SAFETY DATA SHEET

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Trade name or designation of the mixture	Brake Fluid DOT4 320°C
Registration number	-
UFI:	2T10-H04N-800R-9FDW
Synonyms	None.
Product code	FSF050
Issue date	08-July-2024
Version number	01
Revision date	-
Supersedes date	-

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses	Hydraulic brake fluid for high performance and racing applications.
Uses advised against	None known.

1.3. Details of the supplier of the safety data sheet

Manufacturer/Supplier

Company name	Federal-Mogul Italy Srl, Racing & Motorcycle Division
Address	Corso Inghilterra 2 12084 Mondovì (CN) Italy
Telephone	+32 3 450 83 10
Contact person	Braking_EMEA@DRiV.com

1.4. Emergency telephone number

3E Global Incident Response Hotline

+44 20 35147487

Access code: 335908

General emergency	112 or 999 SDS/Product information may not be available for the Emergency Service.
Non-emergency medical helpline	111 SDS/Product information may not be available for the Emergency Service.

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

The mixture has been assessed and/or tested for its physical, health and environmental hazards and the following classification applies.

Classification according to Regulation (EC) No 1272/2008 as amended

Health hazards

Reproductive toxicity (fertility, the unborn child)	Category 2	H361fd - Suspected of damaging fertility. Suspected of damaging the unborn child.

2.2. Label elements

Label according to Regulation (EC) No. 1272/2008 as amended

Contains: Tris[2-[2-(2-methoxyethoxy) ethoxy]ethyl] orthoborate

Hazard pictograms

Signal word Warning

Hazard statements

H361fd	Suspected of damaging fertility. Suspected of damaging the unborn child.

Precautionary statements

Prevention

P101	If medical advice is needed, have product container or label at hand.
P102	Keep out of reach of children.
P280	Wear protective gloves/protective clothing/eye protection/face protection.

Response

P308 + P313	IF exposed or concerned: Get medical advice/attention.

Storage

P405	Store locked up.

Disposal

P501	Dispose of contents/container in accordance with local/regional/national/international regulations.

Supplemental information on the label None.

2.3. Other hazards This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

General information

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	Index No.	Notes
Tris[2-[2-(2-methoxyethoxy) ethoxy]ethyl] orthoborate	80 - 95	30989-05-0 250-418-4	01-2119462824-33-XXXX	-	
Classification: Repr. 2;H361fd					
Amines, C12-14-alkyldimethyl	< 0.25	84649-84-3 283-464-9	01-2119485584-26-XXXX	-	
Classification: Acute Tox. 4;H302, Skin Corr. 1B;H314, Eye Dam. 1;H318, Aquatic Acute 1;H400(M=10), Aquatic Chronic 1;H410(M=1)					

List of abbreviations and symbols that may be used above

M: M-factor

Composition comments All concentrations are in percent by weight. The full text for all H-statements is displayed in section 16.

SECTION 4: First aid measures

General information Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. IF exposed or concerned: Get medical advice/attention.

4.1. Description of first aid measures

Inhalation Move injured person into fresh air and keep person calm under observation. Get medical attention if any discomfort continues.

Skin contact Remove contaminated clothes and rinse skin thoroughly with water. Get medical attention if irritation develops and persists.

Eye contact Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Ingestion Rinse mouth thoroughly with water and give large amounts of milk or water, if person is conscious. Get medical attention if any discomfort continues.

4.2. Most important symptoms and effects, both acute and delayed Exposed individuals may experience eye tearing, redness, and discomfort. Defats the skin. Central nervous system. Headaches, dizziness and nausea. May cause abdominal discomfort if swallowed.

4.3. Indication of any immediate medical attention and special treatment needed Provide general supportive measures and treat symptomatically. Symptoms may be delayed.

SECTION 5: Firefighting measures

General fire hazards Will burn if involved in a fire.

5.1. Extinguishing media

Suitable extinguishing media Alcohol resistant foam. Dry powder. Carbon dioxide (CO_2). Water mist.

Unsuitable extinguishing media Water jet.

5.2. Special hazards arising from the substance or mixture During fire, gases hazardous to health may be formed.

5.3. Advice for firefighters

Special protective equipment for firefighters Self-contained breathing apparatus and full protective clothing should be worn when fighting chemical fires. Selection of respiratory protection for firefighting: follow the general fire precautions indicated in the workplace.

