

SAFETY DATA SHEET



OXSOFT DUO 1

11470

Version / Revision

3.01

Revision Date

04-Dec-2020

Supersedes Version

3.00***

Issuing date

04-Dec-2020

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

1.1. Product identifier

Identification of the substance/preparation

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Chemical Name

Mixture of plasticizers

CAS-No

-

EC No.

-

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

Identified uses

plasticizer
Lubricants and lubricant additives

Uses advised against

None

1.3. Details of the supplier of the safety data sheet

Company/Undertaking Identification

OQ Chemicals GmbH
Rheinpromenade 4A
D-40789 Monheim
Germany

Product Information

Product Stewardship
FAX: +49 (0)208 693 2053
email: sc.psq@oq.com

1.4. Emergency telephone number

Emergency telephone number +44 (0) 1235 239 670 (UK)
available 24/7

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Based on present data no classification and labelling is required according to Directive 1272/2008/EC and its amendments (CLP Regulation)

2.2. Label elements

Not required.

2.3. Other hazards

None known***

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PBT and vPvB assessment This substance is not considered to be persistent, bioaccumulating nor toxic (PBT), nor very persistent nor very bioaccumulating (vPvB)

SECTION 3: Composition / information on ingredients

3.2. Mixtures

Component	CAS-No	REACH-No	1272/2008/EC	Concentration (%)
Tris(2-ethylhexyl) benzene-1,2,4-tricarboxylate	3319-31-1	01-2119487462-32	-	10 - 90
2,2'-Ethylenedioxydiethyl bis(2-ethylhexanoate)	94-28-0	01-2119475524-34	-	10 - 90

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation

Keep at rest. Aerate with fresh air. When symptoms persist or in all cases of doubt seek medical advice.

Skin

Wash off immediately with soap and plenty of water. When symptoms persist or in all cases of doubt seek medical advice.

Eyes

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses. Immediate medical attention is required.

Ingestion

Call a physician immediately. Do not induce vomiting without medical advice.

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

Main symptoms

None known.

Special hazard

None known.

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

General advice

Remove contaminated, soaked clothing immediately and dispose of safely. First aider needs to protect himself.

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

foam, dry chemical, carbon dioxide (CO₂), water spray

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Unsuitable Extinguishing Media

Do not use a solid water stream as it may scatter and spread fire.

5.2. Special hazards arising from the substance or mixture

Under conditions giving incomplete combustion, hazardous gases produced may consist of:

carbon monoxide (CO)

carbon dioxide (CO₂)

Combustion gases of organic materials must in principle be graded as inhalation poisons

Vapours are heavier than air and may spread along floors

5.3. Advice for firefighters

Special protective equipment for firefighters

Fire fighter protection should include a self-contained breathing apparatus (NIOSH-approved or EN 133) and full fire-fighting turn out gear.

Precautions for firefighting

Cool containers / tanks with water spray. Dike and collect water used to fight fire. Keep people away from and upwind of fire.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel: For personal protective equipment see section 8. Avoid contact with skin and eyes. Avoid breathing vapors or mists. Keep people away from and upwind of spill/leak. Ensure adequate ventilation, especially in confined areas. Keep away from heat and sources of ignition.

For emergency responders: Personal protection see section 8.

6.2. Environmental precautions

Prevent further leakage or spillage. Do not discharge product into the aquatic environment without pretreatment (biological treatment plant).

6.3. Methods and material for containment and cleaning up

Methods for containment

Stop the flow of material, if possible without risk. Dike spilled material, where this is possible.

Methods for cleaning up

Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. If liquid has been spilt in large quantities clean up promptly by scoop or vacuum. Dispose of in accordance with local regulations. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours).

6.4. Reference to other sections

For personal protective equipment see section 8.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

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Advice on safe handling

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. Provide sufficient air exchange and/or exhaust in work rooms.

Hygiene measures

When using, do not eat, drink or smoke. Take off all contaminated clothing immediately. Wash hands before breaks and immediately after handling the product.

Advice on the protection of the environment

See Section 8: Environmental exposure controls.

