1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Ashland P.O. Box 2219 Columbus, OH 43216	Regulatory Information Number Telephone Emergency telephone	1-800-325-3751 614-790-3333 1-800-ASHLAND (1-800-274-5263)

Product name	DOT 3 & 4 BRAKE FLUID
Product code	541298
Product Use Description	No data

2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance: liquid,, yellow

WARNING! MAY AFFECT THE CENTRAL NERVOUS SYSTEM CAUSING DIZZINESS, HEADACHE OR NAUSEA. MAY BE HARMFUL IF SWALLOWED. CAUSES EYE IRRITATION. MAY CAUSE SKIN AND RESPIRATORY TRACT IRRITATION.PROLONGED OR REPEATED CONTACT MAY DRY SKIN AND CAUSE DERMATITIS AND BURNS.

Potential Health Effects

Routes of exposure

Inhalation, Skin absorption, Skin contact, Eye Contact, Ingestion

Eye contact

Can cause severe eye irritation. Symptoms include stinging, tearing, redness, and swelling of eyes. Can injure eye tissue.

Skin contact

Can cause skin irritation. Symptoms may include redness and burning of skin, and other skin damage. Skin absorption of this material (or a component) may be increased through injured skin. Although rare, skin contact with ethylene glycol may cause allergic skin reaction (delayed skin rash which may be followed by blistering, scaling and other skin effects).

Ingestion

Liver, kidney and brain damage in humans has resulted from swallowing lethal or near-lethal amounts of ethylene glycol.

Inhalation

Symptoms are not expected at air concentrations below the recommended exposure limits, if applicable (see Section 8.).

Aggravated Medical Condition

Preexisting disorders of the following organs (or organ systems) may be aggravated by exposure to this material:, lung (for example, asthma-like conditions), liver, kidney, blood-forming system, central nervous system, skin, Exposure to this material may aggravate any preexisting condition sensitive to a decrease in available oxygen, such as chronic lung disease, coronary artery disease or anemias.

Symptoms

Signs and symptoms of exposure to this material through breathing, swallowing, and/or passage of the material through the skin may include:, stomach or intestinal upset (nausea, vomiting, diarrhea), irritation (nose, throat, airways), cough, central nervous system excitation (giddiness, liveliness, light-headed feeling) followed by central nervous system depression (dizziness, drowsiness, weakness, fatigue, nausea, headache, unconsciousness) and other central nervous system effects, involuntary eye movement, pain in the abdomen and lower back, loss of coordination, confusion, difficult breathing, cyanosis (causes blue coloring of the skin and nails from lack of oxygen), Bloody urine, blood abnormalities (breakage of red blood cells), narcosis (dazed or sluggish feeling), lung edema (fluid buildup in the lung tissue), acute kidney failure (sudden slowing or stopping of urine production), kidney damage, liver damage, convulsions, coma

Target Organs

Diethylene glycol monobutyl ether has been found to cause breakage of red blood cells following ingestion in rats. Injury to other organs including liver and kidneys was considered secondary to the effect on the blood., Acute lethal exposure to ethylene glycol monobutyl ether in animal studies has resulted in congestion of organs including kidney, spleen, and lung., Overexposure to this material (or its components) has been suggested as a cause of the following effects in laboratory animals:, blood abnormalities, central nervous system damage, kidney damage, liver damage, reproductive effects, mild, reversible spleen effects, Overexposure to this material (or its components) has been suggested as a cause of the following effects in humans:, kidney damage, liver damage

Carcinogenicity

This material is not listed as a carcinogen by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP), or the

Occupational Safety and Health Administration (OSHA). Ethylene glycol monobutyl ether has been shown to cause cancer in laboratory animals. The relevance of this finding to humans is uncertain.

