FILE NAME: Allied Signal Bendix (ASB)

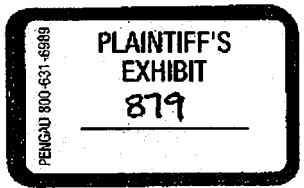
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MATERIAL SAFETY DATA SHEET (1986)

Allied Signal 3/17/03 00475



ALLIED

ALLIED CORPORATION
BENDIX FRICTION MATERIALS DIVISION
MATERIAL SAFETY DATA SHEET

The following data may be used to comply with OSHA's Hazard Communication Standard 29 CFR 1910.1200. The OSHA Standard must, however, be consulted for specific requirements.

The Friction Material products identified in this Sheet meet the OSHA definition of an "article" and are exempt from the Hazard Communication Standard as to all reasonable uses. Some potential may, however, exist for exposure to asbestos dust.

The ingredients in these Friction Material products are resin-bonded and cured. Hazards normally associated with exposure to or contact with pure dusts of the listed ingredients are not expected to be significant. Allied has listed all of the essential ingredients present in a series of Friction Material products of this general description. All Friction Material products identified on this MSDS contain processed chrysotile asbestos fibers, but may contain some of the other materials shown. The recommended exposure limits are those for the most hazardous substance in a class of substances. Exact formulations are proprietary and therefore confidential. Precise product information will not be disclosed, other than in accordance with applicable laws and regulations, or without a written Secrecy Agreement.

Allied shall in no event be responsible for any damages of whatsoever nature or kind directly or indirectly resulting from or arising out of 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 Friction Material products or to the data herein is made hereunder.

PRODUCTS — Bendix Friction Materials covered by this Material Safety Data Sheet can be identified from box labels or price lists as follows:

Drum Brake Segments and Blocks — "Friction King", "FK", "FKD", "D", "FKL", "L", "M", "AE", "E", "ED", "EM", "HP", "ST" and "S-1100."

Disc Brake Pads — "Organic" and "FK II" (semi-metallic).

Note: The "wearing surface" of "FK II" disc pads does not contain processed chrysotile asbestos fiber. However, processed chrysotile asbestos fibers may be included in the "backing layer" which is "sandwiched" between the friction material and the steel shoe plate.

SECTION I

Manufacturer's Name: ALLIED CORPORATION
Bendix Friction Materials Division
Address: P.O. Box 238
Troy, New York 12181

Emergency Telephone Number 518-273-6550
Date Prepared July 30, 1986
Preparer E.L. Rogers

SECTION II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV
Asbestos (Chrysotile)	0.2 fiber/c.c.	2 fibers/c.c.
Silica (oc quartz)	*	*
Silicate(s)		
Carbon Black	10 mg/m³	10 mg/m³
Coke (Petroleum derived)	3.5 mg/m³	3.5 mg/m³
Cured phenolic and cashew resins	NA	NA
Graphite	10 mg/m³	10 mg/m³
Iron, Zinc, Aluminum and their oxides	*	*

* = Respirable Fraction as based upon the formula

$$\frac{10\ mg/m^3}{\%\ Silica + 2}$$ (See OSHA table Z-1000)

SECTION III — Physical/Chemical Characteristics

Boiling Point ..... NA	Specific Gravity (H_2O = 1) ..... 1.6 - 3.7
Vapor Pressure (mm Hg.) ..... NA	Melting Point ..... NA
Vapor Density (Air = 1) ..... NA	Evaporation Rate 0
Solubility in Water ..... NO	

Appearance and Odor: Solid, Odorless, Light Tan to Dark Grey Color

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SECTION IV — Fire and Explosion Hazard Data

Flash Point (Method Used): NA Flammable Limits: NA LEL: NA UEL: NA
Extinguishing Media: Water, (Class A, B, or C), Fog or Foam
Special Fire Fighting Procedures: NA
Unusual Fire and Explosion Hazards: NA

SECTION V — Reactivity Data

Stability		
	Unstable:	Conditions to Avoid: None Known
	Stable X	

Incompatibility (Materials to Avoid): None Known
Hazardous Decomposition or Byproducts: Incomplete combustion will create carbon monoxide and carbon dioxide

Hazardous Polymerization		
	May Occur:	Conditions to Avoid: None Known
	Will Not Occur: X	

SECTION VI — Health Hazard Data

Route(s) of Exposure: Inhalation? Yes Skin? Yes Ingestion? Yes
Health Hazards (Acute and Chronic)

Some persons may be sensitive to partially cured phenolic or cashew resins and develop dermatitis-type reactions. Dusts of crystalline silica may produce silicosis. Metal dusts can be irritants of the eyes and upper respiratory system. There is little known evidence of chronic industrial poisoning from iron, aluminum, and zinc dusts.

Inhalation of concentrations of airborne asbestos fibers in excess of the OSHA limits may be hazardous to health and may cause serious bodily harm, such as asbestosis, lung cancer or mesothelioma. These diseases may not be recognized until many years after exposure. Medical literature indicates that people who smoke are at a significantly increased health risk when working with airborne asbestos fibers.

Carcinogenicity Listing:	NTP?	IARC Monographs?	OSHA Regulated?
Asbestos fibers	Yes	Yes	Yes

Signs and Symptoms of Exposure:

Partially Cured Cashew Resins — skin eruptions similar in appearance to poison ivy. Lung Effects from asbestos and crystalline silica — coughing, wheezing, shortness of breath, impaired pulmonary function. Dusts in eye may cause irritation. Gastrointestinal disturbances possible from ingestion.

