



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

1.1 Product identifier

Trade name/designation Brake fluid DOT4 PLUS, MB 331.0

Partno A 000 989 08 07 18

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

Use of the substance/mixture

Brake fluid

1.3 Details of the supplier of the safety data sheet

Supplier

Daimler AG

70546 Stuttgart
DEUTSCHLAND

Telephone +49 (0)711 17-97390

Telefax +49 (0)711 17-94831

E-mail (competent person):

Mercedes-Benz-SDB@daimler.com

1.4 Emergency telephone number

+49 (0)711 17-0

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Remark

This mixture is classified as not hazardous according to regulation (EC) No 1272/2008 [CLP].

2.2 Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

product identifiers

Trade name/designation Brake fluid DOT4 PLUS, MB 331.0

Precautionary statements

P102 Keep out of reach of children.

Special rules for supplemental label elements for certain mixtures

EUH210 Safety data sheet available on request.

2.3 Other hazards

Results of PBT and vPvB assessment

The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.

SECTION 3: Composition / information on ingredients

3.1 Substances

not applicable

3.2 Mixtures

Description

Technical mixture of polyglycol ethers, polyglycols and their borate esters, amines, additives and stabilizers.



Hazardous ingredients

CAS No.	EC No.	Substance name	Concentration	Classification according to Regulation (EC) No 1272/2008 [CLP]
110-97-4	203-820-9	1,1'-iminodipropan-2-ol	< 10 %	Eye Irrit. 2 H319
111-46-6	203-872-2	diethylene glycol	< 10 %	Acute Tox. 4 H302 STOT RE 2 H373

REACH No.	Substance name
01-2119475444-34	1,1'-iminodipropan-2-ol
01-2119457857-21	diethylene glycol

SECTION 4: First aid measures

4.1 Description of first aid measures

General information

Remove contaminated, saturated clothing immediately.

Following inhalation

Provide fresh air.

In the event of symptoms refer for medical treatment.

Following skin contact

Wash immediately with:

Water

In case of skin irritation, consult a physician.

After eye contact

After contact with the eyes, rinse with water with the eyelids open for a sufficient length of time, then consult an ophthalmologist immediately.

Remove contact lens

After ingestion

Do NOT induce vomiting.

Medical treatment necessary.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms

No known symptoms to date.

4.3 Indication of any immediate medical attention and special treatment needed

Notes for the doctor

Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

alcohol resistant foam

Extinguishing powder

Carbon dioxide (CO₂)

Water spray jet

Unsuitable extinguishing media

High power water jet

5.2 Special hazards arising from the substance or mixture

Hazardous combustion products

In the event of fire the following can be released:

Nitrogen oxides (NO_x)

Carbon monoxide



5.3 Advice for firefighters

Special protective equipment for firefighters:

In case of fire: Wear self-contained breathing apparatus.
Use protective equipment.

Additional information

Fire residues and contaminated firefighting water must be disposed of in accordance with the local regulations.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Use personal protection equipment.
Observe usual precautionary measures for handling chemicals.

For emergency responders

Personal protection equipment
Keep away unprotected persons

6.2 Environmental precautions

Inform respective authorities in case of seepage into water course or sewage system.
Do not allow to enter into surface water or drains.
Prevent spread over a wide area (e.g. by containment or oil barriers).
Do not allow to enter into soil/subsoil.
In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.

6.3 Methods and material for containment and cleaning up

For containment

Take up with absorbent material (e.g. sand, kieselguhr, acid binder, general-purpose binder, sawdust).
After taking up the material dispose according to regulation.

6.4 Reference to other sections

Safe handling: see section 7
Disposal: see section 13
Personal protection equipment: see section 8

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Protective measures

If local exhaust ventilation is not possible or not sufficient, the entire working area should be ventilated by technical means.
Avoid contact with the eyes and skin.
Do not inhale vapours.
Temperature class: T3
Adhere to general precaution rules when handling chemicals

Advices on general occupational hygiene

When using do not eat, drink, smoke, sniff.
Keep away from food and drink.
Wash hands before breaks and after work.
Use protective skin cream before handling the product.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels

Keep/Store only in original container.