Reproductive hazard

This material (or a component) has been shown to cause harm to the fetus in laboratory animal studies. Harm to the fetus occurs only at exposure levels that harm the pregnant animal. The relevance of these findings to humans is uncertain., Diethylene glycol monobutyl ether did not cause harm to the fetus when given orally or when applied to the skin in laboratory animal studies., Ethylene glycol has caused birth defects in animal studies at high oral doses. However, it did not cause harm to the pregnant animal or to the fetus when applied to the skin of the pregnant animal.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS-No.	Concentration
TRIETHYLENE GLYCOL MONOBUTYL ETHER	143-22-6	>=80-<90%
DIETHYLENE GLYCOL MONOBUTYL ETHER	112-34-5	>=30-<40%
DIETHYLENE GLYCOL	111-46-6	>=10-<15%
TRIETHYLENE GLYCOL MONOETHYL ETHER	112-50-5	>=5-<10%
ETHANOL, 2-(2-PROPOXYETHOXY)-	6881-94-3	>=5-<10%
DIETHYLENE GLYCOL MONOETHYL ETHER	111-90-0	>=1.5-<5%
TRIETHYLENE GLYCOL	112-27-6	>=1.5-<5%
ETHYLENE GLYCOL	107-21-1	>=1-<1.5%

4. FIRST AID MEASURES

Eyes

If symptoms develop, immediately move individual away from exposure and into fresh air. Flush eyes gently with water for at least 15 minutes while holding eyelids apart; seek immediate medical attention.

Skin

Remove contaminated clothing. Flush exposed area with large amounts of water. If skin is damaged, seek immediate medical attention. If skin is not damaged and symptoms persist, seek medical attention. Launder clothing before reuse.

Ingestion

Seek medical attention. If individual is drowsy or unconscious, do not give anything by mouth; place individual on the left side with the head down. Contact a physician, medical facility, or poison control center for advice about whether to induce vomiting. If possible, do not leave individual unattended.

Inhalation

If symptoms develop, move individual away from exposure and into fresh air. If symptoms persist, seek medical attention. If breathing is difficult, administer oxygen. Keep person warm and quiet; seek immediate medical attention.

Notes to physician

Hazards: Effects of acute ethylene glycol poisoning appear in three fairly distinct stages. The initial stage occurs shortly after exposure, lasts 6-12 hours, and is characterized by central nervous system effects (transient exhilaration, nausea, vomiting, and in severe cases, coma, convulsions, and possible death). The second stage lasts from 12-36 hours after exposure and is initiated by the onset of coma. This phase is characterized by tachypnia, tachycardia, mild hypotension, cyanosis, and in severe cases, pulmonary edema, bronchopneumonia, cardiac enlargement, and congestive failure. The final stage occurs 24-72 post-exposure and is characterized by renal failure, ranging from a mild increase in blood urea nitrogen and creatinine followed by recovery, to complete anuria with acute tubular necrosis that can lead to death. Oxaluria is found in most cases. The most significant laboratory finding in ethylene glycol intoxication is severe metabolic acidosis. Diglycol ethers may cause acidosis. Ingestion or other significant exposure to this material (or a component) may cause metabolic acidosis.

Treatment: Fomepizole (4-methylpyrazole) is an effective antagonist of alcohol dehydrogenase, and as such, may be used as an antidote in the treatment of ethylene glycol, diethylene glycol and methanol poisoning. This product contains ethylene glycol. Ethanol decreases the metabolism of ethylene glycol to toxic metabolites. Ethanol should be administered as soon as possible in cases of severe poisoning since the elimination half-life of ethylene glycol is 3 hours. If medical care will be delayed several hours, give the patient three to four 1-ounce oral "shots" of 86-proof or higher whiskey before or during transport to the hospital. Fomepizole (4-methylpyrazole) is an effective antagonist of alcohol dehydrogenase, and as such, may be used as an antidote in the treatment of ethylene glycol poisoning. Hemodialysis effectively removes ethylene glycol and its metabolites from the body.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

Dry chemical, Carbon dioxide (CO2), Alcohol-resistant foam, Water sprayCarbon dioxide (CO2), Dry chemical

Hazardous combustion products

alcohols, aldehydes, ethers, carbon dioxide and carbon monoxide, nitrogen oxides, toxic fumes, various hydrocarbons

Precautions for fire-fighting

Wear full firefighting turn-out gear (full Bunker gear), and respiratory protection (SCBA). DO NOT direct a solid stream of water or foam into hot, burning pools of liquid since this may cause frothing and increase fire intensity. Frothing can be violent and possibly endanger any firefighter standing too close to the burning liquid. Use water spray to cool fire exposed containers and structures until fire is out if it can be done with minimal risk. Avoid spreading burning liquid with water used for cooling purposes.

