

MASTER® SAFETY DATA SHEET

1. Product Identification

Master Products
4635 Willow Drive
Medina, MN 55340
(612) 478-2360

Product line: MASTER® DOT 3 Brake Fluid
Products: FH12, FH32, FH128
CAS: Not applicable (Mixture)
Synonyms: Glycol-Based Brake Fluid
Recommended use: Disk and drum hydraulic brake fluid
Restrictions: Do not use where DOT5 is specified
Created: 6 April 2012
Revised: 26 March 2015
Emergency phone: CHEMTREC: (+1) 800-424-9300

2. Hazards Identification

Appearance: Clear, pale yellow liquid
Odor: Mild, sweet odor
Classification(s): Acute Toxicity, Oral Category 4*
Skin Irritation, Category 2
Eye Irritation, Category 2A
Target Organ Toxicity, Acute Category 2
Target organs: Kidney, Liver, Central Nervous System
Symbol(s):



Signal Word: Warning
Hazard Statement(s): Harmful if swallowed. Causes mild skin irritation. Causes serious eye irritation.

Other hazard(s): Combustible liquid. Repeated exposure may cause dryness of the skin. Vapors may cause respiratory irritation.

- Precaution(s):** Wear eye and skin protection before handling. Do not breathe mist/vapors/spray. Use in a well ventilated area. Wear protective gloves/protective clothing. IF IN EYES: Flush with water for 15 minutes and consult a physician. Do no ingest. IF SWALLOWED: Do NOT induce vomiting. Immediately call a POISON CENTER or doctor/physician.
- Disposal:** Keep out of waterways. Check local, national, and international regulations for proper disposal
- HMIS (estimated):** **Health – 3** **Fire – 1** **Instability – 0**

**Classified based on human experience and epistemological data, not based on strict application of the GHS criteria*

3. Composition/Information on Ingredients

Hazardous Ingredients:

Component	CAS No.	Conc (wt%)
Diethylene Glycol	111-46-6	20 – 40
2-(2-propoxyethoxy)ethanol	6881-94-3	0 – 30
2-(2-butoxyethoxy)ethanol	112-34-5	0 – 20
Ethoxytriglycol	112-50-5	0 – 20
Butoxytriglycol	143-22-6	30 – 70
Additives	Proprietary	< 1

4. First Aid Measures

- Eyes** Remove contact lenses, if worn. Rinse with running water for at least 15 minutes, lifting upper and lower eyelids occasionally. Seek medical attention.
- Skin** Remove affected clothing and launder before reuse. Wash affected area for at least 15 minutes with soap and running water. Prolonged or repeated exposure may cause defatting of the skin – symptoms include redness, dryness, cracking
- Inhalation** Remove exposed person to fresh air immediately. Restore or assist breathing, if necessary. Get medical attention immediately if symptoms of CNS depression or intoxication develop
- Ingestion** Do NOT induce vomiting. If conscious, give two full glasses of water. If a significant volume has been swallowed, get medical attention immediately.

Swallowing large amounts of diethylene glycol is potentially lethal. Immediate symptoms may include severe abdominal cramping, diarrhea, vomiting, intoxication, and hypertension. Infrequent urination and other cardiac, neurological, and renal effects of metabolic acidosis, hyponatremia, or hyperkalemia may develop. Diethylene glycol has been known to cause metabolic acidosis leading to kidney and liver failure, neurological complications, and death.

Additional Info Note to physician: Treat for diethylene glycol poisoning

Specific Treatments Immediately treat with hemodialysis. Diethylene glycol is metabolized by NAD-dependent alcohol dehydrogenase and aldehyde dehydrogenase into 2-hydroxyethoxyacetaldehyde and 2-hydroxyethoxyacetic acid, respectively. Administering NAD-dependent alcohol dehydrogenase inhibitors such as ethanol or fomepizole may slow the production of harmful metabolites.

5. Fire Fighting Measures

NFPA (estimated): Health – 2 Fire – 1 Instability – 0

Flash Point 93°C / 199°F (calculated)

Extinguishing Media For small fires use alcohol foam, dry chemical or CO₂. For large fires apply large (flooding) quantities of water from as far away as possible in a spray or mist.

Unsuitable Media Water jet may be ineffective

Firefighting Procedures: Wear a self-contained breathing apparatus if necessary based on concentrations of smoke. Material will produce primarily oxides of carbon as combustion products.

Unusual Hazards Not Determined

6. Accidental Release Measures

Personal precautions, protective equipment, and emergency procedures: Ventilate if released in a confined area. Avoid breathing mists/vapors/spray. Product may present slipping hazard if left on the floor. Beware of vapors pooling in low areas to explosive concentrations.

Environmental precautions: Avoid release to the environment. Prevent from entering into soil, ditches, sewers, waterways or groundwater

Methods for removal: Use an explosion-proof pump to remove bulk liquid. Residual liquid can be absorbed on inert material. Dispose of contaminated adsorbent as hazardous waste. Wash the area with water after excess product and adsorbent is removed.

