

SAFETY DATA SHEET



OXFILM 351

11260A

Version / Revision

5

Revision Date

25-Jun-2021

Supersedes Version

4.01***

Issuing date

25-Jun-2021

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

1.1. Product identifier

Identification of the substance/preparation

OXFILM 351

Chemical Name

2,2'-Ethylenedioxydiethyl bis(2-ethylhexanoate)

CAS-No

94-28-0

EC No.

202-319-2

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

Identified uses

coalescent agent

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

3.1. Substances

Component	CAS-No	1272/2008/EC	Concentration (%)
2,2'-Ethylenedioxydiethyl bis(2-ethylhexanoate)	94-28-0	-	> 97

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

Unsuitable Extinguishing Media

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



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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

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.

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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.

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.

Unsuitable material

None known

Temperature class

T2

7.3. Specific end use(s)

coalescent agent

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

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

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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
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

Special adaptations (REACH)

Not applicable.

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

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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
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.

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	colourless
Odour	fruity mild
Odour threshold	No data available
pH	No data available
Melting point/range	-70 °C (Pour point)
Method	DIN ISO 3016
Boiling point/range	340 - 351 °C @ 1013 hPa
Method	DIN 53171
Flash point	196 °C @ 1013 hPa
Method	ISO 2719
Evaporation rate	No data available
Flammability (solid, gas)	Does not apply, the substance is a liquid
Lower explosion limit	0,46 Vol %
Upper explosion limit	No data available

Vapour pressure

Values [hPa]	Values [kPa]	Values [atm]	@ °C	@ °F	Method
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< 0,001	< 0,0001	< 0,001	25	77	EU A.4
Vapour density		No data available			
Relative density					
Values	@ °C	@ °F		Method	
0,967	20	68		DIN 51757	
Solubility		1,53 mg/l @ 20 °C, in water,		OECD 105	
log Pow		6,1 (measured),		OECD 117	
Autoignition temperature		365 °C @ 1027 hPa			
Method		DIN 51794			
Decomposition temperature		No data available			
Viscosity		16,4 mPa*s @ 20 °C			
Method		dynamic, DIN 51562, 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

Molecular weight	402,56
Molecular formula	C22 H42 O6
log Koc	4,36 OECD 121
Conductivity	0,68 µS/m @ 20 °C
Refractive index	1,444 @ 20 °C
Surface tension	45,8 mN/m (1,375 mg/l @ 20°C), OECD 115

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. Thermal decomposition can take place above 250°C.

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

None known.

10.6. Hazardous decomposition products

No decomposition if stored and applied as directed.



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SECTION 11: Toxicological information

11.1. Information on toxicological effects

Likely routes of exposure Ingestion, Eye contact, Skin contact

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

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				
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	

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				
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

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				
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	rat, female	OECD 408	Oral

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	mg/kg/d (90d)		
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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

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				

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

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:

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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			
2,2'-Ethylenedioxydiethyl bis(2-ethylhexanoate) (94-28-0)			
Species	Exposure time	Dose	Method
Pimephales promelas (fathead minnow)	96h	LC50: > 97 mg/l	
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			
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

12.2. Persistence and degradability

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

Biodegradation

92 % (28 d), BOD, activated sludge (domestic), aerobic, Readily biodegradable.

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

12.3. Bioaccumulative potential

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

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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

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

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

ADN: Container and Tanker
Not restricted

ICAO-TI / IATA-DGR

Not restricted

IMDG

Not restricted

14.7. Transport in bulk according to Annex not applicable***

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II of MARPOL and the IBC Code

SECTION 15: Regulatory information

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

Regulation 1272/2008, Annex VI

not listed

DI 2012/18/EU (Seveso III)

Category not subject

DI 1999/13/EC (VOC Guideline)

Component	Status
2,2'-Ethylenedioxydiethyl bis(2-ethylhexanoate) CAS: 94-28-0	not subject

International Inventories

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

Releases to sewer (Pollution Inventory Substances)

not subject

The REACH etc. (Amendment etc.) (EU Exit) Regulations 2019 No. 758 ***

Component	Status
2,2'-Ethylenedioxydiethyl bis(2-ethylhexanoate) CAS: 94-28-0	The substance will not be pre-registered.***

For details and further information please refer to the original regulation



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15.2. Chemical safety assessment

The Chemical Safety Report (CSR) has 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