

# SAFETY DATA SHEET



n-Undecanal  
11270

Version / Revision  
Supersedes Version

3  
2.00\*\*\*

Revision Date  
Issuing date

19-Dec-2018  
19-Dec-2018

## SECTION 1: Identification

### 1.1. Product identifier

Identification of the  
substance/preparation

**n-Undecanal**

CAS-No

112-44-7

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

Use of the Substance /  
Preparation

Intermediate

Uses advised against

None\*\*\*

### 1.3. Details of the supplier of the safety data sheet

Supplier

**OXEA Corporation**  
1505 West LBJ Freeway, Suite 400  
Dallas, TX 75234  
USA  
Phone: +1 972 481 2700

Product Information

Product Stewardship  
FAX: +49 (0)208 693 2053  
email: psq@oxea-chemicals.com

### 1.4. Emergency telephone number

Emergency telephone number

in USA, call 800 424 9300  
outside USA, call +1.703.527.3887, collect calls accepted  
available 24/7

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

This substance is classified in accordance with paragraph (d) of §1910.1200 (GHS-US classification).

Skin corrosion/irritation Category 2, H315  
Environmental hazard Aquatic Acute 2; H401

OSHA Specified Hazards

Not applicable.

### 2.2. Label elements

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Labeling according to §1910.1200 (GHS-US labeling).

## Hazard symbol(s)



## Signal word

## Warning

## Hazard statements

H315: Causes skin irritation.  
H401: Toxic to aquatic life

## Precautionary statements

## Prevention

P264: Wash hands thoroughly after handling.  
P273: Avoid release to the environment.  
P280: Wear protective gloves.

## Response

P302 + P352: IF ON SKIN: Wash with plenty of soap and water.  
P332 + P313: If skin irritation occurs: Get medical advice/ attention.  
P362 + P364: Take off contaminated clothing and wash it before reuse.

## Disposal

P501: Dispose of contents/container in accordance with local regulation.

## 2.3. Other hazards

None known

## SECTION 3: Composition / information on ingredients

### 3.1. Substances

Component	CAS-No	Concentration (%)
Undecanal	112-44-7	> 90,0

## 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

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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. Obtain medical attention.

## Ingestion

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

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

### Main symptoms

shortness of breath.

### Special hazard

Lung oedema.

## 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. In case of lung irritation, first treatment with cortisone spray.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

#### Suitable extinguishing media

alcohol-resistant foam, dry chemical, carbon dioxide (CO<sub>2</sub>), water spray

#### 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 (CO<sub>2</sub>)

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

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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). Water runoff can cause environmental damage.

### **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. DO NOT use combustible materials such as sawdust. Keep in suitable, closed containers for disposal. If liquid has been spilt in large quantities clean up promptly by scoop or vacuum. 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. Refill and handle product only in closed system.

#### **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**

acids and bases  
amines

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oxidizing agents

## 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. Handle under nitrogen, protect from moisture.

## SECTION 8: Exposure controls / personal protection

### 8.1. Control parameters

#### Exposure limits United States of America

No exposure limits established regarding ACGIH, OSHA Z-1 and OSHA Z-2.

### 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.

#### Individual protection measures, such as 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.

##### 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.

<b>Suitable material</b>	nitrile rubber
<b>Reference substance</b>	n/i-Undecanal

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<b>Evaluation</b>	according to EN 374: level 6
<b>Glove thickness</b>	approx 0,55 mm
<b>Break through time</b>	> 480 min
<b>Suitable material</b>	Viton
<b>Reference substance</b>	n/i-Undecanal
<b>Evaluation</b>	according to EN 374: level 6
<b>Glove thickness</b>	approx 0,5 mm
<b>Break through time</b>	> 480 min

## Skin and body protection

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

## Respiratory protection

Respirator with filter for organic vapour. Use the indicated respiratory protection if the occupational exposure limit is exceeded and/or in case of product release (vapor or mist). Equipment should conform to NIOSH.\*\*\*