Emergency and First Aid Procedures —

Should not be necessary from a proper handling of this Friction Material product.

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SECTION VII — SPILL OR LEAK PROCEDURES

Steps to be taken in case material is released or spilled:

Refer to Section IX (Special Precautions) below and "Recommended Procedures" on Page 4.

Waste Disposal Method:

Dispose of in proper receptacles appropriately labelled in accordance with applicable federal, state and local laws and regulations.

Place receptacles in an "Authorized Landfill" as designated by federal or state authorities.

SECTION VIII — Special Protection Information

Respiratory Protection (Specify Type): Not Required under normal conditions.
However, if concentration of airborne asbestos fibers in excess of the OSHA standard is created, respirators approved by NIOSH for asbestos fibers should be used.

Ventilation:
(during machining — including grinding and drilling)

Local Exhaust: Preferred
Mechanical (General): Not applicable

Protective Gloves: Recommended

Eye Protection: Safety Glasses Suggested

Other Protective Equipment:
See paragraph 7 of Recommended Procedures on Page 4

SECTION IX — SPECIAL PRECAUTIONS

The Friction Material product, as shipped, is not considered hazardous, but machining (grinding and drilling) and/or normal use may create asbestos dust or airborne asbestos fibers in excess of OSHA standard and should be considered hazardous.

Recommended Precaution — If airborne asbestos fiber concentrations exceed OSHA limits, NIOSH approved respirators should be worn and proper engineering controls implemented. If product is ground or machined, local exhaust to control exposure to airborne asbestos fibers or dust is recommended. (See "Recommended Procedures" on Page 4.)

The work environment should be monitored to determine whether employee exposure exceed OSHA permissible exposure level in accordance with OSHA regulation 29 CFR Part 1910.1001.

Packages containing the Friction Material Product should be labelled in accordance with OSHA regulation 29 CFR Part 1910.1001 (j) (2) as follows:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE
HAZARD

Standard industrial hygiene practices, including good housekeeping and vacuuming or wet cleaning work surfaces to prevent asbestos fibers or dust from becoming airborne, should be instituted or implemented and maintained.

SEE REVERSE SIDE FOR FRICTION MATERIALS STANDARDS INSTITUTE'S RECOMMENDED PROCEDURES FOR REDUCING ASBESTOS DUST DURING BRAKE SERVICING.

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RECOMMENDED PROCEDURES FOR REDUCING ASBESTOS DUST DURING BRAKE SERVICING

Because studies have indicated that exposure to excessive amounts of asbestos dust may be a potential health hazard, OSHA has set maximum limits of levels of airborne asbestos dust to which workers may be exposed. Since most automotive friction materials normally contain a sizable amount of asbestos, it is important that people who handle brake linings and clutch facings understand the nature of the problem and know the precautions to be taken.

1. In regulated areas where brake work is done and the air quality standard exceeds the OSHA limit, entrances should be posted with a warning sign as follows:

DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE CLOTHING
ARE REQUIRED IN THIS AREA

2. The amount of asbestos in the dust from brake lining wear is normally at an extremely low level because of chemical breakdown during use, and if machining of friction material does not take place, simple procedures will minimize exposure. During brake servicing, the mechanic should wear a respirator approved by NIOSH for asbestos dust. It should be worn during all procedures starting with the removal of wheels and including reassembly.

3. When removing worn friction materials, remove the accumulated dust in the assemblies with an industrial vacuum cleaner equipped with a high efficiency filter system. If such equipment is not available, dust can be removed with a damp cloth. Do not use compressed air or dry brushing for cleaning unless the assembly is enclosed and properly exhausted.

4. Whenever possible, purchase friction materials pre-ground and ready for installation. If machining is necessary, the precautions which must be taken are of extreme importance. This is the operation in brake service when exposure to asbestos dust may be at its highest. This increases the difficulty in complying with the OSHA standards. In addition to the approved respirator, there must be local exhaust ventilation such that worker exposures are maintained below the OSHA asbestos standards. If there is any question as to the efficiency of asbestos dust removal by the machine, the manufacturer should be contacted.

5. Industrial vacuum cleaner bags containing asbestos dust and cloths used for wiping brake assemblies 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
CONTAINS 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. During removal of vacuum bags, an approved respirator, as described in (2) above should be worn.

6. Good housekeeping is essential in a workplace where asbestos containing materials are handled. Industrial vacuum cleaners equipped with multiple stage high efficiency filters should be used for removing accumulations of asbestos dust and waste. Never use compressed air or dry sweeping for cleaning. Water or other dust suppressants should be applied if brooms are used.

7. Good personal hygiene practices are important in minimizing asbestos dust exposure. Do not smoke. Wash before eating. Shower after work. Change to work clothes upon arrival at work and change from work clothes at conclusion of work. Work clothing should not be taken home. Laundering of asbestos contaminated clothing shall be done so as to prevent release of airborne asbestos fibers in excess of the exposure limits.

CAUTION: DO NOT BREATHE ASBESTOS DUST

Reproduced from the 1986 Friction Materials Standards Institute Automotive Data Book with the warning sign in paragraph 1 and the warning label in paragraph 5 revised to conform to OSHA Standard effective July 21, 1986.

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