SAFETY DATA SHEET

(REACH regulation (EC) n° 1907/2006 - n° 453/2010)

SECTION 1 : IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Product name : DOT 5.1 12x0.500L
Product code : 100950

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

Brake fluid

1.3. Details of the supplier of the safety data sheet

Registered company name : MOTUL.
Address : Chemin du Corps de Garde. 77360. VAIRES SUR MARNE. FRANCE.
Telephone : 33.1.64.72.86.00. Fax : 33.1.64.72.86.25.
Email: motul_hse@motul.fr

1.4. Emergency telephone number : +44 (0) 1235 239 670.

Association/Organisation : .

SECTION 2 : HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

In compliance with directives 67/548/EEC, 1999/45/EC and their amendments.

This mixture does not present a physical hazard. Refer to the recommendations regarding the other products present on the site.
This mixture does not present a health hazard.
This mixture does not present an environmental hazard. No known or foreseeable environmental damage under standard conditions of use.

2.2. Label elements

In compliance with directives 67/548/EEC, 1999/45/EC and their amendments.

Risk phrase :
Safety phrase :

S 2	Keep out of the reach of children.
S 46	If swallowed, seek medical advice immediately and show this container or label.
	Product submitted to restrictions on the marketing and use: see Regulation (EC) No 1907/2006.

2.3. Other hazards

No data available.

SECTION 3 : COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

No substances fulfil the criteria set forth in annexe II section A of the REACH regulation (EC) n° 1907/2006.

3.2. Mixtures

Composition :

Identification	Name	Classification	%
CAS: 143-22-6 EC: 205-592-6 REACH: 01-2119531322-53	2-[2-(2-BUTOXYETHOXY)ETHOXY]ETHANOL	GHS05, Dgr Xi H:318 R: 41	10 <= x % < 25
CAS: 111-46-6 EC: 203-872-2 REACH: 01-2119457857-21	2,2'-OXYBISETHANOL	GHS07, Wng Xn H:302 R: 22	2.5 <= x % < 10
CAS: 111-77-3 EC: 203-906-6 REACH: 01-2119475100-52	2-(2-METHOXYETHOXY)ETHANOL	GHS08, Wng Xn H:361d R: 63.G3	1 <= x % < 2.5

CAS: 112-34-5 EC: 203-961-6 REACH: 01-2119475104-44	2-(2-BUTOXYETHOXY)ETHANOL	GHS07, Wng Xi H:319 R: 36	1 <= x % < 2.5

Other data :

Blend of polyglycol ethers, glycol ether esters and Polyglycols with added corrosion and oxidation inhibitors.

SECTION 4 : FIRST AID MEASURES

As a general rule, in case of doubt or if symptoms persist, always call a doctor.
NEVER induce swallowing by an unconscious person.

4.1. Description of first aid measures

In the event of exposure by inhalation :

Remove the victim to fresh air. If the symptoms persist, call a physician.

In the event of splashes or contact with eyes :

Wash thoroughly with soft, clean water for 15 minutes holding the eyelids open.

In the event of splashes or contact with skin :

Immediately remove all soiled clothing.
Wash immediately and abundantly with soap and water.

In the event of swallowing :

In the event of swallowing, if the quantity is small (no more than one mouthful), rinse the mouth with water and consult a doctor.
Seek medical attention, showing the label.
If swallowed accidentally, call a doctor to ascertain whether observation and hospital care will be necessary. Show the label.

4.2. Most important symptoms and effects, both acute and delayed

No data available.

4.3. Indication of any immediate medical attention and special treatment needed

No data available.

SECTION 5 : FIREFIGHTING MEASURES

Non-flammable.

5.1. Extinguishing media

Suitable methods of extinction

In the event of a fire, use :
- sprayed water or water mist

Unsuitable methods of extinction

In the event of a fire, do not use :
- water jet

5.2. Special hazards arising from the substance or mixture

A fire will often produce a thick black smoke. Exposure to decomposition products may be hazardous to health.
Do not breathe in smoke.
In the event of a fire, the following may be formed :
- carbon monoxide (CO)
- carbon dioxide (CO2)

5.3. Advice for firefighters

No data available.