## 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.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

<b>Appearance</b>	liquid
<b>Colour</b>	colourless
<b>Odour</b>	floral
<b>Odour threshold</b>	No data available
<b>pH</b>	6,7 (0,012 g/l in water @ 20 °C (68 °F))
<b>Melting point/range</b>	14 °F (-10 °C) (Pour point)
<b>Method</b>	DIN ISO 3016***
<b>Boiling point/range</b>	437 °F (225 °C) @ 1 atm (101,3 kPa)
<b>Method</b>	OECD 103***
<b>Flash point</b>	221 °F (105 °C) @ 1 atm (101,3 kPa)***
<b>Method</b>	ISO 2719
<b>Evaporation rate</b>	No data available
<b>Flammability (solid, gas)</b>	Does not apply, the substance is a liquid
<b>Lower explosion limit</b>	No data available
<b>Upper explosion limit</b>	No data available

### Vapour pressure

Values [hPa]	Values [kPa]	Values [atm]	@ °C	@ °F	Method
0,38	0,038	< 0,001	20	68	OECD 104***
1,4	0,14	0,001	50	122	OECD 104***

**Vapour density** 5,94 (Air = 1) @ 20 °C (68 °F)

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<b>Relative density</b>			
Values	@ °C	@ °F	Method
0,828	20	68	DIN 51757
<b>Solubility</b>	No data available		
<b>Water solubility</b>	0,012 g/l @ 68 °F (20 °C) OECD 105		
<b>log Pow</b>	3,84 (measured) OECD 117		
<b>Autoignition temperature</b>	392 °F (200 °C)		
Method	DIN 51794		
<b>Decomposition temperature</b>	No data available		
<b>Viscosity</b>	2,295 mPa*s @ 68 °F (20 °C)		
Method	ASTM D445, dynamic		

## 9.2. Other information

<b>Molecular weight</b>	170,29
<b>Molecular formula</b>	C11 H22 O
<b>Oxidizing properties</b>	Does not apply, substance is not oxidising. There are no chemical groups associated with oxidizing properties
<b>Refractive Index</b>	1,413 - 1,435 @ 68 °F (20 °C)
<b>Explosive properties</b>	Does not apply, substance is not explosive. There are no chemical groups associated with explosive properties
<b>Surface tension</b>	44,8 mN/m (0,0115 g/l @ 20°C (68°F)), 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.

### 10.3. Possibility of hazardous reactions

Hazardous polymerisation may occur. Polymerization is a highly exothermic reaction and may generate sufficient heat to cause thermal decomposition and/or rupture containers. When finely distributed, self-ignition is possible. May form explosive peroxides.

### 10.4. Conditions to avoid

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

### 10.5. Incompatible materials

bases, amines, acids, oxidizing agents.

### 10.6. Hazardous decomposition products

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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

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#### Main symptoms

shortness of breath.

#### 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

<b>Acute toxicity</b>				
<b>Undecanal (112-44-7)</b>				
Routes of Exposure	Endpoint	Values	Species	Method
Oral	LD50	> 5000 mg/kg	rat, male/female	OECD 401 read across***
Dermal	LD50	> 5000 mg/kg	rabbit	

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#### Assessment

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

Acute oral toxicity

Acute dermal toxicity

For acute inhalation toxicity, no data are available

<b>Irritation and corrosion</b>				
<b>Undecanal (112-44-7)</b>				
Target Organ Effects	Species	Result	Method	
Skin	rabbit	irritating	OECD 404	read across
Eyes	rabbit	No eye irritation	OECD 405	read across

**Undecanal, CAS: 112-44-7**

#### Assessment

The available data lead to the classification given in section 2

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

eye irritation/corrosion

For respiratory irritation, no data are available\*\*\*

<b>Sensitization</b>				
<b>Undecanal (112-44-7)</b>				
Target Organ Effects	Species	Evaluation	Method	

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Skin	Human experience	not sensitizing	Maximisation Test	
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## Undecanal, CAS: 112-44-7

### Assessment

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

<b>Subacute, subchronic and prolonged toxicity</b>				
<b>Undecanal (112-44-7)</b>				
Type	Dose	Species	Method	
Subacute toxicity***	NOAEL: 1000 mg/kg/d***	rat***	OECD 422***	Oral***