7. Handling and Storage

Max. Handling Temp: Not determined

Procedures: Use in a well ventilated area. Avoid breathing mists/vapors/spray. Avoid handling hot product where possible. Use appropriate personal protective equipment to avoid contact with skin and eyes. Note the location of nearest emergency shower and eye wash station before use. Store with the lid tightly closed in a cool, dry, well-ventilated place. Product is hygroscopic and effectiveness may diminish if opened product is stored for long periods of time. Dispose of spilled or used material in accordance with local, regional, national, and international regulations.

Max Store Temp: Do not store or handle at elevated temperatures.

8. Exposure Controls/Personal Protection

Exposure Limits

US

Guidelines by component

Diethylene Glycol (CAS# 111-46-6)

OSHA TWA: 10mg/m³

Ethanolamine (CAS# 141-43-5)

ACGIH TWA: 3 ppm

ACGIH STEL: 6 ppm

OSHA TWA: 3 ppm

OSHA STEL: 6 ppm

NIOSH TWA: 3 ppm

NIOSH STEL: 6 ppm

Other Exposure Limits: Not determined

Engineering Controls: Use in a well ventilated area. Local and general ventilation should keep methanol vapor concentration below permissible limits. Where exposure potential exceeds recommended limits, use a NIOSH/OSHA approved supplied air respirator

as recommended. Vapors are heavier than air and will tend to accumulate in low-lying areas.

Personal Protective Equipment

- Respiratory:** Use a NIOSH or CEN approved full-face respirator with multi-purpose combination or type ABEK respirator cartridges as a backup to engineering controls. If the respiratory is the only means of protection, use a full-face supplied air respirator
- Eye:** Use tightly-fitting chemical splash goggles. Use face shield, especially where splashing is likely to occur
- Gloves:** Use nitrile, butyl, viton, or fluoroelastomer gloves. Even appropriate materials may degrade after prolonged exposure with product.
- Clothing:** Use chemical resistant pants and jackets, preferably of butyl or nitrile rubber
- Other:** Locate the nearest eyewash station and safety shower before handling this product. Limit exposure whenever possible.
- Hygiene:** Wash thoroughly after handling this product.

9. Physical and Chemical Properties

Appearance	Clear, pale yellow liquid
Odor	Mild, sweet odor
Odor threshold	Not determined
pH	7 - 11
Melting Point	< -50°C / -58°F
Initial Boiling Pt	> 210°C / 410°F
Flash Point	93°C / 199°F
Evaporation Rate	Not determined
Upper Flammable Lm	Not determined
Lower Flammable Lm	Not determined
Explosive Data	Vapors may form explosive mixtures with air
Vapor Pressure	0.09 hPa (0.07 mmHg) @ 20° (68°F)
Vapor Density	> 5 (Air = 1)
Volatile Organics	Not determined
Density	1.05 mg/cu. cm @15.6°C
Solubility	Miscible in water, alcohol; sparingly soluble in some organic solvents
K_{ow}	Not determined
Viscosity	1.8 mm/s ² @ 100°C
Autoignition Point	Not determined
Decomposition Temp	Not determined

10. Stability and Reactivity

Stability	Material is normally stable at ambient temperatures and pressures.
Decomposition Temp	Not determined
Incompatibility	Keep away from strong oxidizers and strong acids/bases. Keep away from zinc or other active metals
Polymerization	Will not occur
Thermal Decomposition	Primarily oxidizes to carbon dioxide in normal combustion conditions. In lower oxygen environments carbon monoxide, formaldehyde, or formic acid may be formed.
Conditions to Avoid	Vapors may catch fire – keep away from strong oxidizers, acids, bases as well as heat/sparks/open flames/hot surfaces

11. Toxicological Information

- Acute Exposure -

Eye Irritation	Expected to cause mild to moderate irritation of the eye if exposed to liquid or in high vapor concentrations. May cause irritation, tearing, or burning of the eyes.
Skin Irritation	Expected to be mildly irritating to the skin. Symptoms of irritation may include redness, drying, and cracking of the skin.
Respiratory Irritation	High vapor concentrations may cause transient irritation to the respiratory system.
Dermal Toxicity	This product can be absorbed through the skin, but is of low order of toxicity. Limit exposure to skin where possible.
Inhalation Toxicity	Toxicity is similar to that for oral ingestion, though this exposure mode is far less likely to occur.
Oral Toxicity	Toxic or fatal if ingested. Symptoms of diethylene glycol poisoning include severe abdominal cramping, diarrhea, vomiting, sweating, confusion, cardiac abnormalities, neurological abnormalities, infrequent urination, intoxication or CNS depression. If left untreated, product will metabolize to cause metabolic acidosis, renal failure, hyperkalemia, hyponatremia, parylsis, cardiac failure, or death. Seek medical attention immediately for poisoning. If ingested, DO NOT wait for symptoms to develop before getting treatment.
Aspiration Hazard	This product has a very low viscosity and may be fatal if aspirated into the airways. Do NOT induce vomiting, as this increases risk of aspiration.