Incompatible products

strong oxidizing agents
strong acids

7.2. Conditions for safe storage, including any incompatibilities

Advice on protection against fire and explosion

Keep away from sources of ignition - No smoking. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). In case of fire, emergency cooling with water spray should be available. Ground and bond containers when transferring material.

Technical measures/Storage conditions

Keep containers tightly closed in a cool, well-ventilated place. Handle and open container with care.

Temperature class

T2

7.3. Specific end use(s)

plasticizer
Lubricants and lubricant additives

SECTION 8: Exposure controls / personal protection

8.1. Control parameters

Exposure limits European Union

No exposure limits established

Exposure limits UK

No exposure limits established.

DNEL & PNEC

Tris(2-ethylhexyl) benzene-1,2,4-tricarboxylate, CAS: 3319-31-1

Workers

DN(M)EL - long-term exposure - systemic effects - Inhalation	3,97 mg/m ³
DN(M)EL - acute / short-term exposure - systemic effects - Inhalation	No hazard identified
DN(M)EL - long-term exposure - local effects - Inhalation	No hazard identified

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DN(M)EL - acute / short-term exposure - local effects - Inhalation	No hazard identified
DN(M)EL - long-term exposure - systemic effects - Dermal	22,5 mg/kg bw/day
DN(M)EL - acute / short-term exposure - systemic effects - Dermal	No hazard identified
DN(M)EL - long-term exposure - local effects - Dermal	No hazard identified
DN(M)EL - acute / short-term exposure - local effects - Dermal	No hazard identified
DN(M)EL - local effects - eyes	No hazard identified

General population

DN(M)EL - long-term exposure - systemic effects - Inhalation	0,98 mg/m ³
DN(M)EL - acute / short-term exposure - systemic effects - Inhalation	No hazard identified
DN(M)EL - long-term exposure - local effects - Inhalation	No hazard identified
DN(M)EL - acute / short-term exposure - local effects - Inhalation	No hazard identified
DN(M)EL - long-term exposure - systemic effects - Dermal	11,25 mg/kg bw/day
DN(M)EL - acute / short-term exposure - systemic effects - Dermal	No hazard identified
DN(M)EL - long-term exposure - local effects - Dermal	No hazard identified
DN(M)EL - acute / short-term exposure - local effects - Dermal	No hazard identified
DN(M)EL - long-term exposure - systemic effects - Oral	1,13 mg/kg bw/day
DN(M)EL - acute / short-term exposure - systemic effects - Oral	No hazard identified
DN(M)EL - local effects - eyes	No hazard identified

Environment

PNEC aqua - freshwater	60 ng/l
PNEC aqua - marine water	6 ng/l
PNEC aqua - intermittent releases	30 ng/l
PNEC STP	300 ng/l
PNEC sediment - freshwater	7,4 mg/kg dw ^{***}
PNEC sediment - marine water	0,74 mg/kg dw ^{***}
PNEC Air	No hazard identified
PNEC soil	0,095 mg/kg dw ^{***}
PNEC oral	0,125 mg/kg

2,2'-Ethylenedioxydiethyl bis(2-ethylhexanoate), CAS: 94-28-0

Workers

DN(M)EL - long-term exposure - systemic effects - Inhalation	27,9 mg/m ³
DN(M)EL - acute / short-term exposure - systemic effects - Inhalation	No hazard identified
DN(M)EL - long-term exposure - local effects - Inhalation	167,4 mg/m ³
DN(M)EL - acute / short-term exposure - local effects - Inhalation	No hazard identified
DN(M)EL - long-term exposure - systemic effects - Dermal	5 mg/kg bw/day
DN(M)EL - acute / short-term exposure - systemic effects - Dermal	No hazard identified
DN(M)EL - long-term exposure - local effects - Dermal	No hazard identified
DN(M)EL - acute / short-term exposure - local effects - Dermal	No hazard identified
DN(M)EL - local effects - eyes	No hazard identified

General population

DN(M)EL - long-term exposure - systemic effects - Inhalation	8,33 mg/m ³
DN(M)EL - acute / short-term exposure - systemic effects - Inhalation	No hazard identified
DN(M)EL - long-term exposure - local effects - Inhalation	50 mg/m ³

