



**ALLIEDSIGNAL INC.
MATERIAL SAFETY DATA SHEET**

MATERIAL: Semi-Met Disc Pad
Asbestos Backing

TRADE NAME: AlliedSignal Braking Systems
Friction Material

EMERGENCY TELEPHONE: Dr. Lowell Paul (810) 626-9040

SECTION I - GENERAL INFORMATION

MANUFACTURER: AlliedSignal, Inc.
ADDRESS: 900 West Maple Rd.
Troy, Michigan 48084

PRODUCT INFORMATION: 810-362-7196
ISSUE DATE: 01-20-95

CHEMICAL NAME: Disc Pad, Semi-Met **C.A.S.:** #1
FORMULA: Mixture of proprietary ingredients: See Section II.
EDGE CODE: JD, JF, JX, XO
SHIPPING MARKING (49CFR 172.101): BX-"NN", CBD-"NNN", ETC.
D.O.T. HAZARD NAME (49CFR 172.101): None
D.O.T. ID NO (49CFR 172.101): None
D.O.T. HAZARD CLASS (49CFR 172.101): None
RCRA HAZARD CLASS (40CFR 261) (IF DISCARDED): None
E.P.A. PRIORITY POLLUTANTS (40CFR 122.53): None
NFPA = NATIONAL FIRE PROTECTION ASSOCIATION - 704
HEALTH: 1 FLAMMABILITY: 1 REACTIVITY: 0

**SECTION II - HAZARDOUS INGREDIENTS AS DEFINED IN 29 CFR 1910.1200
(Carcinogens identified with an asterisk*)**

CAS NO.	INGREDIENT COMMON NAME	WT-%	EXPOSURE LIMITS (RESPIRABLE)
1317-65-3	Calcium Carbonate	5-10	5 mg/m ³
7727-43-7	Barium Sulfate	5-15	5 mg/m ³
1344-28-1	Aluminum Oxide	2-10	5 mg/m ³
1309-48-4	Magnesium Oxide	1-5	5 mg/m ³
1333-86-4	Carbon Black	2-10	3.5 mg/m ³
7782-42-5	Graphite	1-5	2.5 mg/m ³
1309-37-1	Iron Oxide	2-5	10 mg/m ³
14808-60-7	Silica/Quartz	2-5	*

NON HAZARDOUS RESINS AND FILLERS: Balance

* Based on formula: 10 mg/m³ (See OSHA Table Z-1000)
& - Silica +2

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*** * * WARNING * * ***

**AVOID CREATING OR BREATHING DUST. CONTAINS HAZARDOUS SUBSTANCES WHICH
MAY CAUSE LUNG INJURY.**

GENERAL REQUIREMENT: TOTAL DUST SHALL NOT EXCEED 10 MG/M³

SPECIAL NOTE ON ASBESTOS BACKING:

A few of the part types of these formulas have an asbetos backing layer. Boxes that contain these pads are marked with a special label that asbestos is contained in the parts. The backing is not a hazard in normal grinding and mounting of the pads on a car. However, if the lining is severely worn, or is cut or machined to the backing layer, then all dust controls and applicable to the use of standard asbestos linings should be followed. A copy of the MSDS for asbestos lining formulas (which also applies to backing layers) in enclosed.

SECTION III - EFFECTS OF OVEREXPOSURE

- NOTE:** Avoid creating dust. The parts are not inherently hazardous. All the listed effects relate to dust residues on the parts or to dust generated in installation.
- EYES:** May cause transient irritation with no corneal injury likely if immediately removed by washing. Repeated or prolonged exposure to dust may cause eye irritation.
- SKIN:** May cause minor irritation upon single contact but is not appreciably absorbed. Repeated contact may cause sensitization and skin rash.
- INHALATION:** Avoid inhalation of dust. TLV for inert or nuisance particulate is 10 mp/m³ or 30 mpp/cf, whichever is lower per ACHIH TLV of airborne contaminants.
- INGESTION:** Do not ingest. Irritant to gastrointestinal tract.

SECTION IV - EMERGENCY AND FIRST AID PROCEDURES

Should not be necessary from a proper handling of these friction material products.

FIRE AND EXPLOSION DATA

FLASH POINT: N/A ° F [] OPEN CUP [] CLOSED CUP

UNUSUAL FIRE & EXPLOSION HAZARDS: None

EXTINGUISHING MEDIA: N/A **SPECIAL FIRE-FIGHTING PRECAUTIONS:** None

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SECTION VI - PHYSICAL DATA

MATERIAL STATE @ NORMAL CONDITIONS:

☐ LIQUID	☒ SOLID	☐ GAS	☐ POWDER	☐ OTHER
APPEARANCE & ODOR: Gray or dark solid part - mild odor				
SPECIFIC GRAVITY:	3.2-3.7 GM/CC	pH:	N/A	
BOILING POINT:	N/A	MELTING POINT:	N/A	
VOLATILES:	None	SOLUBILITY IN WATER:	None	

SECTION VII - REACTIVITY DATA

STABILITY:	☒ STABLE	☐ UNSTABLE
CONDITIONS TO AVOID:	None	
HAZARDOUS DECOMPOSITION PRODUCTS:	None	
HAZARDOUS POLYMERIZATION:	☐ MAY OCCUR	☒ WILL NOT OCCUR

SECTION VIII - SPILL, LEAK, MAINTENANCE & DISPOSAL PROCEDURES
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STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

(Solids parts - no special procedures required.)