- Chronic Exposure -

Chronic Toxicity	This product may cause dryness or defatting of the skin, dermatitis, or may aggravate existing skin conditions.
-------------------------	---

Carcinogenicity	This product and its components are NOT listed by the IARC, NTP, ACGIH, or OSHA as carcinogens
Mutagenicity	Available information does not suggest that this product is a germ cell mutagen
Reproductive Toxicity	Available information does not suggest that this product is a reproductive toxin.
Teratogenicity	Diethylene glycol has produced birth defects in rats at concentrations that are toxic to the mother.
- Additional Information -	
Target organ toxicity	Product is toxic to organs: Kidneys, liver, central nervous system, heart. Metabolic products of diethylene glycol produce acidosis and organ toxicity effects. In some cases, other metabolic abnormalities have been reported such as hyponatremia and hyperkalemia leading to nerve and cardiac damage.
Synergistic effects	Though specific data is not available, ethanol is a competing substrate for NAD-dependent alcohol dehydrogenase and may slow the product of harmful metabolic products of diethylene glycol.
Pharmacokinetics	No data available

12. Ecological Information

- Environmental Toxicity -

Freshwater Fish	Acute LD50 > 75.2 g/L (96h)
Freshwater Invertebrates	Acute LD50 > 10g/l (24h)
Algae	Not determined
Saltwater Fish	Not determined
Saltwater Invertebrates	Not determined
Bacteria	Not determined
Miscellaneous	Not determined

- Environmental Fate -

Biodegradation	No data available. Expected to biodegrade rapidly and degrade by photo-oxidative reactions with the air
Bioaccumulation	Product is very mobile in soil and water and is somewhat volatile – it is not expected to bioaccumulate.
Soil Mobility	Product has high mobility in soil, slowly evaporates at environmentally relevant temperatures
Other Effects	Not determined

13. Disposal Considerations

Disposal Considerations

All disposal practices must be in accordance with local, regional, national, and international regulations. Store material for disposal as indicated in Section 7.

Disposal by controlled incineration or by secure land fill may be acceptable – review applicable regulations or regulatory bodies before making disposal decisions.

Contaminated Containers or Packaging

Empty containers are likely to contain flammable vapors or explosive mixtures of vapor and air. Do NOT weld, cut, or grind empty containers. Rinse empty containers with water and dispose of in accordance with local, regional, national, and international regulations

14. Transportation Information

Description shown may not apply to all shipping situations. Consult applicable shipping codes to determine any additional shipping requirements

US DOT Not dangerous goods

IMDG Not dangerous goods

ICAO/IATA Not dangerous goods

15. Regulatory Information

- Global Chemical Inventories/Regulations -

USA	All components of this material are on the US TSCA
Other TSCA Reg.	None known
EU	Components of this product and similar mixtures are registered under REACH. Consult the European Chemicals Agency regarding REACH registration, reporting, and other legal requirements for methanol solutions before importing to the EU.
New Zealand	May require notification before sale under New Zealand Regulations
Canada	All components of this product are listed on the Canadian Domestic Substances List (DSL).
Canada WHMIS	B3

- Other U.S. Federal Regulations -

SARA Ext. Haz. Subst.	No components listed as Extremely Hazardous Substances list. See 40 CFR 355
SARA Sect. 313	2-(2-butoxyethoxy)ethanol (CAS # 112-34-5) and ethoxytriglycol (CAS # 112-50-5) are subject to reporting under SARA Title III, Section 313. See 40 CFR 372

SARA 311/312 Class	<i>Acute Hazard</i>	- YES
	<i>Chronic Hazard</i>	- NO
	<i>Fire Hazard</i>	- NO

CERCLA Haz. Sub. *Reactivity Hazard* - NO
No components listed. See 40 CFR 302

CA Prop 65 **- State Regulations -**
This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

Right to Know Component	Right to Know States
2-(2-propoxyethoxy)ethanol (CAS # 6881-94-3)	NJ, PA
Diethylene glycol (CAS # 111-46-6)	NJ, PA
Butoxytriglycol (CAS # 134-22-6)	NJ, PA
Ethoxytriglycol (CAS # 112-50-5)	NJ, PA
Poly(1,2-dihydro-2,2,4-trimethylquinoline) (CAS # 26780-96-1)	NJ, PA
2-(2-butoxyethoxy)ethanol (CAS # 112-34-5)	NJ, PA
Ethanolamine (CAS # 141-43-5)	NJ, PA, MA
Benzotriazole (CAS # 95-14-7)	NJ, PA, MA
Sodium Nitrate (CAS # 7631-99-4)	NJ, PA

- Other -

16. Other Information

Revision updates may be in many sections and the MSDS should be read in its entirety.
Prepared according to the UN Globally Harmonized System for the Classification and Labeling of Chemicals (GHS).

Disclaimer: The information presented herein has been compiled from sources considered to be dependable and is accurate to the best knowledge. Master, makes no warranty whatsoever expressed or implied of merchantability or fitness for the particular purpose, regarding the accuracy of such data or the results to be obtained from the use thereof. Master, assumes no legal responsibility for use or reliance upon this data. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.