Flammability Class for Flammable Liquids

Combustible Liquid Class IIIB

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

For personal protection see section 8. Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed.

Environmental precautions

Prevent spreading over a wide area (e.g. by containment or oil barriers). Do not let product enter drains. Do not flush into surface water or sanitary sewer system.

Methods for cleaning up

Keep in suitable, closed containers for disposal. Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).

Other information

Comply with all applicable federal, state, and local regulations.

7. HANDLING AND STORAGE

Handling

Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid, and/or solid), all hazard precautions given in the data sheet must be observed.

Storage

Store in a cool, dry, ventilated area.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines

ETHYLENE GLYCOL		**107-21-1**	
ACGIH	Ceiling Limit Value:	100 mg/m3	Aerosol.

General advice

These recommendations provide general guidance for handling this product. Personal protective equipment should be selected for individual applications and should consider factors which affect exposure potential, such as handling practices, chemical concentrations and ventilation. It is ultimately the responsibility of the employer to follow regulatory guidelines established by local authorities.

Exposure controls

Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below exposure guidelines (if applicable) or below levels that cause known, suspected or apparent adverse effects.

Eye protection

Wear chemical splash goggles when there is the potential for exposure of the eyes to liquid, vapor or mist. Maintain eye wash station near work area.

Skin and body protection

Wear resistant gloves (consult your safety equipment supplier).
Wear normal work clothing including long pants, long-sleeved shirts and foot covering to prevent direct contact of the product with the skin. Launder clothing before reuse. If skin irritation develops, contact your facility health and safety professional or your local

safety equipment supplier to determine the proper personal protective equipment for your use.

Respiratory protection

A NIOSH-approved air-purifying respirator with an appropriate cartridge and/or filter may be persmissible under certain circumstancs where airborne concentrations are expected to exceed exposure limits (if applicable) or if overexposure has otherwise been determined. Protection provided by air-purifying respirators is limited. Use a positive pressure, air-supplied respirator if there is any potential for uncontrolled release, exposure levels are not known or any other circumstances where an air-purifying respirator may not provide adequate protection.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	liquid
Form	No data
Colour	yellow
Odour	Characteristic odor
Boiling point/boilingrange	449.60 °F / 449.6 °F@ 760.00 mmHg
pH	(+/- 1.8) 9.3
Flash point	250 °F / 121 °C, Closed Cup
Evaporation rate	No data
Explosion limits	No data
Vapour pressure	No data
Vapour density	9 (AIR=1)
Density	1.038 g/cm3 @ 60.01 °F / 15.56 °C
	No data
Solubility	soluble in water
Partition coefficient: n-octanol/water	No data
Autoignition temperature	419 °F / 215 °C

10. STABILITY AND REACTIVITY

Stability

Stable.

Conditions to avoid

Avoid heat, open flame, and prolonged storage at elevated temperatures.

Incompatible products

Avoid contact with:, acids, acid anhydrides, Alkaline earth metals, Alkali metals, aluminum, salts of strong bases, strong acids, strong alkalis, strong bases, strong oxidizing agents, sulphur compounds

Hazardous decomposition products

acetaldehyde, alcohols, aldehydes, carbon dioxide and carbon monoxide, dioxolanes, ethers, ethylene glycol monomethyl ether, formaldehyde, ketones, nitrogen oxides (NOx), Organic acids, various hydrocarbons

Hazardous reactions

Product will not undergo hazardous polymerization.