Special fire fighting procedures Use standard firefighting procedures and consider the hazards of other involved materials. Containers close to fire should be removed immediately or cooled with water.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel Follow standard emergency procedure. Avoid breathing mist/vapours. Wear appropriate personal protective equipment (See Section 8).

For emergency responders Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Avoid contact with skin and eyes. Ensure adequate ventilation. Wear appropriate protective equipment and clothing during clean-up. Local authorities should be advised if significant spillages cannot be contained. Use personal protection recommended in Section 8 of the SDS.

6.2. Environmental precautions Avoid discharge into drains, water courses or onto the ground.

6.3. Methods and material for containment and cleaning up Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use.

6.4. Reference to other sections For personal protection, see section 8 of the SDS. For waste disposal, see section 13 of the SDS.

SECTION 7: Handling and storage

7.1. Precautions for safe handling Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid breathing mist/vapours. Avoid contact with skin and eyes. Avoid prolonged exposure. Pregnant or breastfeeding women must not handle this product. Provide adequate ventilation. Wear appropriate personal protective equipment. For personal protection, see Section 8 of the SDS. Observe good industrial hygiene practices.

7.2. Conditions for safe storage, including any incompatibilities Store locked up. Keep container in a well-ventilated place. Store between 15°C - 30°C (60°F - 86°F). Store away from incompatible materials (see section 10 of the SDS).

7.3. Specific end use(s) Hydraulic brake fluid for high performance and racing applications.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits No exposure limits noted for ingredient(s).

Biological limit values No biological exposure limits noted for the ingredient(s).

Recommended monitoring procedures Follow standard monitoring procedures.

Derived no effect levels (DNELs)

General population

Components	Value	Assessment factor	Notes
Amines, C12-14-alkyldimethyl (CAS 84649-84-3)			
Long-term, Systemic, Oral	0.5 mg/kg	100	Repeated dose toxicity
Tris[2-[2-(2-methoxyethoxy) ethoxy]ethyl] orthoborate (CAS 30989-05-0)			
Long-term, Systemic, Dermal	10 mg/kg	100	Repeated dose toxicity
Long-term, Systemic, Oral	10 mg/kg	100	Repeated dose toxicity

Workers

Components	Value	Assessment factor	Notes
Amines, C12-14-alkyldimethyl (CAS 84649-84-3)			
Long-term, Local, Inhalation	1 mg/m3		Skin irritation
Long-term, Systemic, Inhalation	1 mg/m3		irritation respiratory tract
Short-term, Local, Inhalation	1 mg/m3		Skin irritation
Short-term, Systemic, Inhalation	1 mg/m3		irritation respiratory tract
Tris[2-[2-(2-methoxyethoxy) ethoxy]ethyl] orthoborate (CAS 30989-05-0)			
Long-term, Systemic, Dermal	16.7 mg/kg	60	Repeated dose toxicity

Predicted no effect concentrations (PNECs)

Components	Value	Assessment factor	Notes
Amines, C12-14-alkyldimethyl (CAS 84649-84-3)			
Freshwater	0.26 µg/l	10	
Marine water	0.03 µg/l	100	
Sediment (freshwater)	1.25 mg/kg	50	
Sediment (marine water)	0.125 mg/kg	500	
Soil	1 mg/kg	10	
STP	130 µg/l	100	
Tris[2-[2-(2-methoxyethoxy) ethoxy]ethyl] orthoborate (CAS 30989-05-0)			
Freshwater	0.211 mg/l	1000	
Intermittent releases	2.112 mg/l		
Marine water	0.021 mg/l	10000	
Sediment (freshwater)	0.76 mg/kg		
Sediment (marine water)	0.076 mg/kg		
Soil	0.028 mg/kg		
STP	100 mg/l	10	

8.2. Exposure controls

Appropriate engineering controls Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide easy access to water supply and eye wash facilities.

Individual protection measures, such as personal protective equipment

General information Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.

Eye/face protection Wear safety glasses with side shields (or goggles). Eye protection should meet standard EN 166.