SECTION 6 : ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Consult the safety measures listed under headings 7 and 8.
Spilled product may make surfaces slippery.

For fire-fighters

Fire-fighters will be equipped with suitable personal protective equipment (See section 8).

6.2. Environmental precautions

Contain and control the leaks or spills with non-combustible absorbent materials such as sand, earth, vermiculite, diatomaceous earth in drums for waste disposal.
Prevent any material from entering drains or waterways.

6.3. Methods and material for containment and cleaning up

Clean preferably with a detergent, do not use solvents.

6.4. Reference to other sections

No data available.

SECTION 7 : HANDLING AND STORAGE

Requirements relating to storage premises apply to all facilities where the mixture is handled.

7.1. Precautions for safe handling

Always wash hands after handling.
Ensure that there is adequate ventilation, especially in confined areas.
Avoid contact with eyes.
No special precaution apart from the observance of hygiene rules

Fire prevention :

Handle in well-ventilated areas.
Prevent access by unauthorised personnel.
Take precautionary measures against static discharges by bonding and grounding equipment.
No smoking.

Recommended equipment and procedures :

For personal protection, see section 8.
Observe precautions stated on label and also industrial safety regulations.
Packages which have been opened must be reclosed carefully and stored in an upright position.
Ensure good ventilation at the workplace

Prohibited equipment and procedures :

No smoking, eating or drinking in areas where the mixture is used.
Do not breathe fumes, vapour, spray.

7.2. Conditions for safe storage, including any incompatibilities

Storage limit 24 months

Storage

Keep out of reach of children.
Keep the container tightly closed in a dry, well-ventilated place
The floor must be impermeable and form a collecting basin so that, in the event of an accidental spillage, the liquid cannot spread beyond this area.

Packaging

Always keep in packaging made of an identical material to the original.

7.3. Specific end use(s)

No data available.

SECTION 8 : EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Occupational exposure limits :

- European Union (2009/161/EU, 2006/15/EC, 2000/39/EC, 98/24/EC)

CAS	VME-mg/m3 :	VME-ppm :	VLE-mg/m3 :	VLE-ppm :	Notes :
111-77-3	50.1	10	-	-	Peau
112-34-5	67.5	10	101.2	15	-

- Germany - AGW (BAuA - TRGS 900, 21/06/2010) :

CAS	VME :	VME :	Excess	Notes	
111-46-6	10 ml/m3	44 mg/m3	4(I)	DFG, Y	
112-34-5	-	100 mg/m3	1(I)	DFG, Y	

- France (INRS - ED984 :2008) :

CAS	VME-ppm :	VME-mg/m3 :	VLE-ppm :	VLE-mg/m3 :	Notes :	TMP No :
111-77-3	10	50.1	-	-	*, R3	84
112-34-5	10	67.5	15	101.2	-	-

- UK / WEL (Workplace exposure limits, EH40/2005, 2007) :

CAS	TWA :	STEL :	Ceiling :	Definition :	Criteria :
111-46-6	23 ppm	-	-	-	-

Derived no effect level (DNEL) or derived minimum effect level (DMEL):

2-(2-BUTOXYETHOXY)ETHANOL (CAS: 112-34-5)

Final use:	**Workers.**
Exposure method:	Dermal contact.
Potential health effects:	Long term systemic effects.

