# MASTER® SAFETY DATA SHEET

## 1. Product Identification

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

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|---|---|
| **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

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

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| **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-hydroxyethoxyacetadlehyde 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 $CO_2$. 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-container 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 fluoroelastemer 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

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|---|---|
| **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

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| **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 –**

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| **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 –**

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

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| **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 –**

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| **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 –**

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| **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 –**

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|---|---|
| **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

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|---|---|
| **US DOT** | Not dangerous goods |
| **IMDG** | Not dangerous goods |
| **ICAO/IATA** | Not dangerous goods |

## 15. Regulatory Information

**- Global Chemical Inventories/Regulations –**

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|---|---|
| **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 –**

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|---|---|
| **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** | *Acute Hazard* | - YES |
| | *Chronic Hazard* | - NO |
| | *Fire Hazard* | - NO |

*Reactivity Hazard* - NO

**CERCLA Haz. Sub.** No components listed. See 40 CFR 302

**- State Regulations –**

**CA Prop 65** 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 |
| Butoxytrigycol (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).

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