Storage class

LGK10 Combustible liquids that cannot be assigned to any of the above storage classes

Materials to avoid

Do not store together with:
Food and feedingstuffs
Combustible substance



Further information on storage conditions

Keep container tightly closed in a cool, well-ventilated place.

Protect against:

Frost

Heat

UV-radiation/sunlight

Recommended storage temperature: room temperature.

7.3 Specific end use(s)

Recommendation

See section 1.2

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limit values

CAS No.	EC No.	Substance name	occupational exposure limit value
111-46-6	203-872-2	2,2'-Oxydiethanol	10 [ml/m3(ppm)] 44 [mg/m3] peak limitation4(II) DFG, Y, 11 TRGS 900

DNEL worker

CAS No.	Substance name	DNEL value	DNEL type	Remark
111-46-6	diethylene glycol	44 mg/m ³	long-term inhalative (systemic)	
111-46-6	diethylene glycol	60 mg/m ³	long-term inhalative (local)	
111-46-6	diethylene glycol	43 mg/kg bw/day	long-term dermal (systemic)	

DNEL Consumer

CAS No.	Substance name	DNEL value	DNEL type	Remark
111-46-6	diethylene glycol	12 mg/m ³	long-term inhalative (systemic)	
111-46-6	diethylene glycol	12 mg/m ³	long-term inhalative (local)	
111-46-6	diethylene glycol	21 mg/kg bw/day	long-term dermal (systemic)	

PNEC

CAS No.	Substance name	PNEC Value	PNEC type	Remark
111-46-6	diethylene glycol	10 mg/L	aquatic, freshwater	
111-46-6	diethylene glycol	1 mg/L	aquatic, marine water	
111-46-6	diethylene glycol	199.5 mg/L	sewage treatment plant (STP)	
111-46-6	diethylene glycol	20.9 mg/kg	sediment, freshwater	
111-46-6	diethylene glycol	2.09 mg/kg	sediment, marine water	
111-46-6	diethylene glycol	1.53 mg/kg	soil, freshwater	

8.2 Exposure controls

Appropriate engineering controls

Technical measures to prevent exposure

Sufficient ventilation and exhaustion.



Personal protection equipment

Eye/face protection

Eye glasses with side protection

Hand protection

For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

Glove materials data [type, thickness, breakthrough time/duration of use, permeation rate]: Butyl rubber, >480 min, 0,7 mm

Glove material specification [make/type, thickness, permeation time/life, wetting resistance]: Nitrile rubber, 0.4 mm coating thickness, for short-term contact/splash

Body protection:

Protective clothing

Respiratory protection

Respiratory protection necessary at:

insufficient exhaust

prolonged exposure

Suitable respiratory protection apparatus:

Full mask, filter A

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state

liquid

Colour

yellow

Odour

characteristic

Safety relevant basis data

	Value	Method	Source, Remark
Odour threshold:	not determined		
pH	in delivery state 7- 8.5 at °C: 20	FMVSS 116	
Melting point/freezing point	< -70 °C	DIN 51583	
Initial boiling point and boiling range	> 260 °C	FMVSS 116	
Flash point	approx. 134 °C	ASTM D 7094	
Evaporation rate	not determined		
flammability	not determined		
Upper/lower flammability or explosive limits	Lower explosion limit 1.5 Vol-%		
Vapour pressure	< 1 mbar at °C: 20		
Vapour density	not determined		
Density	1.065- 1.085 at °C: 20	DIN 51757	
Solubility(ies)	Water solubility (g/L) at °C: 20		soluble
Partition coefficient: n-octanol/water			not applicable
Auto-ignition temperature	> 200 °C	DIN 51794	
Decomposition temperature	360 °C		
Viscosity	kinematic 15- 17 mm ² /s at °C: 20	FMVSS 116	



	Value	Method	Source, Remark
Explosive properties:			The product is not explosive
Oxidising properties			The product is not oxidising.

9.2 Other information

Other safety information

Product effects hygroscopic.

SECTION 10: Stability and reactivity

10.1 Reactivity

No hazardous reactions known.

10.2 Chemical stability

The product is chemically stable under recommended conditions of storage, use and temperature.

10.3 Possibility of hazardous reactions

No hazardous reaction when handled and stored according to provisions.

10.4 Conditions to avoid

No data available

10.5 Incompatible materials

No data available

10.6 Hazardous decomposition products

No hazardous decomposition products known.