Thermal decomposition

No data

11. TOXICOLOGICAL INFORMATION

Acute oral toxicity

TRIETHYLENE GLYCOL MONOBUTYL ETHER	LD 50 Rat: 5,300 mg/kg
DIETHYLENE GLYCOL MONOBUTYL ETHER	LD 50 Rat: 6,560 mg/kg
DIETHYLENE GLYCOL	LD 50 Rat: 12,565 mg/kg
TRIETHYLENE GLYCOL MONOETHYL ETHER	LD 50 Rat: 7,750 mg/kg
ETHANOL, 2-(2-PROPOXYETHOXY)-	LD 50 Rat: 6,661 mg/kg
DIETHYLENE GLYCOL MONOETHYL ETHER	LD 50 Rat: 5,540 mg/kg
TRIETHYLENE GLYCOL	LD 50 Rat: 15,000 - 22,000 mg/kg
ETHYLENE GLYCOL	LD 50 Rat: 6,140 mg/kg LD 50 Mouse: 14,600 mg/kg

Acute inhalation toxicity

DIETHYLENE GLYCOL	LC Lo Mouse: 130 mg/m3 , 2 h

Acute dermal toxicity

TRIETHYLENE GLYCOL MONOBUTYL ETHER	LD 50 Rabbit: 3,502 mg/kg
DIETHYLENE GLYCOL MONOBUTYL ETHER	LD 50 Rabbit: 2,700 mg/kg
DIETHYLENE GLYCOL	LD 50 Rabbit: 11,890 mg/kg
TRIETHYLENE GLYCOL MONOETHYL ETHER	LD 50 Rabbit: 8,200 mg/kg
ETHANOL, 2-(2-PROPOXYETHOXY)-	LD 50 Guinea pig: 5,048 mg/kg
DIETHYLENE GLYCOL MONOETHYL ETHER	LD 50 Rabbit: 4,150 mg/kg
TRIETHYLENE GLYCOL	LD 50 Rabbit: > 22.6 g/kg
ETHYLENE GLYCOL	LD 50 Rabbit: 10,611 mg/kg

12. ECOLOGICAL INFORMATION

Aquatic toxicity

Acute and Prolonged Toxicity to Fish
No data

Acute Toxicity to Aquatic Invertebrates
No data

Environmental fate and pathways
No data

13. DISPOSAL CONSIDERATIONS

Waste disposal methods

For assistance with your waste management needs - including disposal, recycling and waste stream reduction, contact Ashland Distribution's Environmental Services Group at 800-637-7922.

14. TRANSPORT INFORMATION

Dangerous goods descriptions (if indicated above) may not reflect package size, quantity, end-use or region-specific exceptions that can be applied. Consult shipping documents for descriptions that are specific to the shipment.

15. REGULATORY INFORMATION

California Prop. 65

WARNING! This product contains a chemical known in the State of California to cause cancer.
1,4-DIOXANE
ETHYLENE OXIDE
ACETALDEHYDE

WARNING! This product contains a chemical known in the State of California to cause birth defects or other reproductive harm.
ETHYLENE OXIDE
ETHYLENE GLYCOL MONOMETHYL ETHER

SARA Hazard Classification Acute Health Hazard

SARA 313 Component(s)

TRIETHYLENE GLYCOL MONOBUTYL ETHER	143-22-6	82.2%
DIETHYLENE GLYCOL MONOBUTYL ETHER	112-34-5	33.7%
TRIETHYLENE GLYCOL MONOETHYL ETHER	112-50-5	5%

ETHANOL, 2-(2-PROPOXYETHOXY)-	6881-94-3	5%
DIETHYLENE GLYCOL MONOETHYL ETHER	111-90-0	3.7102%
ETHYLENE GLYCOL MONOBUTYL ETHER	111-76-2	0.5%
ETHYLENE GLYCOL	107-21-1	1.4657%

	Health	Flammability	Reactivity	Other
HMIS	2*	1	0	
NFPA	1	1	0	

16. OTHER INFORMATION

The information accumulated herein is believed to be accurate but is not warranted to be whether originating with the company or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. This MSDS has been prepared by Ashland's Environmental Health and Safety Department (1-800-325-3751).