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DN(M)EL - acute / short-term exposure - local effects - Inhalation	No hazard identified
DN(M)EL - long-term exposure - systemic effects - Dermal	3 mg/kg bw/day
DN(M)EL - acute / short-term exposure - systemic effects - Dermal	No hazard identified
DN(M)EL - long-term exposure - local effects - Dermal	No-threshold effect and/or no dose-response information available
DN(M)EL - acute / short-term exposure - local effects - Dermal	No hazard identified
DN(M)EL - long-term exposure - systemic effects - Oral	3 mg/kg bw/day
DN(M)EL - acute / short-term exposure - systemic effects - Oral	No hazard identified
DN(M)EL - local effects - eyes	No hazard identified

Environment

PNEC aqua - freshwater	0,039 mg/l
PNEC aqua - marine water	0,004 mg/l
PNEC aqua - intermittent releases	0,387*** mg/l***
PNEC STP	1,94 g/l
PNEC sediment - freshwater	88,78 mg/kg dw***
PNEC sediment - marine water	8,88 mg/kg dw***
PNEC Air	No hazard identified***
PNEC soil	17,7 mg/kg
Secondary poisoning	No potential to cause toxic effects if accumulated (in higher organisms) via the food chain***

8.2. Exposure controls

Appropriate Engineering controls

General or dilution ventilation is frequently insufficient as the sole means of controlling employee exposure. Local ventilation is usually preferred. Explosion-proof equipment (for example fans, switches, and grounded ducts) should be used in mechanical ventilation systems.

Personal protective equipment

General industrial hygiene practice

Avoid contact with skin, eyes and clothing. Do not breathe vapours or spray mist. Ensure that eyewash stations and safety showers are close to the workstation location.

Hygiene measures

When using, do not eat, drink or smoke. Take off all contaminated clothing immediately. Wash hands before breaks and immediately after handling the product.

Eye protection

Tightly fitting safety goggles. In addition to goggles, wear a face shield if there is a reasonable chance for splash to the face.

Equipment should conform to EN 166

Hand protection

Wear protective gloves. Recommendations are listed below. Other protective material may be used, depending on the situation, if adequate degradation and permeation data is available. If other chemicals are used in conjunction with this chemical, material selection should be based on protection for all chemicals present.

Suitable material	nitrile rubber
Reference substance	Di-(2-ethylhexyl)-phthalate

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Evaluation	according to EN 374: level 6
Glove thickness	approx 0,55 mm
Break through time	> 480 min
Suitable material	polyvinylchloride / nitrile rubber
Reference substance	Di-(2-ethylhexyl)-phthalate
Evaluation	according to EN 374: level 6
Glove thickness	approx 0,9 mm
Break through time	> 480 min

Skin and body protection

Impervious clothing. Wear face-shield and protective suit for abnormal processing problems.

Respiratory protection

Respirator with A filter. Full mask with above mentioned filter according to producers using requirements or self-contained breathing apparatus. Equipment should conform to EN 136 or EN 140 and EN 143.

Environmental exposure controls

If possible use in closed systems. If leakage can not be prevented, the substance needs to be suck off at the emersion point, if possible without danger. Observe the exposure limits, clean exhaust air if needed. If recycling is not practicable, dispose of in compliance with local regulations. Inform the responsible authorities in case of leakage into the atmosphere, or of entry into waterways, soil or drains.

Additional advice

Further details on substance data can be found in the registration dossier under the following link:
<http://echa.europa.eu/information-on-chemicals/registered-substances>.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	liquid		
Colour	light yellow		
Odour	weak		
Odour threshold	No data available		
pH	No data available		
Melting point/range	No data available		
Boiling point/range	No data available		
Flash point	> 199 °C		
Method	COC (Cleveland open cup)		
Evaporation rate	No data available		
Flammability (solid, gas)	Does not apply, the substance is a liquid		
Lower explosion limit	No data available		
Upper explosion limit	No data available		
Vapour pressure	No data available		
Vapour density	No data available		
Relative density			
Values	@ °C	@ °F	Method
0,98	20	68	ASTM D 4052
Solubility	No data available		
log Pow	No data available		
Autoignition temperature	No data available		
Decomposition temperature	No data available		

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Viscosity	50 mm ² /s @ 20°C
Method	kinematic, ASTM D445
Explosive properties	Does not apply, substance is not explosive. There are no chemical groups associated with explosive properties
Oxidizing properties	Does not apply, substance is not oxidising. There are no chemical groups associated with oxidizing properties

9.2. Other information

Refractive index 1,47 @ 20 °C

SECTION 10: Stability and Reactivity

10.1. Reactivity

The reactivity of the product corresponds to the typical reactivity shown by the substance group as described in any text book on organic chemistry.

