA, NJ, PA, RI
Paraffinic Distillate	MA
Quartz (impurity in Mica)	CA65c, MA, MN, NJ, PA
Zinc	MA, MI, MN, NJ, NY, PA, RI
Zirconium Silicate (or as zirconium compound)	CA, MN

CA - Directors List of Hazardous Substances
MA - Massachusetts Right To Know List
MN - Minnesota Hazardous Substance List
NY - New York Hazardous Substances List
RI - Rhode Island Hazardous Substance List

CA65c - California Proposition 65 Carcinogen
MI - Michigan Critical Materials List
NJ - New Jersey Right to Know Lists
PA - Pennsylvania Right to Know List

Other Major U.S. Federal Regulatory Lists:
The following ingredients are found on additional major U.S. environmental regulations lists.

Ingredient List
Antimony Trisulfide (as antimony compound) CWA - TP
Copper CWA - PP, CWA - TP
Zinc CWA - PP, CWA - TP

CWA - PP: Clean Water Act Priority Pollutant CWA - TP: Clean Water Act Toxic Pollutant

=====
Section 16 - OTHER INFORMATION
=====

The information in this MSDS was obtained from sources believed to be reliable.

However, by the delivery or provision of this MSDS, Akebono Corporation (North America) makes no express or implied warranties of any kind, including warranties of merchantability or fitness for a particular purpose, with

respect to the friction material products or the accuracy of the data contained herein and Akebono Corporation (North America) will have no liability for loss, damage or expense of any nature whatsoever directly resulting from, arising out or in any way connected with the handling, storage or use or disposal of the products or publication. Each user should review

these recommendations in the specific context of the intended use and determine whether they are appropriate.

General Guidelines For Brake Service

While most friction materials used for brake service may still contain asbestos, many suppliers are now replacing asbestos with steel, mineral, and/or synthetic fibers. The OSHA regulations refer directly to the asbestos used in friction materials. However, since the long term medical effects of the non-asbestos fibers are unknown, it is suggested that exposure levels be controlled for all replacement friction materials. The OSHA regulations on asbestos exposure emphasize two levels for airborne concentrations of asbestos. These levels determine if the workplace is in compliance with the regulations, and if not, what action must be taken.

- A. The Permissible Exposure Level (PEL): 0.1 fiber per cc, 8 hour time weighted average (TWA).
- B. Excursion limit. No employee is to be exposed to an airborne concentration of asbestos in excess of 1.0 fiber per cubic centimeter of air (1 f/cc) as averaged over a sampling period of thirty (30) minutes.
 1. 1. Always follow the "Work Practices and Engineering Controls for Brake and Clutch Inspection, Disassembly, Repair and Assembly - Mandatory" (29 CFR 1910.1001, Appendix F).
 2. 2. Whenever possible, purchase friction materials that are preground and ready for installation. If machining is necessary, there is a possibility that the Permissible Exposure Limit (PEL) for one or more of the ingredients in the friction material may be exceeded. Local exhaust ventilation must be provided so that worker exposures are maintained below the PEL. Local exhaust ventilation consists of dust collection hoods or enclosures connected by ductwork or piping to a pollution control device.
 3. 3. In certain grinding operations where concentrations cannot be reduced below the PEL, a respirator program should be implemented. Respirators also may be required during certain maintenance, start-up or emergency situations where engineering controls cannot maintain concentrations below the PEL. The respirator must be one approved by the National Institute for Occupational Safety and Health (NIOSH) for the concentrations encountered.
 4. 4. Good housekeeping is essential in a workplace where friction materials are handled. Vacuums equipped with High Efficiency Particulate (HEPA) filters should be used to remove accumulations of friction dusts and wastes. Water or other dust suppressants should be applied if brooms are used.

Never use compressed air or dry sweeping for cleaning. Industrial vacuum cleaner bags containing asbestos dust, cloths used for wiping brake assemblies, used cartridges from respirators, and disposable work clothing should be sealed in plastic bags and labeled with the following warning label printed in letters of sufficient size and contrast to be readily visible and legible:

DANGER MAY CONTAIN ASBESTOS FIBERS AVOID CREATING DUST CANCER AND LUNG DISEASE HAZARD

All asbestos waste should be disposed of in accordance with OSHA and EPA asbestos regulations and local ordinances.

5. Good personal hygiene practices are important in minimizing dust exposures.

Do not smoke. Wash before eating. If the PEL is exceeded, protective equipment should be worn. Change into work clothes upon arrival at work and change from work clothes at conclusion of work. Do not take work clothing home.