Skin protection

- Hand protection Wear appropriate chemical resistant gloves. Full contact: Glove material: Butyl rubber. Use gloves with breakthrough time of >480 minutes. Minimum glove thickness 0.3 mm. Nitrile. Use gloves with breakthrough time of > 480 minutes. Minimum glove thickness 0.2 mm. Always wear chemical-resistant protective gloves that comply with EN 374 to handle this product. Observe good industrial hygiene practices and wash gloves with soap and water before removing them. Assess the working conditions and always consult your glove supplier for information on the most suitable type of glove for each task and the required material, thickness, and breakthrough time specifications. The use of type-B gloves in accordance with EN 374 is recommended as a minimum protection against intermittent or splash contact. Consult your supplier to find the most suitable option for the product in question. The requirements of EN 388 must be taken into account for applications involving mechanical hazards with the risk of abrasion or incision. The requirements outlined in EN 407 must be taken into consideration for tasks involving thermal hazards.

- Other Wear appropriate clothing to prevent repeated or prolonged skin contact.

Respiratory protection In case of inadequate ventilation or when the product is heated, use suitable respiratory equipment with gas filter (type A2). Respiratory protection should meet standard EN 14387. Appropriate respirator selection should be made by a qualified professional.

Thermal hazards When material is heated, wear gloves to protect against thermal burns.

Hygiene measures Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Observe any medical surveillance requirements.

Environmental exposure controls Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. Fume scrubbers, filters or engineering modifications to the process equipment may be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance

Physical state Liquid.

Form Liquid.

Colour Amber.

Odour Mild.

Odour threshold Not available.

pH 7 - 9.5

Melting point/freezing point < -50 °C (< -58 °F)

Initial boiling point and boiling range	> 300 °C (> 572 °F)
Flash point	> 120 °C (> 248 °F)
Evaporation rate	0.01 (n-butylacetate = 100)
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Explosive limit - lower (%)	Property has not been measured.
Explosive limit – upper (%)	Property has not been measured.
Vapour pressure	1 mbar (20 °C (68 °F))
Vapour density	Property has not been measured.
Relative density	1.04 - 1.09 (20 °C (68 °F))
Solubility(ies)	
Solubility (water)	Completely soluble.
Partition coefficient (n-octanol/water)	1.5
Auto-ignition temperature	> 280 °C (> 536 °F)
Decomposition temperature	300 °C (572 °F)
Viscosity	Property has not been measured.
Explosive properties	Not explosive.
Oxidising properties	Not oxidising.
9.2. Other information	
Kinematic viscosity	5 - 15 cSt (20 °C (68 °F))

SECTION 10: Stability and reactivity

10.1. Reactivity	The product is stable and non reactive under normal conditions of use, storage and transport.
10.2. Chemical stability	Stable under normal temperature conditions.
10.3. Possibility of hazardous reactions	Will not occur.
10.4. Conditions to avoid	Avoid exposure to high temperatures or direct sunlight. Contact with incompatible materials.
10.5. Incompatible materials	Strong oxidizers, strong acids, and strong bases. Strong reducing agents.
10.6. Hazardous decomposition products	Fire or high temperatures create: Carbon monoxide. Carbon dioxide.

SECTION 11: Toxicological information

General information	Occupational exposure to the substance or mixture may cause adverse effects.
Information on likely routes of exposure	
Inhalation	Prolonged inhalation may be harmful.
Skin contact	Prolonged or repeated contact may dry skin and cause dermatitis.
Eye contact	Direct contact with eyes may cause temporary irritation.
Ingestion	May cause discomfort if swallowed.
Symptoms	Exposure may cause temporary irritation, redness, or discomfort. Defats the skin. Central nervous system. Headaches, dizziness and nausea. May cause abdominal discomfort if swallowed.

11.1. Information on toxicological effects

Acute toxicity

Product	Species	Test Results
Brake Fluid DOT4 320°C (CAS Mixture)		
Acute		
Dermal		
LD50	Rabbit	> 3000 mg/kg
Oral		
LD50	Rat	> 5000 mg/kg

Skin corrosion/irritation	Based on available data, the classification criteria are not met.
Serious eye damage/eye irritation	Direct contact with eyes may cause temporary irritation.
Respiratory sensitisation	Based on available data, the classification criteria are not met.