10.2. Chemical stability

Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

Hazardous polymerisation does not occur.

10.4. Conditions to avoid

Avoid contact with heat, sparks, open flame and static discharge. Avoid any source of ignition.

10.5. Incompatible materials

strong oxidizing agents, strong acids.

10.6. Hazardous decomposition products

No decomposition if stored and applied as directed.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Likely routes of exposure Ingestion, Inhalation, Eye contact, Skin contact

Acute toxicity				
Tris(2-ethylhexyl) benzene-1,2,4-tricarboxylate (3319-31-1)				
Routes of Exposure	Endpoint	Values	Species	Method
Oral	LD50	> 2000 mg/kg	rat, male/female***	OECD 401
Dermal	LD50	> 2 ml/kg	rabbit male female***	FIFRA part 163, title 40
Inhalative	LC50	> 2600 mg/m ³ (4h)	rat, male/female***	aerosol OECD 403

2,2'-Ethylenedioxydiethyl bis(2-ethylhexanoate) (94-28-0)

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Routes of Exposure	Endpoint	Values	Species	Method
Oral	LD50	> 2000 mg/kg	rat, female	OECD 420
Dermal	LD50	> 2000 mg/kg	rat, male/female	OECD 402
Inhalative	LC50	> 2000 mg/m ³ (4h)	rat, male	OECD 403

Tris(2-ethylhexyl) benzene-1,2,4-tricarboxylate, CAS: 3319-31-1

Assessment

Based on available data, the classification criteria are not met for:

Acute oral toxicity

Acute dermal toxicity

Acute inhalation toxicity

2,2'-Ethylenedioxydiethyl bis(2-ethylhexanoate), CAS: 94-28-0

Assessment

Based on available data, the classification criteria are not met for:

Acute oral toxicity

Acute dermal toxicity

Acute inhalation toxicity

STOT SE

Irritation and corrosion

Tris(2-ethylhexyl) benzene-1,2,4-tricarboxylate (3319-31-1)

Target Organ Effects	Species	Result	Method	
Skin	rabbit	No skin irritation	16 CFR P124	24h***
Eyes	rabbit	No eye irritation	16 CFR P125	

2,2'-Ethylenedioxydiethyl bis(2-ethylhexanoate) (94-28-0)

Target Organ Effects	Species	Result	Method	
Skin	rabbit	Mild skin irritation	OECD 404	4h
Eyes	rabbit	Mild eye irritation	OECD 405	

Tris(2-ethylhexyl) benzene-1,2,4-tricarboxylate, CAS: 3319-31-1

Assessment

Based on available data, the classification criteria are not met for:

skin irritation/corrosion

eye irritation/corrosion

For respiratory irritation, no data are available

2,2'-Ethylenedioxydiethyl bis(2-ethylhexanoate), CAS: 94-28-0

Assessment

Based on available data, the classification criteria are not met for:

skin irritation/corrosion

eye irritation/corrosion

For respiratory irritation, no data are available

Sensitization

Tris(2-ethylhexyl) benzene-1,2,4-tricarboxylate (3319-31-1)

Target Organ Effects	Species	Evaluation	Method	
Skin	guinea pig	not sensitizing	OECD 406	
Skin***	human***	not sensitizing***	Patch-test***	1 % in acetone***

2,2'-Ethylenedioxydiethyl bis(2-ethylhexanoate) (94-28-0)

Target Organ Effects	Species	Evaluation	Method	
Skin	mouse	not sensitizing	OECD 429	in vivo***
Skin	guinea pig	not sensitizing	OECD 406	in vivo***

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Tris(2-ethylhexyl) benzene-1,2,4-tricarboxylate, CAS: 3319-31-1