DNEL :	20 mg/kg body weight/day
Exposure method:	Inhalation.
Potential health effects:	Short term systemic effects.
DNEL :	101.2 mg of substance/m3
Exposure method:	Inhalation.
Potential health effects:	Long term systemic effects.
DNEL :	67 mg of substance/m3
Exposure method:	Inhalation.
Potential health effects:	Short term local effects.
DNEL :	50.6 mg of substance/m3
Final use:	**Consumers.**
Exposure method:	Ingestion.
Potential health effects:	Long term systemic effects.
DNEL :	1.25 mg/kg body weight/day
Exposure method:	Dermal contact.
Potential health effects:	Long term systemic effects.
DNEL :	10 mg/kg body weight/day
Exposure method:	Inhalation.
Potential health effects:	Long term systemic effects.
DNEL :	34 mg of substance/m3

2-(2-METHOXYETHOXY)ETHANOL (CAS: 111-77-3)

Final use:	**Workers.**
Exposure method:	Dermal contact.
Potential health effects:	Long term systemic effects.
DNEL :	0.53 mg/kg body weight/day
Exposure method:	Inhalation.
Potential health effects:	Long term systemic effects.
DNEL :	50.1 mg of substance/m3
Final use:	**Consumers.**
Exposure method:	Ingestion.
Potential health effects:	Long term systemic effects.
DNEL :	1.5 mg/kg body weight/day
Exposure method:	Dermal contact.
Potential health effects:	Long term systemic effects.
DNEL :	0.27 mg/kg body weight/day
Exposure method:	Inhalation.
Potential health effects:	Long term systemic effects.
DNEL :	25 mg of substance/m3

2,2'-OXYBISETHANOL (CAS: 111-46-6)

Final use:	**Workers.**
Exposure method:	Dermal contact.
Potential health effects:	Long term systemic effects.
DNEL :	106 mg/kg body weight/day
Exposure method:	Inhalation.
Potential health effects:	Long term systemic effects.
DNEL :	60 mg of substance/m3
Final use:	**Consumers.**
Exposure method:	Dermal contact.
Potential health effects:	Long term systemic effects.
DNEL :	53 mg/kg body weight/day

Exposure method:	Inhalation.
Potential health effects:	Long term systemic effects.
DNEL :	12 mg of substance/m3

2-[2-(2-BUTOXYETHOXY)ETHOXY]ETHANOL (CAS: 143-22-6)

Final use:	**Workers.**
Exposure method:	Dermal contact.
Potential health effects:	Long term systemic effects.
DNEL :	50 mg/kg body weight/day
Exposure method:	Inhalation.
Potential health effects:	Long term systemic effects.
DNEL :	195 mg of substance/m3
Final use:	**Consumers.**
Exposure method:	Ingestion.
Potential health effects:	Long term systemic effects.
DNEL :	2.5 mg/kg body weight/day
Exposure method:	Dermal contact.
Potential health effects:	Long term systemic effects.
DNEL :	25 mg/kg body weight/day
Exposure method:	Inhalation.
Potential health effects:	Long term systemic effects.
DNEL :	117 mg of substance/m3

Predicted no effect concentration (PNEC):

2-(2-BUTOXYETHOXY)ETHANOL (CAS: 112-34-5)

Environmental compartment:	Soil.
PNEC :	0.4 mg/kg
Environmental compartment:	Fresh water.
PNEC :	1.0 mg/l
Environmental compartment:	Sea water.
PNEC :	0.1 mg/l
Environmental compartment:	Intermittent waste water.
PNEC :	3.9 mg/l
Environmental compartment:	Fresh water sediment.
PNEC :	4.0 mg/kg
Environmental compartment:	Marine sediment.
PNEC :	0.4 mg/kg
Environmental compartment:	Waste water treatment plant.
PNEC :	200 mg/l

2-(2-METHOXYETHOXY)ETHANOL (CAS: 111-77-3)

Environmental compartment:	Soil.
PNEC :	2.44 mg/kg
Environmental compartment:	Fresh water.
PNEC :	12 mg/kg
Environmental compartment:	Intermittent waste water.
PNEC :	12 mg/l
Environmental compartment:	Fresh water sediment.
PNEC :	44.4 mg/kg

Environmental compartment:	Marine sediment.
PNEC :	0.44 mg/kg
Environmental compartment:	Waste water treatment plant.
PNEC :	10000 mg/l

2,2'-OXYBISETHANOL (CAS: 111-46-6)

