

SAFETY DATA SHEET

Safety data sheet in accordance with
Colombian Standard NTC 4435

CLARIANT^E

SAFEBRAKE 6 M (DOT 4)

Page 1(31)

Substance key: 000000181578

Revision Date: 19.11.2025

Version : 1 - 5 / CO

Date of printing : 14.03.2026

SECTION 1. IDENTIFICATION

Trade name

SAFEBRAKE 6 M (DOT 4)

Material number: 201418

Chemical nature: Technical mixture based on polyethylene glycol ethers and their boric acid esters , additives and stabilisers

Relevant identified uses of the substance or mixture

Industry sector : Functional Fluids
Type of use: Automobile industry
Brake fluid.

Identification of the company

Clariant Produkte (Deutschland) GmbH
65926 Frankfurt am Main
Telephone no. : +49 69 305 18000

Information about the substance/mixture

BU Care Chemicals
Product Stewardship
e-mail: SDS.Europe@clariant.com

Emergency telephone number : +57 1 877 3300 (24 h)

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Serious eye damage/eye irritation : Category 1

Reproductive toxicity : Category 2

GHS label elements

Hazard pictograms :



Signal word : Danger

Hazard statements : H318 Causes serious eye damage.
H361fd Suspected of damaging fertility. Suspected of damaging the unborn child.

Precautionary statements : P101 If medical advice is needed, have product container or label at hand.
P102 Keep out of reach of children.
P103 Read label before use.

Prevention:

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P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.

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

Storage:

P405 Store locked up.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards which do not result in classification

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

Chemical name	CAS-No.	Concentration (% w/w)
Tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl] orthoborate	30989-05-0	>= 30 -< 50
2-(2-(2-Butoxyethoxy)ethoxy)ethanol	143-22-6	>= 5 -< 10
Diethylene glycol	111-46-6	>= 5 -< 10
Triethylene glycol	112-27-6	>= 5 -< 10
3,6,9,12-Tetraoxahexadecan-1-ol	1559-34-8	>= 1 -< 5
1,1'-Iminodipropan-2-ol	110-97-4	>= 1 -< 5

SECTION 4. FIRST AID MEASURES

General advice : Move out of dangerous area.
Consult a physician.
Show this safety data sheet to the doctor in attendance.
Do not leave the victim unattended.

If inhaled : Move to fresh air.
If unconscious, place in recovery position and seek medical advice.
Never give anything by mouth to an unconscious person.
Get immediate medical advice/ attention.

In case of skin contact : If on skin, rinse well with water.

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- Take off all contaminated clothing immediately.
If skin irritation occurs, seek medical advice/attention.
- In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Get immediate medical advice/ attention.
If easy to do, remove contact lens, if worn.
Protect unharmed eye.
Keep eye wide open while rinsing.
- If swallowed : Rinse mouth with water.
Do NOT induce vomiting.
Never give anything by mouth to an unconscious person.
Take victim immediately to hospital.
- Most important symptoms and effects, both acute and delayed : The possible health hazards known are those derived from the labelling (see corresponding section) and/or provided in this section.
The possible symptoms known are those derived from the labelling (see section 2).
Causes serious eye damage.
Suspected of damaging fertility. Suspected of damaging the unborn child.
- Notes to physician : Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media : Water spray jet
Alcohol-resistant foam
Dry powder
Carbon dioxide (CO₂)
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Unsuitable extinguishing media : High volume water jet
- Hazardous combustion products : Boron oxides
Carbon oxides
Hydrocarbons
Nitrogen oxides (NO_x)
- Specific extinguishing methods : In the event of fire and/or explosion do not breathe fumes.
Do not allow run-off from fire fighting to enter drains or water courses.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
- Special protective equipment for firefighters : Wear full protective clothing and self-contained breathing apparatus.

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SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Avoid contact with skin, eyes and clothing.
Ensure adequate ventilation.
Evacuate personnel to safe areas.
Remove all sources of ignition.
Use personal protective equipment.
Refer to protective measures listed in sections 7 and 8.
- Environmental precautions : The product should not be allowed to enter drains, water courses or the soil.
- Methods and materials for containment and cleaning up : Prevent product from entering drains.
Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
Clean contaminated surface thoroughly.
Treat recovered material as described in the section "Disposal considerations".

SECTION 7. HANDLING AND STORAGE

- Advice on protection against fire and explosion : Keep away from heat and sources of ignition.
Observe the general rules of industrial fire protection
- Advice on safe handling : Use only with adequate ventilation/personal protection.
For personal protection see section 8.
Avoid contact with skin, eyes and clothing.
Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- Conditions for safe storage : Keep containers tightly closed in a dry, cool and well-ventilated place.
Handle and open container with care.
Keep away from sources of ignition - No smoking.
- Further information on storage conditions : Store at room temperature.
- Materials to avoid : When used and handled as intended, none.
- Further information on storage stability : Stable under recommended storage conditions.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

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Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Triethylene glycol	112-27-6	TWA (Inhalable fraction and vapor)	10 mg/m ³	ACGIH

Engineering measures : Use engineering controls such as local or general exhaust to maintain airborne concentrations below exposure limits.