Skin sensitisation	Based on available data, the classification criteria are not met.
Germ cell mutagenicity	Based on available data, the classification criteria are not met.
Carcinogenicity	Based on available data, the classification criteria are not met.
Reproductive toxicity	Suspected of damaging fertility. Suspected of damaging the unborn child.
Specific target organ toxicity - single exposure	Based on available data, the classification criteria are not met.
Specific target organ toxicity - repeated exposure	Based on available data, the classification criteria are not met. Not classified.
Aspiration hazard	Based on available data, the classification criteria are not met.
Mixture versus substance information	No information available.
Other information	No other specific acute or chronic health impact noted.

SECTION 12: Ecological information

12.1. Toxicity	Based on available data, the classification criteria are not met for hazardous to the aquatic environment.
12.2. Persistence and degradability	Expected to be inherently biodegradable. Expected to be readily biodegradable. (OECD 302B).
12.3. Bioaccumulative potential	The product is not expected to bioaccumulate.
Partition coefficient n-octanol/water (log Kow)	
Brake Fluid DOT4 320°C	1.5
Bioconcentration factor (BCF)	Not available.
12.4. Mobility in soil	This product is water soluble and may disperse in soil.
12.5. Results of PBT and vPvB assessment	This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.
12.6. Other adverse effects	None known.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Residual waste	Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.
EU waste code	16 01 13* The Waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Disposal methods/information	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.
Special precautions	Dispose in accordance with all applicable regulations.

SECTION 14: Transport information

ADR

14.1. - 14.6.: Not regulated as dangerous goods.

RID

14.1. - 14.6.: Not regulated as dangerous goods.

ADN

14.1. - 14.6.: Not regulated as dangerous goods.

IATA

14.1. - 14.6.: Not regulated as dangerous goods.

IMDG

14.1. - 14.6.: Not regulated as dangerous goods.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Retained direct EU regulations

Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I and II, as amended

Not listed.

Regulation (EU) 2019/1021 On persistent organic pollutants (recast), as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 1 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 2 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 3 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex V as amended

Not listed.

Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry, as amended

Not listed.

Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA

Not listed.

Authorisations

Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorisation, as amended

Not listed.

Restrictions on use

Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use, as amended - Conditions of restriction given for the associated entry number should be considered

Tris[2-[2-(2-methoxyethoxy) ethoxy]ethyl] orthoborate (CAS 30989-05-0)

Other regulations

This product is classified and labelled in accordance with the retained CLP Regulation (EC) No 1272/2008, as amended for Great Britain. This Safety Data Sheet is compiled in accordance with REACH Regulation (EC) No 1907/2006, as amended by UK REACH Regulations SI 2019/758.

New or expectant mothers should not work with this product if there is a risk due to exposure, in accordance with the Management of Health and Safety at Work Regulations 1999 [SI 1999/3242], as amended.
Follow the requirements of the Control of Substances Hazardous to Health Regulations 2002 [SI 2002/2677], as amended, when using this material.

15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out.

SECTION 16: Other information

List of abbreviations

ADN: European Agreement Concerning the International Carriage of Dangerous Goods by Inland Waterways.
ADR: Agreement concerning the International Carriage of Dangerous Goods by Road.
CAS: Chemical Abstract Service.
CEN: European Committee for Standardization.
IATA: International Air Transport Association.
IBC Code: International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk.
IMDG: International Maritime Dangerous Goods.
LD50: Lethal Dose, 50%.
MARPOL: International Convention for the Prevention of Pollution from Ships.
PBT: Persistent, bioaccumulative and toxic.
RID: Regulations concerning the International Carriage of Dangerous Goods by Rail.
vPvB: Very persistent and very bioaccumulative.

References

HSDB® - Hazardous Substances Data Bank
IARC Monographs. Overall Evaluation of Carcinogenicity

Information on evaluation method leading to the classification of mixture

The classification for health and environmental hazards is derived by a combination of calculation methods and test data, if available.

Full text of any statements, which are not written out in full under sections 2 to 15

H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.
H318 Causes serious eye damage.
H361fd Suspected of damaging fertility. Suspected of damaging the unborn child.
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.

Training information	Follow training instructions when handling this material.
Disclaimer	Federal-Mogul Italy Srl, Racing & Motorcycle Division cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.