Assessment

Based on available data, the classification criteria are not met for:

Skin sensitization

For respiratory sensitization, no data are available

2,2'-Ethylenedioxydiethyl bis(2-ethylhexanoate), CAS: 94-28-0

Assessment

Based on available data, the classification criteria are not met for:

Skin sensitization

For respiratory sensitization, no data are available

Subacute, subchronic and prolonged toxicity

Tris(2-ethylhexyl) benzene-1,2,4-tricarboxylate (3319-31-1)

Type	Dose	Species	Method	
Subacute toxicity	NOEL: 1000 mg/kg/d (28d)***	rat, male/female	OECD 407	Oral
Subchronic toxicity	NOAEL: 225 mg/kg/d (90d)	rat, male/female	OECD 408	Oral
Subchronic toxicity	LOAEL: 1000 mg/kg/d (90d)	rat, male/female	OECD 408	Oral

2,2'-Ethylenedioxydiethyl bis(2-ethylhexanoate) (94-28-0)

Type	Dose	Species	Method	
Subacute toxicity	NOAEL: 5000 ppm	rat, male/female	OECD 422	Oral
Subacute toxicity	NOAEC: 1000 mg/m ³ (14 d)	rat, male	OECD 403	Inhalation
Subchronic toxicity	NOAEL: 120 mg/kg/d (90d)	rat, female	OECD 408	Oral

Tris(2-ethylhexyl) benzene-1,2,4-tricarboxylate, CAS: 3319-31-1

Assessment

Based on available data, the classification criteria are not met for:

STOT RE

2,2'-Ethylenedioxydiethyl bis(2-ethylhexanoate), CAS: 94-28-0

Assessment

Based on available data, the classification criteria are not met for:

STOT RE

Carcinogenicity, Mutagenicity, Reproductive toxicity

Tris(2-ethylhexyl) benzene-1,2,4-tricarboxylate (3319-31-1)

Type	Dose	Species	Evaluation	Method	
Mutagenicity		Salmonella typhimurium Escherichia coli***	negative	OECD 471 (Ames)	In vitro study
Mutagenicity		human lymphocytes	negative	OECD 473 (Chromosomal Aberration)	In vitro study
Mutagenicity		mouse	negative	Chromosomal Aberration	in vivo
Reproductive toxicity	NOEL 100 mg/kg/d***	rat, parental, male		OECD 421 Oral	Fertility

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Reproductive toxicity	NOEL 1000 mg/kg/d***	rat, 1. Generation, male/female		OECD 421 Oral	Viability***
Reproductive toxicity	NOEL 500 mg/kg/d***	rat, parental, male		OECD 422 Oral	Reproduction / developmental Toxicity***
Reproductive toxicity	NOEL 500 mg/kg/d***	rat, 1. Generation, male/female		OECD 422 Oral	
Teratogenicity	NOAEL 1050 mg/kg/d	rat male/female***		OECD 414, Oral	Developmental toxicity prenatal***
Mutagenicity		mouse lymphoma cells	negative	OECD 476 (Mammalian Gene Mutation)	In vitro study
Carcinogenicity	not expected***				

2,2'-Ethylenedioxydiethyl bis(2-ethylhexanoate) (94-28-0)

Type	Dose	Species	Evaluation	Method	
Mutagenicity		Salmonella typhimurium Escherichia coli***	negative	OECD 471 (Ames)	In vitro study
Mutagenicity		mouse lymphoma cells	negative	OECD 476 (Mammalian Gene Mutation)	In vitro study
Mutagenicity		human lymphocytes	negative	OECD 473 (Chromosomal Aberration)	In vitro study
Reproductive toxicity	NOAEL: 5000 ppm	rat, parental male/female***		OECD 422, Oral	
Reproductive toxicity	NOAEL: 15000 ppm	rat, 1. Generation, male/female		OECD 422, Oral	
Developmental Toxicity	NOAEL 300 mg/kg/d	rat	Maternal toxicity	OECD 414, Oral	
Developmental Toxicity	NOAEL 300 mg/kg/d	rat	Developmental toxicity Fetal toxicity***	OECD 414, Oral	
Reproductive toxicity***	NOAEL 250 mg/kg/d***	rat, parental male/female***		OECD 443 Oral***	
Reproductive toxicity***	NOAEL >= 750 mg/kg/d***	rat, 1. Generation, male/female rat 2. Generation, male/female***		OECD 443 Oral***	Reproduction / developmental Toxicity***
Carcinogenicity***	No data available***				