Personal protective equipment

Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines.

Filter type : Combined particulates, inorganic and acidic gas/vapour, ammonia/amines and organic vapour type

Hand protection

Break through time : 480 min

Glove thickness : 0,7 mm

Remarks : Long-term exposure Impervious butyl rubber gloves

Break through time : 30 min

Glove thickness : 0,4 mm

For short-term exposure (splash protection): Nitrile rubber gloves.

These types of protective gloves are offered by various manufacturers. Please note the manufacturers' detailed statements, especially about the minimum thickness and the minimum breakthrough time. Consider also the particular working conditions under which the gloves are being used.

Eye protection : Chemical splash goggles with face shield.
Do not wear contact lenses.

Skin and body protection : Wear protective clothing, including long sleeves and gloves, to prevent skin contact.

Protective measures : Observe the usual precautions for handling chemicals.
Avoid breathing dust or vapour.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice.
Use protective skin cream before handling the product.
Wash hands before breaks and at the end of workday.
Take off immediately all contaminated clothing and wash it before reuse.

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SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: Liquid
Colour	: yellow
Odour	: characteristic
Odour Threshold	: no data available
pH	: approx. 8,5 (20 °C) Concentration: 50 % Method: FMVSS 116
Solidification point	: < -70 °C Method: DIN 51583
Boiling point	: > 260 °C (1,013 hPa) Method: FMVSS 116
Flash point	: approx. 139 °C Method: ASTM D 7094 (closed cup)
Evaporation rate	: no data available
Flammability (solid, gas)	: Not applicable
Self-ignition	: The substance or mixture is not classified as self heating.
Upper explosion limit / upper flammability limit	: no data available
Lower explosion limit / Lower flammability limit	: 1,5 %(V)
Vapour pressure	: < 1 mbar (20 °C)
Relative vapour density	: no data available
Relative density	: no data available
Density	: approx. 1,06 g/cm ³ (20 °C) Method: DIN 51757
Solubility(ies) Water solubility	: completely miscible (20 °C)
Partition coefficient: n-	: Not applicable

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octanol/water

Auto-ignition temperature : > 200 °C
Method: DIN 51794

Decomposition temperature : approx. 360 °C
Method: DSC

Viscosity

Viscosity, dynamic : no data available

Viscosity, kinematic : 15 - 17 mm²/s (20 °C)
Method: FMVSS 116

Explosive properties : Not explosive
Method: Expert judgement

Oxidizing properties : The substance or mixture is not classified as oxidizing.
Method: Expert judgement

Molecular weight : no data available

Metal corrosion rate : < 6,25 mm/a

Particle size : Does not apply to liquids.

SECTION 10. STABILITY AND REACTIVITY

Reactivity : No dangerous reaction known under conditions of normal use.

Chemical stability : Stable under normal conditions.
hygroscopic

Possibility of hazardous reactions : No dangerous reaction known under conditions of normal use.

Conditions to avoid : None known.

Incompatible materials : not known

Hazardous decomposition products : When handled and stored appropriately, no dangerous decomposition products are known

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Not classified

Product:

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Acute oral toxicity : Acute toxicity estimate: > 5.000 mg/kg
Method: Calculation method

Components:

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

Acute oral toxicity : LD50 (Rat, male and female): > 2.000 mg/kg
Method: OECD Test Guideline 401
Assessment: The substance or mixture has no acute oral toxicity

Acute inhalation toxicity : Remarks: Not relevant

Acute dermal toxicity : LD50 (Rat, male and female): > 2.000 mg/kg
Method: OECD Test Guideline 402
Assessment: The substance or mixture has no acute dermal toxicity

2-(2-(2-Butoxyethoxy)ethoxy)ethanol:

Acute oral toxicity : LD50: 5.170 mg/kg

Acute inhalation toxicity : Remarks: not required

Acute dermal toxicity : LD50 (Rabbit, male): 3.540 mg/kg
Method: Other
GLP: no
Assessment: The substance or mixture has no acute dermal toxicity
Remarks: By analogy with a product of similar composition

Diethylene glycol:

Acute oral toxicity : LD50 (Rat, male): 19.600 mg/kg
Method: Other
GLP: no
Assessment: The component/mixture is moderately toxic after single ingestion.

