Safety Data Sheet

Brake Fluid Dot 4

1. Product Identification

Product Identifier:	**Brake Fluid DOT 4**
Manufacturer/Supplier:	Quality Liquid Packaging 50 Tiffield Road Unit 9, Scarborough, ON M1V 5B7
CAS:	Not applicable (Mixture)
Trade Name & Synonyms:	Rev Brake Fluid Dot 4, R539, R540,R541,R542,R543,R545
Recommended use:	Disk and drum hydraulic brake fluid
Restrictions:	Do not use where DOT5 is specified
Created:	26 April 2018

2. Hazards Identification

Appearance:	Clear to amber
Odor:	Mild 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. May cause damage to kidneys, liver or central nervous system if ingested.
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 – 2** **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%)*
Triethylene Glycol Monomethyl Borate Ester	71243-41-9	20 - 40
Butoxytriglycol	143-22-6	40 – 60
Diethylene Glycol	111-46-6	20 – 40
Triethylene Glycol	112.27-6	0 – 5
Triethylene Glycol Monomethyl Ether	112-35-6	0 – 5
Polyethylene Glycol Monomethyl Ether	9004-74-4	0 – 5
Additives	Proprietary	< 2

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 Not determined.

5. Fire Fighting Measures

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

Flash Point > 121°C / 249°F (based on most flammable component)

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 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

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

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	> 232°C / 449°F
Flash Point	121°C / 250°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	1.06 mg/cu. cm @15.6°C
Solubility	Miscible in water, alcohol; sparingly soluble in some organic solvents
Kow	Not determined
Viscosity	2 mm/s^2 @ 100°C
Autoignition Point	310°C / 590°F
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 strong reducing agents such as powdered 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 production of harmful metabolic products of diethylene glycol.

Pharmacokinetics No data available

12. Ecological Information

- **Environmental Toxicity –**

Freshwater Fish Acute LD50 > 590 mg/L (96h)
Freshwater Invertebrates Acute LD50 > 10g/l (48h)
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 –

All components of this material are on the US TSCA

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

- Other U.S. Federal Regulations –

SARA Ext. Haz. Subst. No components listed as Extremely Hazardous Substances list. See 40 CFR 355

SARA Sect. 313 Triethylene glycol monomethyl ether (CAS # 143-22-6), triethylene glycol monomethyl ether (CAS # 112-35-6), nitrate compounds (EPA ID # N511) and diethanolamine (CAS # 111-42-2) are subject to reporting under SARA Title III, Section 313. See 40 CFR 372

SARA 311/312 Class	*Acute Hazard*	- YES
	Chronic Hazard	- YES
	Fire Hazard	- YES
	Reactivity Hazard	- NO
CERCLA Haz. Sub.	No components listed. See 40 CFR 302	

Right to Know Component	*Right to Know States*
Triethylene glycol monobutyl ether (CAS # 143-22-6)	NJ, PA
Triethylene glycol monomethyl borate ester (CAS # 71243-41-9)	NJ, PA
Triethylene glycol monomethyl ether (CAS # 112-35-6)	NJ, PA
Tetraethylene glycol (CAS # 112-60-7)	NJ, PA
Diethylene glycol (CAS # 111-46-6)	NJ, PA
Diethanolamine (CAS # 111-42-2)	NJ
Nitrate Compounds (EPA ID # N511)	NJ, RI, PA

16. Other Information

Disclaimer: Notice to reader: To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.