Appendix F to Part 1910.1001 -- Work Practices and Engineering Controls for Automotive Brake and Clutch Inspection, Disassembly, Repair and Assembly -- Mandatory

This mandatory appendix specifies engineering controls and work practices that must be implemented by the employer during automotive brake and clutch inspection, disassembly, repair, and assembly operations. Proper use of these engineering controls and work practices will reduce employees' asbestos exposure below the permissible exposure level during clutch and brake inspection, disassembly, repair, and assembly operations.

The employer shall institute engineering controls and work practices using either the method set forth in paragraph [A] or paragraph [B] of this appendix, or any other method which the employer can demonstrate to be equivalent in terms of reducing employee exposure to asbestos as defined and which meets the requirements described in paragraph [C] of this appendix, for those facilities in which no more than 5 pairs of brakes or 5 clutches are inspected, disassembled, reassembled and/or repaired per week, the method set forth in paragraph [D] of this appendix may be used:

[A] Negative Pressure Enclosure/HEPA Vacuum System Method

- . (1) The brake and clutch inspection, disassembly, repair, and assembly operations shall be enclosed to cover and contain the clutch or brake assembly and to prevent the release of asbestos fibers into the worker's breathing zone.
- . (2) The enclosure shall be sealed tightly and thoroughly inspected for leaks before work begins on brake and clutch inspection, disassembly, repair, and assembly.
- . (3) The enclosure shall be such that the worker can clearly see the operation and shall provide impermeable sleeves through which the worker can handle the brake and clutch inspection, disassembly, repair and assembly. The integrity of the sleeves and ports shall be examined before work begins.
- . (4) A HEPA-filtered vacuum shall be employed to maintain the enclosure under negative pressure throughout the operation. Compressed air may be used to remove asbestos fibers or particles from the enclosure.
- . (5) The HEPA vacuum shall be used first to loosen the asbestos-containing residue from the brake and clutch parts and then to evacuate the loosened asbestos-containing material from the enclosure and capture the material in the vacuum filter.
- . (6) The vacuum's filter, when full, shall be first wetted with a fine mist of water, then removed and placed immediately in an impermeable container, labeled according to paragraph (j) (2) (ii) [see text of law] of the standard and disposed of according to paragraph (k) [see text of law] of the standard.
- . (7) Any spills or releases of asbestos-containing waste material from inside of the enclosure or vacuum hose or vacuum filter shall be immediately cleaned up and disposed of according to paragraph (k) [see text of law] of the standard.

[B] Low Pressure/Wet Cleaning Method

- . (1) A catch basin shall be placed under the brake assembly, positioned to avoid splashes and spills.

- . (2) The reservoir shall contain water containing an organic solvent or wetting agent. The flow of liquid shall be controlled such that the brake assembly is gently flooded to prevent the asbestos-containing brake dust from becoming airborne.
- . (3) The aqueous solution shall be allowed to flow between the brake drum and brake support before the drum is removed.
- . (4) After removing the brake drum, the wheel hub and back of the brake assembly shall be thoroughly wetted to suppress dust.
- . (5) The brake support plate, brake shoes and brake components used to attach the brake shoes shall be thoroughly washed before removing the old shoes.
- . (6) In systems using filters, the filters, when full, shall be first wetted with a fine mist of water, then removed and placed immediately in an impermeable container, labeled according to paragraph (j) (2) (ii) [see text of law] of this section and disposed of according to paragraph (k) [see text of law] of this section.
- . (7) Any spills of asbestos-containing aqueous solution or any asbestos-containing waste material shall be cleaned up immediately and disposed of according to paragraph (k) [see text of law] of this section.
- . (8) The use of dry brushing during low pressure/wet cleaning operations is prohibited.

[C] Equivalent Methods

An equivalent method is one which has sufficient written detail so that it can be reproduced and has been demonstrated that the exposures resulting from the equivalent method are equal to or less than the exposures which would result from the use of the method described in paragraph [A] of this appendix. For purposes of making this comparison, the employer shall assume that exposures resulting from the use of the method described in paragraph [A] of this appendix shall not exceed 0.004 f/cc, as measured by the OSHA reference method and as averaged over at least 18 personal samples.

[D] Wet Method

- . (1) A spray bottle, hose nozzle, or other implement capable of delivering a fine mist of water or amended water or other delivery system capable of delivering water at low pressure, shall be used to first thoroughly wet the brake and clutch parts. Brake and clutch components shall then be wiped clean with a cloth.
- . (2) The cloth shall be placed in an impermeable container, labeled according to paragraph (j) (2) (ii) [see text of law] of the standard and then disposed of according to paragraph (k) [see text of law] of the standard, or the cloth shall be laundered in a way to prevent release of asbestos fibers in excess of 0.1 fiber per cubic centimeter of air.
- . (3) Any spills of solvent or any asbestos-containing waste material shall be cleaned up immediately according to paragraph (k) [see text of law] of the standard.
- . (4) The use of dry brushing during the wet method operations is prohibited.