Triethylene glycol:

Acute inhalation toxicity : LC50 (Rat, male and female): > 5,2 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: Other
Assessment: The substance or mixture has no acute inhalation toxicity

3,6,9,12-Tetraoxahexadecan-1-ol:

Acute oral toxicity : LD50 (Rat, male and female): 2.630 mg/kg
Method: Other
Assessment: The substance or mixture has no acute oral toxicity

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1,1'-Iminodipropán-2-ol:

- Acute oral toxicity : LD50 (Rat, male and female): > 2.000 mg/kg
Method: OECD Test Guideline 401
GLP: yes
Assessment: The substance or mixture has no acute oral toxicity
- Acute inhalation toxicity : LC0 (Mouse, male): 2,07 mg/l
Exposure time: 3 h
Method: Other
GLP: no
Assessment: The substance or mixture has no acute inhalation toxicity
- Acute dermal toxicity : LD50 (Rabbit, male): 8.000 mg/kg
Method: Other
GLP: no

Skin corrosion/irritation

Not classified

Components:

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

- Species : Rabbit
Method : OECD Test Guideline 404
Result : No skin irritation

2-(2-(2-Butoxyethoxy)ethoxy)ethanol:

- Species : Rabbit
Exposure time : 4 h
Method : OECD Test Guideline 404
Result : No skin irritation
GLP : yes
Remarks : By analogy with a product of similar composition

Diethylene glycol:

- Species : Rabbit
Exposure time : 23 h
Method : Draize Test
Result : No skin irritation
GLP : no

Triethylene glycol:

- Species : Rabbit
Method : Draize Test
Result : No skin irritation

1,1'-Iminodipropán-2-ol:

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Species	: Rabbit
Exposure time	: 4 h
Method	: OECD Test Guideline 404
Result	: No skin irritation
GLP	: no

Serious eye damage/eye irritation

Causes serious eye damage.

Components:

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

Species	: Rabbit
Result	: No eye irritation
Method	: OECD Test Guideline 405
GLP	: yes

2-(2-(2-Butoxyethoxy)ethoxy)ethanol:

Species	: rabbit eye
Result	: Risk of serious damage to eyes.
Method	: OECD Test Guideline 405
GLP	: yes

Diethylene glycol:

Species	: Rabbit
Result	: No eye irritation
Method	: Other
GLP	: no

Triethylene glycol:

Species	: Rabbit
Result	: No eye irritation
Method	: Draize Test

3,6,9,12-Tetraoxahexadecan-1-ol:

Result	: Irritating to eyes.
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1,1'-Iminodipropan-2-ol:

Species	: rabbit eye
Result	: Irritating to eyes.
Exposure time	: 72 h
Method	: OECD Test Guideline 405
GLP	: No information available.

Respiratory or skin sensitisation

Skin sensitisation

Not classified

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Respiratory sensitisation

Not classified

Components:

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

Test Type	: Maximisation Test
Species	: Guinea pig
Method	: OECD Test Guideline 406
Result	: Not a skin sensitizer.

2-(2-(2-Butoxyethoxy)ethoxy)ethanol:

Test Type	: Guinea pig maximization test
Exposure routes	: Skin contact
Species	: Guinea pig
Method	: OECD Test Guideline 406
Result	: Does not cause skin sensitisation.
GLP	: No information available.
Remarks	: By analogy with a product of similar composition

Diethylene glycol:

Test Type	: Maximisation Type
Exposure routes	: Dermal
Species	: Guinea pig
Method	: Directive 67/548/EEC, Annex V, B.6.
Result	: Not a skin sensitizer.
GLP	: yes

Assessment : Harmful if swallowed.

Triethylene glycol:

Test Type	: Patch Test 24 Hrs.
Species	: Humans
Method	: Other
Result	: Not a skin sensitizer.

1,1'-Iminodipropan-2-ol:

Test Type	: Buehler Test
Exposure routes	: Skin contact
Species	: Guinea pig
Method	: OECD Test Guideline 406
Result	: Does not cause skin sensitisation.
GLP	: yes

Germ cell mutagenicity

Not classified

Components:

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

Genotoxicity in vitro	: Test Type: Ames test
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Test system: Salmonella typhimurium
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

Test Type: gene mutation test
Test system: Chinese hamster ovary cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative

Test Type: Chromosome aberration test in vitro
Test system: Human lymphocytes
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: negative

Germ cell mutagenicity - Assessment : In vitro tests did not show mutagenic effects

2-(2-(2-Butoxyethoxy)ethoxy)ethanol:

Genotoxicity in vitro : Test Type: Ames test
Test system: Salmonella typhimurium
Concentration: 20 - 50000 µg/plate
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative
GLP: no
Remarks: By analogy with a product of similar composition

Test Type: Chromosome aberration test in vitro
Test system: Chinese hamster ovary cells
Concentration: 10 - 5000 µg/ml
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: negative
GLP: yes
Remarks: By analogy with a product of similar composition

Test Type: HGPRT assay
Test system: Chinese hamster ovary cells
Concentration: 1000 - 5000 µg/ml
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative
GLP: yes
Remarks: By analogy with a product of similar composition

Germ cell mutagenicity - Assessment : In vitro tests did not show mutagenic effects

Diethylene glycol:

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- Genotoxicity in vitro : Test Type: Ames test
Test system: Salmonella typhimurium
Concentration: 33 - 5000 µg/plate
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative
GLP: yes
- Test Type: Ames test
Test system: Escherichia coli
Concentration: 33 - 5000 µg/plate
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative
GLP: yes
- Genotoxicity in vivo : Test Type: Micronucleus test
Species: Mouse (male)
Strain: NMRI
Cell type: Bone marrow
Application Route: Intraperitoneal injection
Exposure time: once
Dose: 500 - 1000 - 2000 mg/kg
Method: OECD Test Guideline 474
Result: negative
GLP: yes
- Germ cell mutagenicity - Assessment : In vivo tests did not show mutagenic effects, In vitro tests did not show mutagenic effects
- Triethylene glycol:**
- Genotoxicity in vitro : Test Type: Ames test
Test system: Salmonella typhimurium
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative
- Test Type: sister chromatid exchange assay
Test system: Chinese hamster ovary cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 479
Result: negative
- Test Type: Chromosome aberration test in vitro
Test system: Chinese hamster ovary cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: negative
- Germ cell mutagenicity - Assessment : In vitro tests did not show mutagenic effects

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1,1'-Iminodipropan-2-ol:

Genotoxicity in vitro

: Test Type: Chromosome aberration test in vitro
Test system: mammalian cells
Concentration: 78,1 - 5000 µg/ml
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: negative
GLP: yes

Test Type: Ames test
Test system: Salmonella typhimurium
Concentration: 100 - 5000 µg/plate
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative
GLP: yes

Test Type: In vitro gene mutation study in mammalian cells
Test system: Chinese hamster ovary cells
Concentration: 313 - 5000 µg/ml
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative
GLP: yes

Germ cell mutagenicity -
Assessment

: It is concluded that the product is not mutagenic based on
evaluation of several mutagenicity tests.

Carcinogenicity

Not classified

Components:

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

Carcinogenicity - : No information available.
Assessment

2-(2-(2-Butoxyethoxy)ethoxy)ethanol:

Carcinogenicity - : No information available.
Assessment

Diethylene glycol:

Carcinogenicity - : Animal testing did not show any carcinogenic effects.
Assessment

Triethylene glycol:

Species : Rat, male and female
Application Route : Oral
Exposure time : 108 w
NOAEL : 1.210 mg/kg body weight
Method : Other

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Remarks : By analogy with a product of similar composition

Carcinogenicity - Assessment : Not classifiable as a human carcinogen.

1,1'-Iminodipropan-2-ol:

Carcinogenicity - Assessment : Not classifiable as a human carcinogen.

Reproductive toxicity

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

Components:

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

Effects on fertility : Test Type: One generation study
Species: Rat, male and female
Strain: Sprague-Dawley
Application Route: oral (gavage)
Dose: 100, 300, 1000 mg/kg bw/day
General Toxicity - Parent: NOAEL: 300 mg/kg body weight
General Toxicity F1: NOAEL: 300 mg/kg body weight
General Toxicity F2: NOAEL: 300 mg/kg body weight
Method: OECD Test Guideline 443
GLP: yes

Effects on foetal development : Test Type: Pre-natal
Species: Rabbit
Strain: New Zealand white
Application Route: oral (gavage)
Dose: 100, 250, 500 mg/kg bw/day
General Toxicity Maternal: NOAEL: 250 mg/kg body weight
Embryo-foetal toxicity: NOAEL: 250 mg/kg body weight
Method: OECD Test Guideline 414
GLP: yes

Test Type: Pre-natal
Species: Rat
Strain: Sprague-Dawley
Application Route: oral (gavage)
Dose: 0, 30, 300, 1000 mg/kg bw/d
General Toxicity Maternal: NOAEL: <= 1.000 mg/kg body weight
Method: OECD Test Guideline 414

Reproductive toxicity - Assessment : Some evidence of adverse effects on sexual function and fertility, based on animal experiments., Some evidence of adverse effects on development, based on animal experiments.

2-(2-(2-Butoxyethoxy)ethoxy)ethanol:

Effects on fertility : Test Type: Two-generation study

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Species: Mouse, male and female
Strain: CD1
Application Route: Drinking water
Dose: 720 - 1340 - 2050 mg/kg
General Toxicity - Parent: NOAEL: 720 mg/kg body weight
General Toxicity F1: NOAEL: 720 mg/kg body weight
General Toxicity F2: NOAEL: 720 mg/kg body weight
Method: Other
GLP: yes
Remarks: By analogy with a product of similar composition

Effects on foetal
development

: Species: Rat
Strain: Fischer F344
Application Route: oral (gavage)
Dose: 30 - 100 - 200 - 300 mg/kg
General Toxicity Maternal: NOAEL: 30 mg/kg body weight
Teratogenicity: NOAEL: > 200 mg/kg body weight
Method: OECD Test Guideline 414
GLP: No information available.
Remarks: By analogy with a product of similar composition

Reproductive toxicity -
Assessment

: No evidence of adverse effects on sexual function and fertility,
or on development, based on animal experiments.