Environmental compartment:	Soil.
PNEC :	1.53 mg/kg
Environmental compartment:	Fresh water.
PNEC :	10 mg/l
Environmental compartment:	Sea water.
PNEC :	1 mg/l
Environmental compartment:	Intermittent waste water.
PNEC :	10 mg/l
Environmental compartment:	Fresh water sediment.
PNEC :	20.9 mg/kg
Environmental compartment:	Waste water treatment plant.
PNEC :	199.5 mg/l

2-[2-(2-BUTOXYETHOXY)ETHOXY]ETHANOL (CAS: 143-22-6)

Environmental compartment:	Soil.
PNEC :	0.45 mg/kg
Environmental compartment:	Fresh water.
PNEC :	1.5 mg/l
Environmental compartment:	Sea water.
PNEC :	0.25 mg/l
Environmental compartment:	Intermittent waste water.
PNEC :	5.0 mg/l
Environmental compartment:	Fresh water sediment.
PNEC :	5.77 mg/kg
Environmental compartment:	Marine sediment.
PNEC :	0.13 mg/kg
Environmental compartment:	Waste water treatment plant.
PNEC :	200 mg/l

8.2. Exposure controls

Suitable technical inspections

Ensure adequate ventilation, if possible with extractor fans at work posts and appropriate general extraction.
Personnel shall wear regularly laundered overalls.

Personal protection measures, such as personal protective equipment

Pictogram(s) indicating the obligation of wearing personal protective equipment (PPE) :

Use personal protective equipment that is clean and has been properly maintained.
Store personal protective equipment in a clean place, away from the work area.
Never eat, drink or smoke during use. Remove and wash contaminated clothing before re-using. Ensure that there is adequate ventilation, especially in confined areas.

- Eye / face protection

Avoid contact with eyes.
Use eye protectors designed to protect against liquid splashes
Before handling, wear safety goggles in accordance with standard EN166.

- Hand protection

Wear suitable protective gloves in the event of prolonged or repeated skin contact.
Type of gloves recommended :
- Natural latex
- Butyl Rubber (Isobutylene-isoprene copolymer)
Recommended properties :
- Impervious gloves in accordance with standard EN374

- Body protection

Work clothing worn by personnel shall be laundered regularly.
After contact with the product, all parts of the body that have been soiled must be washed.

- Respiratory protection

Particle filter according to standard EN143 :
- P2 (White)
Breathing apparatus only when aerosol or spray are formed.

SECTION 9 : PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

General information :

Physical state :	fluid liquid.

Important health, safety and environmental information

pH :	Not stated.
	slightly basic.
Boiling point/boiling range :	261 °C.
Flash point interval :	Flash point > 60°C
Vapour pressure :	Below 110 kPa (1.10 bar).
Density :	> 1
Water solubility :	Soluble.
Viscosity :	5-10 cSt à 20°C
Melting point/melting range :	-50 °C.
Self-ignition temperature :	301 °C.
Decomposition point/decomposition range :	301 °C.

9.2. Other information

No data available.

SECTION 10 : STABILITY AND REACTIVITY

10.1. Reactivity

No data available.

10.2. Chemical stability

This mixture is stable under the recommended handling and storage conditions in section 7.

10.3. Possibility of hazardous reactions

When exposed to high temperatures, the mixture can release hazardous decomposition products, such as carbon monoxide and dioxide, fumes and nitrogen oxide.

10.4. Conditions to avoid

No data available.

10.5. Incompatible materials

Keep away from :
- oxidising agents

10.6. Hazardous decomposition products

The thermal decomposition may release/form :
- carbon monoxide (CO)
- carbon dioxide (CO2)

SECTION 11 : TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Splashes in the eyes may cause irritation and reversible damage

11.1.1. Substances

No toxicological data available for the substances.

11.1.2. Mixture

Acute toxicity :

Oral route : No observed effect.
Species : Rat
DL50 > 5000 mg/kg

Dermal route : No observed effect.
Species : Rabbit
2,000 < DL50 <= 5000 mg/kg

Skin corrosion/skin irritation :

"Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties to the product."