Additional information

No risk of production of decomposition products when appropriately handled and stored

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Animal data

	Effective dose	Method	Source, Remark
Acute oral toxicity	> 5000 mg/kg Rat	OECD 401	
Acute oral toxicity	LD50: > 2000 mg/kg Rat	OECD 401	CAS No.110-97-4 1,1'-iminodipropyl-2-ol
Acute oral toxicity	LD50: 19600 mg/kg Rat		CAS No.111-46-6 diethylene glycol
Acute dermal toxicity	LD50: 8000 mg/kg Rabbit		CAS No.110-97-4 1,1'-iminodipropyl-2-ol
Acute dermal toxicity	LD50: 13300 mg/kg Rabbit		CAS No.111-46-6 diethylene glycol
Acute inhalation toxicity	LC0: 2.07 mg/L Mouse Exposure time 3 h		CAS No.110-97-4 1,1'-iminodipropyl-2-ol
Acute inhalation toxicity	LC50: > 4.6 mg/L Rat Exposure time 4 h		CAS No.111-46-6 diethylene glycol

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Version 16

Assessment/classification

Based on available data, the classification criteria are not met.

Skin corrosion/irritation**Animal data**

Result / evaluation	Method	Source, Remark
Not an irritant. Rabbit Exposure time 4 h	OECD 404	CAS No.110-97-4 1,1'-iminodipropan-2-ol
non-irritant Rabbit Exposure time 23 h	Draize-method	CAS No.111-46-6 diethylene glycol

Assessment/classification

Based on available data, the classification criteria are not met.

Eye damage/irritation**Animal data**

Result / evaluation	Method	Source, Remark
Not an irritant. Rabbit	OECD 405	
irritant Rabbit Exposure time 72 h	OECD 405	CAS No.110-97-4 1,1'-iminodipropan-2-ol
non-irritant Rabbit		CAS No.111-46-6 diethylene glycol

Assessment/classification

Based on available data, the classification criteria are not met.

Skin sensitisation**Animal data**

Result / evaluation	Dose / Concentration	Method	Source, Remark
not sensitising.	CAS No.110-97-4 1,1'-iminodipropan-2-ol	OECD 406	
not sensitising.	CAS No.111-46-6 diethylene glycol	Regulation (EC) No. 440/2008, Annex, B.6 (Maximisation test)	

Assessment/classification

Based on available data, the classification criteria are not met.

Repeated dose toxicity (subacute, subchronic, chronic)

	Effective dose	Method	Specific effects:	Organs affected:	Source, Remark
Subacute oral toxicity					This information is not available.
Subacute dermal toxicity					This information is not available.
Subacute inhalation toxicity					This information is not available.
Subchronic oral toxicity					This information is not available.
Subchronic dermal toxicity					This information is not available.
Subchronic inhalation toxicity					This information is not available.
Chronic oral toxicity					This information is not available.



	Effective dose	Method	Specific effects:	Organs affected:	Source, Remark
Chronic dermal toxicity					This information is not available.
Chronic inhalation toxicity					This information is not available.

Germ cell mutagenicity

	Value	Method	Result / evaluation	Remark
In vitro mutagenicity/genotoxicity	CAS No. 110-97-4 1,1'-iminodipropyl-2-ol 78.1- 5000 µg/ml Säugetierzellen (mit und ohne metabolische Aktivierung)	OECD 473	negative.	
In vitro mutagenicity/genotoxicity	CAS No. 110-97-4 1,1'-iminodipropyl-2-ol 100- 5000 µg/plate Salmonella typhimurium	OECD 471 (Ames test)	negative.	with and without metabolic activation
In vitro mutagenicity/genotoxicity	CAS No. 110-97-4 1,1'-iminodipropyl-2-ol 313- 5000 µg/ml Hamster cells	OECD 476	negative.	with and without metabolic activation
In vitro mutagenicity/genotoxicity	CAS No. 111-46-6 diethylene glycol 33- 5000 µg/plate Salmonella typhimurium	OECD 471 (Ames test)	negative.	with and without metabolic activation
In vitro mutagenicity/genotoxicity	CAS No. 111-46-6 diethylene glycol 33- 5000 µg/plate Escherichia coli.	OECD 471 (Ames test)	negative.	with and without metabolic activation
In vivo mutagenicity/genotoxicity	CAS No. 111-46-6 diethylene glycol 500- 2000 mg/kg Mouse	OECD 474	negative.	