Diethylene glycol:

Effects on fertility

: Test Type: Two-generation study
Species: Mouse, male and female
Strain: CD1
Application Route: Drinking water
Dose: 612 - 3063 - 6125 mg/kg
General Toxicity - Parent: NOAEL: 3.060 mg/kg body weight
Method: Other
GLP: No information available.

Effects on foetal
development

: Test Type: Pre-natal
Species: Rabbit, female
Application Route: oral (gavage)
Dose: 100 - 400 - 1000 mg/kg
Duration of Single Treatment: 12 d
General Toxicity Maternal: NOAEL: 1.000 mg/kg body weight
Teratogenicity: NOAEL: > 1.000 mg/kg body weight
Method: OECD Test Guideline 414
GLP: yes

Reproductive toxicity -
Assessment

: No reproductive toxicity to be expected.
No teratogenic effects to be expected.

Triethylene glycol:

Effects on foetal
development

: Species: Rat
Strain: Sprague-Dawley
Application Route: Oral
Dose: 0.0, 1.0, 5.0, 10.0 ml/kg/day

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General Toxicity Maternal: NOEL: 1
Developmental Toxicity: NOEL: 5
Method: Other
Remarks: By analogy with a product of similar composition

Reproductive toxicity - Assessment : No evidence of adverse effects on sexual function and fertility, or on development, based on animal experiments.

1,1'-Iminodipropyl-2-ol:

Effects on fertility : Test Type: One generation study
Species: Rat, male and female
Strain: Sprague-Dawley
Application Route: oral (feed)
Dose: 500 - 2000 - 7500 ppm in diet
General Toxicity - Parent: NOAEL: 602 - 693 mg/kg body weight
General Toxicity F1: NOAEL: 609 - 700 mg/kg body weight
Method: Other
GLP: yes

Effects on foetal development : Test Type: Fertility/early embryonic development
Species: Rat, female
Application Route: Ingestion
Dose: 100 - 300 - 1000 mg/kg
Duration of Single Treatment: 15 d
Frequency of Treatment: 1 daily
General Toxicity Maternal: NOAEL: 1.000 mg/kg body weight
Embryo-foetal toxicity: NOAEL: 1.000 mg/kg body weight
Method: OECD Test Guideline 414
GLP: yes

Reproductive toxicity - Assessment : Animal testing did not show any effects on fertility.
Did not show teratogenic effects in animal experiments.

STOT - single exposure

Not classified

Components:

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

Assessment : The substance or mixture is not classified as specific target organ toxicant, single exposure.

2-(2-(2-Butoxyethoxy)ethoxy)ethanol:

Assessment : The substance or mixture is not classified as specific target organ toxicant, single exposure.

Diethylene glycol:

Assessment : The substance or mixture is not classified as specific target organ toxicant, single exposure.

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Triethylene glycol:

Assessment : The substance or mixture is not classified as specific target organ toxicant, single exposure.

1,1'-Iminodipropan-2-ol:

Assessment : The substance or mixture is not classified as specific target organ toxicant, single exposure.

STOT - repeated exposure

Not classified

Components:

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

Assessment : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

2-(2-(2-Butoxyethoxy)ethoxy)ethanol:

Assessment : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Diethylene glycol:

Assessment : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Triethylene glycol:

Assessment : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

1,1'-Iminodipropan-2-ol:

Assessment : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Repeated dose toxicity

Components:

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

Species : Rat, male and female
NOAEL : 1000 mg/kg bw/day
Application Route : oral (gavage)
Number of exposures : daily
Dose : 10, 100, 1000 mg/kg bw/d
Method : OECD Test Guideline 408

2-(2-(2-Butoxyethoxy)ethoxy)ethanol:

Species : Rat, male and female
NOAEL : 400 mg/kg
LOAEL : 1.200 mg/kg

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Application Route : Drinking water
Exposure time : 90 d
Number of exposures : daily
Dose : 400 - 1200 - 4000 mg/kg
Control Group : yes
Method : OECD Test Guideline 408
GLP : yes
Remarks : By analogy with a product of similar composition

Species : Rat, male and female
NOAEL : 4.000 mg/kg
Application Route : Skin contact
Exposure time : 13 w
Number of exposures : 6 hours/day, 5 days/week
Dose : 400 - 1200 - 4000 mg/kg
Control Group : yes
Method : Other
GLP : yes
Remarks : By analogy with a product of similar composition

Application Route : Inhalation
Remarks : The study is not necessary from a scientific perspective.