Tris(2-ethylhexyl) benzene-1,2,4-tricarboxylate, CAS: 3319-31-1

CMR Classification

The available data on CMR properties are summarized in the table above. They do not indicate a classification into categories 1A or 1B

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Evaluation

In vitro tests did not show mutagenic effects
Did not show mutagenic effects in animal experiments
In the absence of specific alerts no cancer testing is required
2,2'-Ethylenedioxydiethyl bis(2-ethylhexanoate), CAS: 94-28-0

CMR Classification

The available data on CMR properties are summarized in the table above. They do not indicate a classification into categories 1A or 1B

Evaluation

In vitro tests did not show mutagenic effects
Animal testing did not show any effects on fertility
No developmental effects in the absence of maternal toxicity
No cancer study was conducted

Tris(2-ethylhexyl) benzene-1,2,4-tricarboxylate, CAS: 3319-31-1

Target Organ Systemic Toxicant - Single exposure

no data available

Target Organ Systemic Toxicant - Repeated exposure

no data available

Aspiration toxicity

no data available

2,2'-Ethylenedioxydiethyl bis(2-ethylhexanoate), CAS: 94-28-0

Target Organ Systemic Toxicant - Single exposure

Based on available data, the classification criteria are not met for:
STOT SE

Target Organ Systemic Toxicant - Repeated exposure

Based on available data, the classification criteria are not met for:
STOT RE

Aspiration toxicity

no data available

Note

Handle in accordance with good industrial hygiene and safety practice. Further details on substance data can be found in the registration dossier under the following link:
<http://echa.europa.eu/information-on-chemicals/registered-substances>.

SECTION 12: Ecological information

12.1. Toxicity

Acute aquatic toxicity

Tris(2-ethylhexyl) benzene-1,2,4-tricarboxylate (3319-31-1)

Species	Exposure time	Dose	Method
Fish (fresh water) <i>Oryzias latipes</i> (Medaka) ^{***}	96 d	LC50: >100 mg/l	OECD 203
<i>Daphnia magna</i> (Water flea)	48h	NOEC: > 180 mg/l	OECD 202
<i>Pseudokirchneriella subcapitata</i>	72h	EC50: >= 100 mg/l (Growth inhibition) ^{***}	OECD 201
Activated sludge (bacteriae)	3 h	NOEC: 1000 mg/l	OECD 209

2,2'-Ethylenedioxydiethyl bis(2-ethylhexanoate) (94-28-0)

Species	Exposure time	Dose	Method
<i>Pimephales promelas</i> (fathead minnow)	96h	LC50: > 97 mg/l	

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Danio rerio (Zebra fish)	96h	LC0: > 78 mg/l	84/449/EEC C.1
Daphnia magna (Water flea)	96h	EC50: > 97 mg/l	Mobility
Desmodesmus subspicatus	72h	EC50: > 55,9 mg/l (Growth rate)	84/449/EEC C.3
Americamysis bahia***	48h	LC50: > 1,8 mg/l	EPA/600/4-90/027
Pseudomonas putida	5 h	EC10: >1,934 g/l	Respiration inhibition***

Long term toxicity

Tris(2-ethylhexyl) benzene-1,2,4-tricarboxylate (3319-31-1)

Type	Species	Dose	Method
Reproductive toxicity	Daphnia magna (Water flea)	NOEC: 55,6 mg/l (21d)	OECD 211
Reproductive toxicity	Daphnia magna (Water flea)	EC50: 89,1 mg/l/21d	OECD 211
Aquatic toxicity	Fish Oryzias latipes (Medaka)	NOEC: > 75 mg/l (14d)	OECD 204
Aquatic toxicity	Algae Pseudokirchneriella subcapitata	NOEC: 100 mg/l (3d)	OECD 201 Growth rate***

2,2'-Ethylenedioxydiethyl bis(2-ethylhexanoate) (94-28-0)