## Undecanal, CAS: 112-44-7

### Assessment

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

<b>Carcinogenicity, Mutagenicity, Reproductive toxicity</b>					
<b>Undecanal (112-44-7)</b>					
Type	Dose	Species	Evaluation	Method	
Mutagenicity		Salmonella typhimurium	negative	OECD 471 (Ames)	In vitro study***
Mutagenicity		human lymphocytes	negative	OECD 487	In vitro study***
Mutagenicity		V79 cells, Chinese hamster	negative	OECD 476 (Mammalian Gene Mutation)	In vitro study***
Reproductive toxicity	NOAEL > 1000 mg/kg/d	rat, parental		OECD 422, Oral	
Reproductive toxicity	NOAEL > 1000 mg/kg/d	rat, 1. Generation, male/female		OECD 422, Oral	

## Undecanal, CAS: 112-44-7

### 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  
Did not show reprotoxic effects in animal experiments  
In the absence of specific alerts no cancer testing is required

## Undecanal, CAS: 112-44-7

### Aspiration toxicity

Due to the viscosity, this product does not present an aspiration hazard

### 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>.

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## SECTION 12: Ecological information

### 12.1. Toxicity

Acute aquatic toxicity			
Undecanal (112-44-7)			
Species	Exposure time	Dose	Method
Danio rerio (Zebra fish)	96h	LC50: 5 - 7,1 mg/l	OECD 203 read across***
Daphnia magna (Water flea)	48h	EC50: 3,85 mg/l	read across
Desmodesmus subspicatus	72h	EC50: 4,37 mg/l (Growth rate)	DIN 38412, part 9***
Desmodesmus subspicatus	72h	EC50: 2,07 mg/l (Biomass)	DIN 38412, part 9***
Activated sludge (domestic)	3 h	EC50: ~ 195 mg/l	OECD 209***

### 12.2. Persistence and degradability

Undecanal, CAS: 112-44-7

#### Biodegradation

65 % (28 d), activated sludge (domestic), non-adapted, aerobic, OECD 301 B.

Abiotic Degradation		
Undecanal (112-44-7)		
Type	Result	Method
Hydrolysis***	not expected***	
Photolysis***	No data available***	

### 12.3. Bioaccumulative potential

Undecanal (112-44-7)		
Type	Result	Method
log Pow***	3,84***	OECD 117***
BCF***	158,7***	calculated***

### 12.4. Mobility in soil

Undecanal (112-44-7)		
Type	Result	Method
Surface tension***	44,8 mN/m (0,0115 g/l @ 20°C (68°F))***	OECD 115***
Adsorption/Desorption***	log Koc: 2,84***	calculated***
Distribution to environmental compartments***	no data available***	

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## 12.5. Results of PBT and vPvB assessment

### Undecanal, CAS: 112-44-7

#### **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

### Undecanal, CAS: 112-44-7

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

D.O.T. (49CFR) 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

### Federal and State Regulations

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Components of the product are listed in the quoted regulations. For details please refer to the regulations directly. This list is not exhaustive, please check for other applicable regulations.

## **Federal Regulations**

This product is listed on the TSCA inventory

## **State Regulations**

### **Undecanal, CAS: 112-44-7**

NJ Right to Know

NY Right to Know

## **International Inventories**

### **Undecanal, CAS: 112-44-7**

AICS (AU)\*\*\*

DSL (CA)\*\*\*

IECSC (CN)\*\*\*

EC-No. 2039726 (EU)\*\*\*

ENCS (2)-217 (JP)

ENCS (2)-494 (JP)\*\*\*

ISHL (2)-217 (JP)

ISHL (2)-494 (JP)\*\*\*

KECI KE-35050 (KR)\*\*\*

PICCS (PH)\*\*\*

TSCA (US)\*\*\*

NZIoC-NZ May be used as single component chemical\*\*\*

TCSI (TW)\*\*\*

## **SECTION 16: Other information**

**Revision Date** 19-Dec-2018

**Issuing date** 19-Dec-2018

## **Hazard Rating Systems**

### **NFPA (National Fire Protection Association)**

Health Hazard 2

Fire Hazard 1

Reactivity 0

### **HMS (Hazardous Material Information System)**

Health Hazard 1

Flammability 1

Physical Hazard 0

## **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](http://echa.europa.eu/documents/10162/13632/information_requirements_r20_en.pdf)\*\*\*

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## **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 Oxea 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 Oxea homepage ([www.oxea-chemicals.com](http://www.oxea-chemicals.com)).

The use of a comma in section 3 and section 7 to 12 is the same as a period.

## **Disclaimer**

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**End of Safety Data Sheet**