Diethylene glycol:

Species : Rat, male and female
NOAEL : 936 mg/kg bw/day
Application Route : oral (feed)
Exposure time : 4 w
Number of exposures : daily
Dose : 500-2500-10000-40000mg/kg diet
Control Group : yes
Method : OECD Test Guideline 407
GLP : yes

Species : Dog, male
NOAEL : 2200 mg/kg bw/day
Application Route : Skin contact
Exposure time : 4 w
Number of exposures : daily
Dose : 0,5 - 2 - 8 ml/kg
Control Group : yes
Method : OECD Test Guideline 410
GLP : yes
Remarks : By analogy with a product of similar composition

Repeated dose toxicity - Assessment : Harmful if swallowed.

Triethylene glycol:

Species : Rat, male and female
NOAEL : 1522 - 1699 mg/kg bw/day
Application Route : Oral

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Exposure time : 13 w
Method : OECD Test Guideline 408

1,1'-Iminodipropyl-2-ol:

Species : Rat, male and female
NOAEL : 100 - 500 mg/kg
Application Route : Drinking water
Exposure time : 90 d
Number of exposures : daily
Dose : 100 - 500 - 1000 mg/kg
Control Group : yes
Method : OECD Test Guideline 408
GLP : yes

Application Route : Inhalation
Remarks : This information is not available.

Species : Rat, female
NOAEL : 100 mg/kg
Application Route : Skin contact
Exposure time : 28 d
Number of exposures : 5 days/week
Dose : 100 - 500 - 750 mg/kg
Control Group : yes
Method : OECD Test Guideline 410
GLP : yes

Aspiration toxicity

Not classified

Components:

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

no data available

2-(2-(2-Butoxyethoxy)ethoxy)ethanol:

No aspiration toxicity classification

Diethylene glycol:

No aspiration toxicity classification

Triethylene glycol:

no data available

1,1'-Iminodipropyl-2-ol:

No aspiration toxicity classification

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Further information

Product:

Remarks : Information given is based on data on the components and the toxicology of similar products.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): 250 - 350 mg/l
Exposure time: 96 h
Method: DIN 38412

Toxicity to microorganisms : EC50: 6,25 mg/l

Components:

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

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): > 222,2 mg/l
End point: mortality
Exposure time: 96 h
Test Type: semi-static test
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 211,2 mg/l
End point: Immobilization
Exposure time: 48 h
Test Type: static test
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (algae)): > 224,4 mg/l
End point: Growth rate
Exposure time: 72 h
Test Type: static test
Method: OECD Test Guideline 201

Toxicity to fish (Chronic toxicity) : Remarks: no data available

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : Remarks: no data available

Toxicity to microorganisms : EC50 (activated sludge): > 1.000 mg/l
Exposure time: 30 min
Test Type: static test
Method: OECD Test Guideline 209

2-(2-(2-Butoxyethoxy)ethoxy)ethanol:

Toxicity to fish : LC50 (Fish): > 1.800 mg/l

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	Exposure time: 96 h Test Type: semi-static test Analytical monitoring: no data available Method: OECD Test Guideline 203 GLP: yes Remarks: By analogy with a product of similar composition
Toxicity to daphnia and other aquatic invertebrates	EC50 (Daphnia magna (Water flea)): > 3.200 mg/l Exposure time: 48 h Test Type: semi-static test Analytical monitoring: no data available Method: OECD Test Guideline 202 GLP: yes Remarks: The details of the toxic effect relate to the nominal concentration.
Toxicity to algae/aquatic plants	EC50 (Scenedesmus capricornutum (fresh water algae)): 2.490 mg/l End point: Growth rate Exposure time: 72 h Test Type: static test Analytical monitoring: no Method: OECD Test Guideline 201 GLP: yes Remarks: The details of the toxic effect relate to the nominal concentration.
Toxicity to fish (Chronic toxicity)	Remarks: not required
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	Remarks: not required
Toxicity to microorganisms	IC50 (activated sludge): > 5.000 mg/l End point: Growth rate Exposure time: 16 h Test Type: aquatic Analytical monitoring: no Method: Other GLP: no Remarks: By analogy with a product of similar composition The details of the toxic effect relate to the nominal concentration.
Toxicity to soil dwelling organisms	Remarks: Not applicable
Plant toxicity	Remarks: Not applicable
Sediment toxicity	Remarks: not available
Toxicity to terrestrial	Remarks: Not applicable

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organisms

Diethylene glycol:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 75.200 mg/l
End point: mortality
Exposure time: 96 h
Test Type: flow-through test
Analytical monitoring: yes
Method: Other
GLP: no

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 10.000 mg/l
Exposure time: 24 h
Test Type: static test
Analytical monitoring: no
Method: DIN 38412
GLP: no
Remarks: The details of the toxic effect relate to the nominal concentration.

Toxicity to algae/aquatic plants : EC50 (green algae): 9.362 mg/l
Exposure time: 96 h
Analytical monitoring: no
Method: estimated
GLP: no

Toxicity to fish (Chronic toxicity) : Chronic Toxicity Value (Fish): 7.694 mg/l
End point: Other
Exposure time: 30 d
Method: Other
GLP: no
Remarks: The value is given based on a SAR/AAR approach using OECD Toolbox, DEREK, VEGA QSAR models (CAESAR models), etc.