Type	Species	Dose	Method
Aquatic toxicity	Desmodesmus subspicatus	NOEC: ~ 27,3 mg/l (3d) Cell number	84/449/EEC C.3

Sediment toxicity

Tris(2-ethylhexyl) benzene-1,2,4-tricarboxylate (3319-31-1)

Species	Exposure time	Dose	Type	Method
Midge Chironomus riparius	28 d	NOEC: 740 mg/kg sediment dw	Emergence rate	OECD 218

Terrestrial toxicity

Tris(2-ethylhexyl) benzene-1,2,4-tricarboxylate (3319-31-1)

Species	Exposure time	Dose	Type	Method
Earthworm Eisenia fetida	14 d	LC10: > 1000 mg/kg soil dw	Mortality	EU Method C.8 read across
Plant Triticum aestivum	18 d	LC50: >= 100 mg/kg soil dw	Seeding emergence	OECD 208 read across
Plant Triticum aestivum	18 d	EC50: >= 100 mg/kg soil dw	Growth	OECD 208 read across
Plant Brassica alba	17 d	LC50: >= 100 mg/kg soil dw	Seeding emergence	OECD 208 read across
Plant Brassica alba	17 d	EC50: >= 100 mg/kg soil dw***	Growth	OECD 208 read across
Plant Lepidum Sativum	18 d	LC50: >= 100 mg/kg soil dw	Seeding emergence	OECD 208 read across
Plant Lepidum Sativum	18 d	EC50: >= 100 mg/kg soil dw	Growth	OECD 208 read across

12.2. Persistence and degradability

Tris(2-ethylhexyl) benzene-1,2,4-tricarboxylate, CAS: 3319-31-1

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Biodegradation

27 % (28^{***} d), activated sludge, aerobic, OECD 301 D.

2,2'-Ethylenedioxydiethyl bis(2-ethylhexanoate), CAS: 94-28-0

Biodegradation

92 % (28 d), BOD, activated sludge (domestic), aerobic, Readily biodegradable.^{***}

Abiotic Degradation		
Tris(2-ethylhexyl) benzene-1,2,4-tricarboxylate (3319-31-1)		
Type	Result	Method
Hydrolysis	Half-life (DT50): 7 d @25 °C, pH 7 ^{***}	measured OECD 111 ^{***}
Photolysis	Half-life (DT50): 3,9 - 11,8 h ^{***}	calculated SRC AOP v1.92 ^{***}

2,2'-Ethylenedioxydiethyl bis(2-ethylhexanoate) (94-28-0)		
Type	Result	Method
Hydrolysis	No data available	
Photolysis	No data available	

12.3. Bioaccumulative potential

Tris(2-ethylhexyl) benzene-1,2,4-tricarboxylate (3319-31-1)		
Type	Result	Method
log Pow	8,0 @ 25 °C (77 °F) ^{***}	measured, OECD 123
BCF	< 2,7 @ 0,2 mg/l	OECD 305 C

2,2'-Ethylenedioxydiethyl bis(2-ethylhexanoate) (94-28-0)		
Type	Result	Method
log Pow	6,1 @ 25 °C (77 °F) ^{***}	measured, OECD 117
BCF	No data available	

12.4. Mobility in soil

Tris(2-ethylhexyl) benzene-1,2,4-tricarboxylate (3319-31-1)		
Type	Result	Method
Adsorption/Desorption	log Koc: 23 @ 20 °C	OECD 121
Surface tension	Surface activity not expected	
Distribution to environmental compartments	Air: 0,445 % Soil: 33,7 % Water: 4,99 % Sediment: 60,9 %	Calculation according Mackay, Level III

2,2'-Ethylenedioxydiethyl bis(2-ethylhexanoate) (94-28-0)		
Type	Result	Method
Surface tension	45,8 mN/m @ 20 °C (68 °F) @ 1,375 mg/l	OECD 115
Adsorption/Desorption	log Koc: 4,36	OECD 121
Distribution to environmental compartments	no data available	

12.5. Results of PBT and vPvB assessment

Tris(2-ethylhexyl) benzene-1,2,4-tricarboxylate, CAS: 3319-31-1

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PBT and vPvB assessment

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT), nor very persistent nor very bioaccumulating (vPvB)