WASTE DISPOSAL METHOD: Dispose by landfill according to Federal, State and local regulations.

D.O.T. (49 CFR 171.8) / E.P.A. (40CFR 117) SPILL REPORTING INFORMATION:

HAZARDOUS SUBSTANCE:	NONE
REPORTABLE QUANTITY:	N/A
CONCENTRATION OF HAZARDOUS SUBSTANCES:	N/A
REPORTABLE QUANTITY OF PRODUCT:	N/A

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SECTION IX - ROUTINE HANDLING PRECAUTIONS

EYES: Use proper protection -- safety glasses, as a minimum.

SKIN: Washing on leaving work area and at end of shift.

INHALATION: Respiratory protection is needed if dust is generated.

VENTILATION: Local exhaust not required
Mechanical (general): Recommended

**SUITABLE
RESPIRATOR:** Recommended for anyone sensitive to the dust.

STORAGE: No special precautions

SECTION X - SPECIAL PRECAUTIONS

Special precautions are required when removing asbestos backed disk pads. Since asbestos fibers may be released in removing the worn out lining we suggest the worker follow the recommended procedures published by the "Friction Materials Institute" that are reproduced on page 5.

SECTION XI - COMMENTS

SUPPLEMENTAL STATE COMPLIANCE INFORMATION:

PENNSYLVANIA: 1344281 Aluminum Oxide
7727437 Barium Sulphate

These data are offered in good faith as typical values and not as a product specification. Allied shall in no event be responsible for damages of whatsoever nature or kind directly or indirectly resulting or arising out of the publication or use of or reliance upon data presented here. 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.

PREPARED BY: Dr. A. Staklis
LAST REVISION DATE Jan. 20, 1995
PREVIOUS REVISION DATE: Oct. 29, 1993

RECOMMENDED PROCEDURES FOR REDUCING ASBESTOS DUST DURING BRAKE SERVICING

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 material. 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.

1. The OSHA regulations on asbestos exposure emphasize two levels for airborne concentrations of asbestos. These levels determine (1) if the workplace is in compliance with the regulations, and (2) if not, what action must be taken.

(1) The Permissible Exposure Level (PEL): 0.2 fiber per cc, 8 hour time weighted average (TWA).

(2) The Action Level: 0.1 fiber per cc 8 hour TWA. (The regulation is not activated if fiber exposure remains 0.1 fiber per cc.)

If certain precautions are taken, it is believed that the workplace can be maintained at levels below the Action Level, and if this is the case, several requirements of the OSHA regulations may be avoided. Monitoring of these levels is required where exposure is or may be expected to exceed the Action Level.

2. Areas where brakes are serviced should be set aside. If concentrations exceed the permissible exposure level (PEL), a "regulated area" must be established which restricts occupancy to authorized personnel. Where a "regulated area" is designated a warning sign must be displayed at each entrance to the area:

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

3. When removing worn friction materials or cleaning used brake parts, remove the accumulated dust with a vacuum cleaner equipped with a High Efficiency Particulate Air (HEPA) filter. If removing accumulated dust or other debris from the brake assembly, alternate wet methods may be used: (a) Compressed air/solvent bottle system where parts are sprayed with a mist and the wetted particles are removed with a wet rag, or (b) Solvent spray-mist with final clean-up with a wet rag. Do not use compressed air or dry brushing for cleaning unless the assembly is enclosed and properly exhausted. (Refer to OSHA Asbestos Regulations, CFR Title 29, Part 1910. 1001, Appendix F).

4. Whenever possible, purchase friction materials preground and ready for installation. If machining is necessary, there is the possibility that the permissible exposure level (PEL) may be exceeded, in which case respirator protection is required. There must be local exhaust ventilation such that worker exposures are maintained below the PEL. Local exhaust ventilation consists of dust collection hoods or enclosures connected by duct or piping to a collection filter and suction source.
5. In certain grinding operations, where concentrations cannot be reduced below the permissible exposure level (PEL), a respirator program shall be used. The respirator must be one approved by the National Institute for Occupational Safety and Health (NIOSH) for the concentrations encountered. Respirators may also be required during certain maintenance, start-up or emergency situations where engineering controls cannot maintain concentrations below the PEL. Where a regulated area is designated for concentrations exceeding the PEL, approved respirators with high efficiency filters must be worn.
6. 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
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 and local ordinances.

7. Good housekeeping is essential in a workplace where asbestos-containing materials are handled. Industrial vacuum cleaners equipped with High Efficiency Particulate Air (HEPA) 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.
8. Good personal hygiene practices are important in minimizing asbestos dust exposure. Do not smoke. Wash before eating. Shower after work. If the PEL is exceeded, protective clothing must be worn. Change to work clothes upon arrival at work and change from work clothes at conclusion of work. Do not take work clothing home. Laundering of asbestos contaminated clothing shall be done so as to prevent release of airborne asbestos fibers in excess of the permitted exposure level.