Assessment/classification

Based on available data, the classification criteria are not met.

Carcinogenicity**Animal data**

	Value	Method	Result / evaluation	Remark
Carcinogenicity	CAS No. 110-97-4 1,1'-iminodipropyl-2-ol			No indication of human carcinogenicity.



	Value	Method	Result / evaluation	Remark
Carcinogenicity	CAS No.111-46-6 diethylene glycol			No indication of human carcinogenicity.

Assessment/classification

Based on available data, the classification criteria are not met.

Reproductive toxicity**Animal data**

	Value	Method	Result / evaluation	Remark
Adverse effects on sexual function and fertility	CAS No.110-97-4 1,1'-iminodiprop-2-ol NOAEL 602- 693 mg/kg Rat	One-generation study		
Adverse effects on developmental toxicity	CAS No.110-97-4 1,1'-iminodiprop-2-ol 100- 1000 mg/kg Rat	OECD 414		Embryo-foetal development
Adverse effects on developmental toxicity	CAS No.111-46-6 diethylene glycol NOAEL(C): 3060 mg/kg Mouse	Embryo-foetal development		
Adverse effects on developmental toxicity	CAS No.111-46-6 diethylene glycol 100- 1000 mg/kg Kaninchen	OECD 414		

Assessment/classification

Based on available data, the classification criteria are not met.

STOT-single exposure**STOT SE 1 and 2****Assessment/classification**

The mixture is not classified as a specific target organ toxicant, single exposure.

STOT-repeated exposure**Animal data**

	Effective dose	Method	Specific effects:	Organs affected:	Source, Remark
Oral specific target organ toxicity (repeated exposure)	CAS No.110-97-4 1,1'-iminodiprop-2-ol NOAEL(C): 100-500 mg/kg Rat Exposure time 90 ddaily	OECD 408			



	Effective dose	Method	Specific effects:	Organs affected:	Source, Remark
Oral specific target organ toxicity (repeated exposure)	CAS No.111-46-6 diethylene glycol NOAEL(C): 936 mg/kg Rat Exposure time 4 Wochen Exposure frequency 7 d/w	OECD 407			
Dermal specific target organ toxicity (repeated exposure)	CAS No.110-97-4 1,1'-iminodipropyl-2-ol NOAEL(C): 100 mg/kg Rat Exposure time 28 Tage Exposure frequency 5 d/w	OECD 410			
Dermal specific target organ toxicity (repeated exposure)	CAS No.111-46-6 diethylene glycol NOAEL(C): approx. 2200 mg/kg bw/day Hund Exposure time 4 Wochen Exposure frequency 7 d/w	OECD 410			

Assessment/classification

Das Gemisch ist nicht als zielorgantoxisch, wiederholte Exposition, eingestuft.

Aspiration hazard**Experimental data**

	Value	Method	Source, Remark
Viscosity	kinematic 15- 17 mm ² /s at °C: 20	FMVSS 116	

Assessment/classification

Based on available data, the classification criteria are not met.

SECTION 12: Ecological information**12.1 Toxicity****Aquatic toxicity**

	Effective dose	Method	Source, Remark
Acute (short-term) fish toxicity	LC50: 250- 350 mg/L Leuciscus idus (golden orfe) Test duration 96 h	DIN 38412 / part 15	
Acute (short-term) fish toxicity	LC50: 1466 mg/L Danio rerio Test duration 96 h	OECD 203	CAS No.110-97-4 1,1'-iminodipropyl-2-ol
Acute (short-term) fish toxicity	LC50: 75200 mg/L Pimephales promelas (fathead minnow) Test duration 96 h		CAS No.111-46-6 diethylene glycol