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : Chronic Toxicity Value (Daphnia sp. (water flea)): 1.891 mg/l
Exposure time: 16 d
Method: Other
GLP: no

Toxicity to microorganisms : EC20 (activated sludge): > 1.995 mg/l
Exposure time: 0,5 h
Test Type: static test
Analytical monitoring: no
Method: ISO 8192
GLP: no

Toxicity to soil dwelling organisms : LC50 (Eisenia andrei (red worm)): 10.974 mg/kg
Exposure time: 63 d
End point: mortality
Method: Other
GLP: No information available.

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LC50 (*Folsomia candida*): 15.689 mg/kg
Exposure time: 28 d
End point: mortality
Method: Other
GLP: No information available.

Plant toxicity : EC50: 18.102 mg/kg
Exposure time: 14 d
End point: emergence
Species: *Medicago sativa* L.
Method: Other
GLP: yes

Triethylene glycol:

Toxicity to fish : LC50 (*Lepomis macrochirus* (Bluegill sunfish)): > 10.000 mg/l
End point: mortality
Test Type: static test
Method: Other

Toxicity to daphnia and other aquatic invertebrates : EC50 (*Daphnia magna* (Water flea)): > 10.000 mg/l
Exposure time: 48 h
Test Type: static test
Method: DIN 38412

Toxicity to algae/aquatic plants : NOEC (*Pseudokirchneriella subcapitata* (algae)): > 100 mg/l
End point: Growth rate
Exposure time: 72 h
Test Type: static test
Method: OECD Test Guideline 201
Remarks: By analogy with a product of similar composition

Toxicity to fish (Chronic toxicity) : NOEC (*Pimephales promelas* (fathead minnow)): 15.380 mg/l
Exposure time: 7 d
Test Type: semi-static test
Method: Other

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (*Daphnia magna* (Water flea)): > 15.000 mg/l
Exposure time: 21 d
Test Type: static test
Method: Other

Toxicity to microorganisms : (activated sludge): > 1.995 mg/l
Exposure time: 30 min
Test Type: static test
Method: Other

1,1'-Iminodipropan-2-ol:

Toxicity to fish : LC50 (*Danio rerio* (zebra fish)): 1.466 mg/l
Exposure time: 96 h
Test Type: static test
Analytical monitoring: yes
Method: OECD Test Guideline 203

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GLP: no

Remarks: The details of the toxic effect relate to the nominal concentration.

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 277,7 mg/l
Exposure time: 48 h
Test Type: static test
Analytical monitoring: no
Method: Tested according to Directive 92/69/EEC.
GLP: no
Remarks: The details of the toxic effect relate to the nominal concentration.

Toxicity to fish (Chronic toxicity) : Remarks: not required

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : Remarks: not required

Toxicity to microorganisms : (Pseudomonas putida): not toxic
End point: Growth rate
Exposure time: 17 h
Test Type: aquatic
Analytical monitoring: no
Method: Other
GLP: no

Toxicity to soil dwelling organisms : Remarks: Not applicable

Plant toxicity : LOEC: 424 mg/kg
Exposure time: 50 d
End point: Growth
Species: Lactuca sativa (lettuce)
Method: Other
GLP: No information available.

Sediment toxicity : Remarks: no data available

Toxicity to terrestrial organisms : Remarks: Not applicable

Persistence and degradability

Product:

Biodegradability : Result: Readily biodegradable.
Biodegradation: 90 %
Exposure time: 15 d
Method: static test

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Components:

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

Biodegradability : Inoculum: activated sludge
Dissolved organic carbon (DOC)
Result: Readily biodegradable.
Biodegradation: > 70 %
Exposure time: 10 d
Method: OECD Test Guideline 301A

Stability in water : Degradation half life (DT50): < 10 min pH: 1,4 - 9
Method: OECD Test Guideline 111
Remarks: Hydrolyses readily.

2-(2-(2-Butoxyethoxy)ethoxy)ethanol:

Biodegradability : aerobic
Inoculum: activated sludge, domestic
Concentration: 2,5 mg/l
Chemical oxygen demand
Result: Readily biodegradable.
Biodegradation: 76 %
Exposure time: 28 d
Method: OECD Test Guideline 301D
GLP: yes

Diethylene glycol:

Biodegradability : aerobic
Inoculum: activated sludge
Concentration: 44 mg/l
Carbon dioxide (CO₂)
Result: Readily biodegradable.
Biodegradation: 70 - 80 %
Exposure time: 28 d
Method: OECD Test Guideline 301B
GLP: no

aerobic
Inoculum: activated sludge
Concentration: 45 mg/l
Dissolved organic carbon (DOC)
Result: Biodegradable
Biodegradation: 90 - 100 %
Exposure time: 28 d
Method: OECD Test Guideline 301A
GLP: yes