2,2'-Ethylenedioxydiethyl bis(2-ethylhexanoate), CAS: 94-28-0

PBT and vPvB assessment

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT), nor very persistent nor very bioaccumulating (vPvB)

12.6. Other adverse effects

Tris(2-ethylhexyl) benzene-1,2,4-tricarboxylate, CAS: 3319-31-1

No data available

2,2'-Ethylenedioxydiethyl bis(2-ethylhexanoate), CAS: 94-28-0

No data available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product Information

Disposal required in compliance with all waste management related state and local regulations. The choice of the appropriate method of disposal depends on the product composition by the time of disposal as well as the local statutes and possibilities for disposal.

Uncleaned empty packaging

Contaminated packaging should be emptied as far as possible and after appropriate cleansing may be taken for reuse.

SECTION 14: Transport information

Section 14.1 - 14.6

ADR/RID

Not restricted

ADN

Not restricted

ICAO-TI / IATA-DGR

Not restricted

IMDG

Not restricted

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code not applicable

SECTION 15: Regulatory information

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

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Regulation 1272/2008, Annex VI

not listed

DI 2012/18/EU (Seveso III)

Category not subject

DI 1999/13/EC (VOC Guideline)

Component	Status
Tris(2-ethylhexyl) benzene-1,2,4-tricarboxylate CAS: 3319-31-1	not subject
2,2'-Ethylenedioxydiethyl bis(2-ethylhexanoate) CAS: 94-28-0	not subject

International Inventories

Tris(2-ethylhexyl) benzene-1,2,4-tricarboxylate, CAS: 3319-31-1

AICS (AU)
DSL (CA)
IECSC (CN)
EC-No. 2220200 (EU)
ENCS (3)-1372 (JP)
ENCS (3)-2684 (JP)
ISHL (3)-1372 (JP)
ISHL (3)-2684 (JP)
KECI KE-02668 (KR)
INSQ (MX)
PICCS (PH)
TSCA (US)
NZIoC-NZ May be used as single component chemical
TCSI (TW)

2,2'-Ethylenedioxydiethyl bis(2-ethylhexanoate), CAS: 94-28-0

AICS (AU)
DSL (CA)
IECSC (CN)
EC-No. 2023192 (EU)
ENCS (2)-658 (JP)
ISHL (2)-658 (JP)
KECI KE-13751 (KR)
PICCS (PH)
TSCA (US)
NZIoC-NZ May be used as single component chemical
TCSI (TW)

National regulatory information Great Britain

Releases to air (Pollution Inventory Substances)

not subject

Releases to water (Pollution Inventory Substances)

not subject

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Releases to sewer (Pollution Inventory Substances)

not subject

For details and further information please refer to the original regulation

15.2. Chemical safety assessment

The Chemical Safety Reports (CSR) of the substances contained in this mixture have been generated. As this product is not hazardous under REACH, no Exposure Scenarios have been calculated.

SECTION 16: Other information

Abbreviations

A table of terms and abbreviations can be found under the following link:

http://echa.europa.eu/documents/10162/13632/information_requirements_r20_en.pdf

Training advice

For effective first-aid, special training / education is needed.

Sources of key data used to compile the datasheet

Information contained in this safety data sheet is based on OQ owned data and public sources deemed valid or acceptable. The absence of data elements required by OSHA, ANSI or Annex II, Regulation 1907/2006/EC indicates, that no data meeting these requirements is available.

Further information for the safety data sheet

Changes against the previous version are marked by ***. Observe national and local legal requirements. For more information, other material safety data sheets or technical data sheets please consult the OQ homepage (www.chemicals.oq.com).

The annex is not required because the substance is not hazardous under REACH

Disclaimer

For industrial use only. The information contained herein is accurate to the best of our knowledge. We do not suggest or guarantee that any hazards listed herein are the only ones which exist. OQ makes no warranty of any kind, express or implied, concerning the safe use of this material in your process or in combination with other substances. User has the sole responsibility to determine the suitability of the materials for any use and the manner of use contemplated. User must meet all applicable safety and health standards.

End of Safety Data Sheet