Serious damage to eyes/eye irritation :

Mild eye irritation

Aspiration hazard :

"Inhalation of vapours may cause irritation of the respiratory system in very susceptible persons."
May cause lung damage if swallowed

SECTION 12 : ECOLOGICAL INFORMATION

12.1. Toxicity

12.1.1. Substances

No aquatic toxicity data available for the substances.

12.1.2. Mixtures

Acute fish toxicity : No observed effect.
CL50 > 100 mg/l
Species : Oncorhynchus mykiss
Duration of exposure : 96 h

12.2. Persistence and degradability

Biodegradability in water : Easily biodegradable.
OECD Guideline 302 B (Inherent biodegradability: Zahn-Wellens/EMPA Test)

12.3. Bioaccumulative potential

Octanol/water partition coefficient : Koe log < 4.
Does not have the potential for bioconcentration.

12.4. Mobility in soil

Mobile in soil

12.5. Results of PBT and vPvB assessment

No data available.

12.6. Other adverse effects

No data available.

German regulations concerning the classification of hazards for water (WGK) :

WGK 1 (VwVwS vom 27/07/2005, KBws) : Slightly hazardous for water.

SECTION 13 : DISPOSAL CONSIDERATIONS

Proper waste management of the mixture and/or its container must be determined in accordance with Directive 2008/98/EC.

13.1. Waste treatment methods

Do not pour into drains or waterways.

Waste :

Waste management is carried out without endangering human health, without harming the environment and, in particular without risk to water, air, soil, plants or animals.
Recycle or dispose of waste in compliance with current legislation, preferably via a certified collector or company.

Do not contaminate the ground or water with waste, do not dispose of waste into the environment.

Soiled packaging :

Empty container completely. Keep label(s) on container.

Give to a certified disposal contractor.

Codes of wastes (Decision 2001/573/EC, Directive 2006/12/EEC, Directive 94/31/EEC on hazardous waste) :

16 01 13 * brake fluids

SECTION 14 : TRANSPORT INFORMATION

Exempt from transport classification and labelling.

Transport product in compliance with provisions of the ADR for road, RID for rail, IMDG for sea and ICAO/IATA for air transport (ADR 2011 - IMDG 2010 - ICAO/IATA 2012).

SECTION 15 : REGULATORY INFORMATION

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

Usage restrictions apply to the product : See annex XVII of EC regulation No. 1907/2006.

Banned from sale to the general public (EC Regulation No. 1907/2006) - For professional users only.

For professional users only.

- Particular provisions :

No data available.

- German regulations concerning the classification of hazards for water (WGK) :

Germany : WGK 1 (VwVwS vom 27/07/2005, KBws)

15.2. Chemical safety assessment

No data available.

SECTION 16 : OTHER INFORMATION

Since the user's working conditions are not known by us, the information supplied on this safety data sheet is based on our current level of knowledge and on national and community regulations.

The mixture must not be used for other uses than those specified in section 1 without having first obtained written handling instructions.

It is at all times the responsibility of the user to take all necessary measures to comply with legal requirements and local regulations.

The information in this safety data sheet must be regarded as a description of the safety requirements relating to the mixture and not as a guarantee of the properties thereof.

Title for H, EUH and R indications mentioned in section 3 :

H302	Harmful if swallowed.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H361d	Suspected of damaging the unborn child.
R 22	Harmful if swallowed.
R 36	Irritating to eyes.
R 41	Risk of serious damage to eyes.
R 63.G3	Possible risk of harm to the unborn child.

Abbreviations :

DNEL : Derived No-Effect Level

PNEC : Predicted No-Effect Concentration

ADR : European agreement concerning the international carriage of dangerous goods by Road.

IMDG : International Maritime Dangerous Goods.

IATA : International Air Transport Association.

ICAO : International Civil Aviation Organisation

RID : Regulations concerning the International carriage of Dangerous goods by rail.

WGK : Wassergefahrdungsklasse (Water Hazard Class).