Triethylene glycol:

Biodegradability : Inoculum: activated sludge
Dissolved organic carbon (DOC)
Result: Readily biodegradable.
Biodegradation: 90 - 100 %

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Exposure time: 10 d
Method: OECD Test Guideline 301A
Remarks: By analogy with a product of similar composition

1,1'-Iminodipropan-2-ol:

Biodegradability : aerobic
Inoculum: activated sludge
Concentration: 52,6 mg ThOD NH₃/l
Biochemical Oxygen Demand (BOD)
Result: Readily biodegradable.
Biodegradation: 94 %
Exposure time: 28 d
Method: OECD Test Guideline 301F
GLP: yes

Physico-chemical
removability : Remarks: Biodegradable

Photodegradation : Test Type: air
Sensitiser: OH
Concentration: 500.000 1/cm³
Rate constant: 0.000000000101686 cm³/molecule
Degradation (indirect photolysis): 50 % Degradation half life:
3,8 h
Method: other (calculated)
GLP: no

Bioaccumulative potential

Product:

Bioaccumulation : Remarks: Not applicable

Components:

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

Bioaccumulation : Remarks: Bioaccumulation is unlikely.

2-(2-(2-Butoxyethoxy)ethoxy)ethanol:

Bioaccumulation : Remarks: Due to the low logPow bioaccumulation is not expected

Diethylene glycol:

Bioaccumulation : Species: Leuciscus idus (Golden orfe)
Bioconcentration factor (BCF): 100
Exposure time: 3 d
Concentration: 0,05 mg/l
Method: Other
GLP: no

Triethylene glycol:

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Bioaccumulation : Remarks: Bioaccumulation is unlikely.

1,1'-Iminodipropyl-2-ol:

Bioaccumulation : Remarks: Due to the distribution coefficient n-octanol/water, accumulation in organisms is not expected.

Mobility in soil

Components:

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

Distribution among : Koc: 0,008
environmental compartments Method: calculated

2-(2-(2-Butoxyethoxy)ethoxy)ethanol:

Distribution among : Remarks: Not applicable
environmental compartments

Diethylene glycol:

Distribution among : Adsorption/Soil
environmental compartments Medium: water - soil
log Koc: 0
Method: other (calculated)

Triethylene glycol:

Distribution among : Adsorption/Soil
environmental compartments log Koc: 1
Method: estimated

1,1'-Iminodipropyl-2-ol:

Distribution among : Adsorption/Soil
environmental compartments Medium: water - soil
log Koc: ca. 1,67
Method: estimated

Other adverse effects

Components:

2-(2-(2-Butoxyethoxy)ethoxy)ethanol:

Environmental fate and : not available
pathways

Additional ecological : Do not allow to enter ground water, waterways or waste water.
information

Diethylene glycol:

Environmental fate and : not available
pathways

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Additional ecological information : Do not allow to enter ground water, waterways or waste water.

1,1'-Iminodipropan-2-ol:

Environmental fate and pathways : no data available

Additional ecological information : The product should not be allowed to enter drains, water courses or the soil.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : Product should be taken to a suitable and authorized waste disposal site in accordance with relevant regulations and if necessary after consultation with the waste disposal operator and/or the competent Authorities

Contaminated packaging : Packaging that cannot be cleaned should be disposed of as product waste

SECTION 14. TRANSPORT INFORMATION

Road Transport Regulation not restricted
IATA not restricted
IMDG not restricted

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable for product as supplied.

SECTION 15. REGULATORY INFORMATION

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

Apart from the data/regulations specified in this chapter, no further information is available concerning safety, health and environmental protection.

SECTION 16. OTHER INFORMATION

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Further information

Other information : Observe national and local legal requirements

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Items where changes have been made to the previous version are highlighted in the body of this document by two vertical lines.

Full text of other abbreviations

ACGIH : USA. ACGIH Threshold Limit Values (TLV)

ACGIH / TWA : 8-hour, time-weighted average

AIIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonised System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organisation; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardisation; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MERCOSUR - The Agreement for the Facilitation of the Transport of Dangerous Goods; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organisation for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

This information corresponds to the present state of our knowledge and is intended as a general description of our products and their possible applications. Clariant makes no warranties, express or implied, as to the information's accuracy, adequacy, sufficiency or freedom from defect and assumes no liability in connection with any use of this information. Any user of this product is responsible for determining the suitability of Clariant's products for its particular application. Nothing included in this information waives any of Clariant's General Terms and Conditions of Sale, which control unless it agrees otherwise in writing. Any existing intellectual/industrial property rights must be observed. Due to possible changes in our products and applicable national and international regulations and laws, the status of our products could change. Material

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Safety Data Sheets providing safety precautions, that should be observed when handling or storing Clariant products, are available upon request and are provided in compliance with applicable law. You should obtain and review the applicable Material Safety Data Sheet information before handling any of these products. For additional information, please contact Clariant.

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