	Effective dose	Method	Source, Remark
Chronic (long-term) fish toxicity	7694 mg/L Test duration 30 d		CAS No.111-46-6 diethylene glycol
Acute (short-term) toxicity to crustacea	EC50 277.7 mg/L Daphnia magna (Big water flea) Test duration 48 h		CAS No.110-97-4 1,1'-iminodipropyl-2-ol
Acute (short-term) toxicity to crustacea	EC50 > 10000 mg/L Daphnia magna (Big water flea) Test duration 24 h	DIN 38412 / part 11	CAS No.111-46-6 diethylene glycol
Chronic (long-term) toxicity to crustacea	1891 mg/L Daphnia pulex (water flea) Test duration 16 d		CAS No.111-46-6 diethylene glycol
Acute (short-term) toxicity to aquatic algae and cyanobacteria	EC50 9362 mg/L Test duration 96 h	estimated	CAS No.111-46-6 diethylene glycol
Toxicity to other aquatic plants/organisms	not determined		
Toxicity to microorganisms	EC50 15 mg/L		
Toxicity to microorganisms	EC20 > 1995 mg/L activated sludge Test duration 0.5 h	ISO 8192	CAS No.111-46-6 diethylene glycol

Toxicity to terrestrial plants

	Effective dose	Method	Source, Remark
Chronic plant toxicity	LOEC 424 mg/kg Lactuca sativa (Kopfsalat) Exposure time 50 h		CAS No.110-97-4 1,1'-iminodipropyl-2-ol

12.2 Persistence and degradability

	Value	Method	Source, Remark
Biodegradation	Degradation rate (%): 96	static test	Readily biodegradable (according to OECD criteria).
Biodegradation	Activated sludge Degradation rate (%): 94	OECD 301F/ ISO 9408/ EEC 92/69/V, C.4-D	CAS No.110-97-4 1,1'-iminodipropyl-2-ol 28 days Easily biodegradable
Biodegradation	municipal Degradation rate (%): 70- 80	OECD 301B/ ISO 9439/ EEC 92/69/V, C.4-C	CAS No.111-46-6 diethylene glycol 28 days Easily biodegradable
Biodegradation	municipal Degradation rate (%): 90- 100	OECD 301A/ ISO 7827/ EEC 92/69/V, C.4-A	CAS No.111-46-6 diethylene glycol 28 days Easily biodegradable

12.3 Bioaccumulative potential

	Value	Method	Source, Remark
Partition coefficient: n-octanol/water			not applicable

Assessment/classification

Eine Bioakkumulation ist nicht zu erwarten.



12.4 Mobility in soil

	Value	Distribution	Transport type	Method	Remark
Log KOC					not applicable

12.5 Results of PBT and vPvB assessment

The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.

12.6 Other adverse effects

Additional ecotoxicological information

Additional information

Do not allow product to reach ground water, water course or sewage system.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Appropriate disposal / Product

Dispose of waste according to applicable legislation.

Appropriate disposal / Package

Dispose of waste according to applicable legislation.

Remark

Send to a hazardous waste incinerator facility under observation of official regulations.

The allocation of waste identity numbers/waste descriptions must be carried out according to the EEC, specific to the industry and process.

SECTION 14: Transport information

	Land transport (ADR/RID)	Sea transport (IMDG)	Air transport (ICAO-TI / IATA-DGR)
14.1 UN number	-	-	-
14.2 UN proper shipping name	-	-	-
14.3 Transport hazard class(es)	-	-	-
14.4 Packing group	-	-	-
14.5 Environmental hazards	No	No	No

14.6 Special precautions for user

No data available

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

not applicable

All transport carriers

No dangerous goods as defined by the transport regulations - ADR/RID, IMDG, ICAO/IATA-DGR.

SECTION 15: Regulatory information

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

EU legislation

Authorisations

None of the components is listed.

Restrictions on use

None of the components is listed.

National regulations

Water hazard class (WGK)

slightly hazardous to water (WGK 1)

Classification according to VwVwS, Annex 4.



15.2 Chemical Safety Assessment

Für einen/mehrere Inhaltsstoffe des hier beschriebenen Gemisches sind Stoffsicherheitsbeurteilungen (CSA) verfügbar.

SECTION 16: Other information

Indication of changes

* Data changed compared with the previous version

Abbreviations and acronyms

See overview table at www.euphrac.eu

Key literature references and sources for data

Safety data sheets of suppliers

Additional information

Adhere to existing national and local rules referring to chemicals.

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.

Relevant R-, H- and EUH-phrases (Number and full text)

H302 Harmful if swallowed.

H319 Causes serious eye irritation.

H373 May cause damage to organs through prolonged or repeated exposure.