acc. to Regulation (EC) No. 1907/2006 (REACH)

n-Undecan ≥ 95%, for synthesis

article number: **8781**Version: **3.0 en**date of compilation: 2015-07-28
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Version: (2)



1.1 Product identifier

Identification of the substance n-Undecan \geq 95%, for synthesis

Article number 8781

EC number 214-300-6 CAS number 1120-21-4

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

Relevant identified uses: Laboratory chemical

Laboratory and analytical use

Uses advised against: Do not use for products which come into contact

with foodstuffs. Do not use for private purposes (household). Food, drink and animal feeding-

stuffs.

1.3 Details of the supplier of the safety data sheet

Carl Roth GmbH + Co. KG Schoemperlenstr. 3-5 D-76185 Karlsruhe Germany

Telephone:+49 (0) 721 - 56 06 0 **Telefax:** +49 (0) 721 - 56 06 149 **e-mail:** sicherheit@carlroth.de **Website:** www.carlroth.de

Competent person responsible for the safety data Department Health, Safety and Environment

sheet:

e-mail (competent person): sicherheit@carlroth.de

1.4 Emergency telephone number

Name	Street	Postal code/city	Telephone	Website
National Poisons Information Service City Hospital	Dudley Rd	B187QH Birmingham	844 892 0111	

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification acc. to GHS

Section	Hazard class	Cat- egory	Hazard class and category	Hazard statement
3.10	Aspiration hazard	1	Asp. Tox. 1	H304

United Kingdom (en) Page 1 / 17

acc. to Regulation (EC) No. 1907/2006 (REACH)



n-Undecan ≥ 95%, for synthesis

article number: 8781

Supplemental hazard information

Code	Supplemental hazard information
EUH066	repeated exposure may cause skin dryness or cracking

For full text of abbreviations: see SECTION 16

2.2 Label elements

Labelling

Signal word Danger

Pictograms

GHS08



Hazard statements

H304 May be fatal if swallowed and enters airways

Precautionary statements

Precautionary statements - response

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/doctor

P331 Do NOT induce vomiting

Precautionary statements - storage

P405 Store locked up

Precautionary statements - disposal

P501 Dispose of contents/container to industrial combustion plant

Supplemental hazard information

EUH066 Repeated exposure may cause skin dryness or cracking.

2.3 Other hazards

This material is combustible, but will not ignite readily.

Results of PBT and vPvB assessment

According to the results of its assessment, this substance is not a PBT or a vPvB.

Endocrine disrupting properties

Does not contain an endocrine disruptor (ED) at a concentration of \geq 0,1%.

United Kingdom (en) Page 2 / 17

acc. to Regulation (EC) No. 1907/2006 (REACH)

n-Undecan ≥ 95%, for synthesis

article number: 8781



SECTION 3: Composition/information on ingredients

3.1 Substances

Name of substance n-Undecan

Molecular formula C₁₁H₂₄

Molar mass 156,3 g/_{mol}

CAS No 1120-21-4

EC No 214-300-6

SECTION 4: First aid measures

4.1 Description of first aid measures



General notes

Take off contaminated clothing.

Following inhalation

Provide fresh air.

Following skin contact

Rinse skin with water/shower.

Following eye contact

Rinse cautiously with water for several minutes. In all cases of doubt, or when symptoms persist, seek medical advice.

Following ingestion

Call a physician immediately. Observe aspiration hazard if vomiting occurs.

4.2 Most important symptoms and effects, both acute and delayed

Aspiration hazard

4.3 Indication of any immediate medical attention and special treatment needed

none

SECTION 5: Firefighting measures

5.1 Extinguishing media



Suitable extinguishing media

co-ordinate firefighting measures to the fire surroundings! water spray, dry extinguishing powder, BC-powder, carbon dioxide (CO₂)

Unsuitable extinguishing media

water jet

United Kingdom (en) Page 3 / 17

acc. to Regulation (EC) No. 1907/2006 (REACH)

n-Undecan ≥ 95%, for synthesis

article number: 8781



5.2 Special hazards arising from the substance or mixture

Combustible. Vapours are heavier than air, spread along floors and form explosive mixtures with air.

Hazardous combustion products

In case of fire may be liberated: Carbon monoxide (CO), Carbon dioxide (CO₂)

5.3 Advice for firefighters

In case of fire and/or explosion do not breathe fumes. Fight fire with normal precautions from a reasonable distance. Wear self-contained breathing apparatus.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures



For non-emergency personnel

Avoid contact with skin, eyes and clothes. Do not breathe vapour/spray.

6.2 Environmental precautions

Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it.

6.3 Methods and material for containment and cleaning up

Advice on how to contain a spill

Covering of drains.

Advice on how to clean up a spill

Absorb with liquid-binding material (sand, diatomaceous earth, acid- or universal binding agents).

Other information relating to spills and releases

Place in appropriate containers for disposal. Ventilate affected area.

6.4 Reference to other sections

Hazardous combustion products: see section 5. Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Provision of sufficient ventilation.

Measures to prevent fire as well as aerosol and dust generation



Keep away from sources of ignition - No smoking.

Advice on general occupational hygiene

Wash hands before breaks and after work. Keep away from food, drink and animal feedingstuffs.

7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed.

Incompatible substances or mixtures

United Kingdom (en) Page 4 / 17

acc. to Regulation (EC) No. 1907/2006 (REACH)

n-Undecan ≥ 95%, for synthesis

article number: 8781

Observe hints for combined storage.

Consideration of other advice:

Specific designs for storage rooms or vessels

Recommended storage temperature: 15 - 25 °C

7.3 Specific end use(s)

No information available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

National limit values

Occupational exposure limit values (Workplace Exposure Limits)

This information is not available.

Environmental values

Relevant PNECs and other threshold levels

End- point	Threshold level	Organism	Environmental compartment	Exposure time
PNEC	3,5 ^{µg} / _I	aquatic organisms	water	intermittent release
PNEC	0,92 ^{µg} / _l	aquatic organisms	freshwater	short-term (single instance)
PNEC	0,92 ^{µg} / _l	aquatic organisms	marine water	short-term (single instance)
PNEC	14 ^{µg} / _l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
PNEC	1 ^{mg} / _{kg}	aquatic organisms	freshwater sediment	short-term (single instance)
PNEC	1 ^{mg} / _{kg}	aquatic organisms	marine sediment	short-term (single instance)
PNEC	1 ^{mg} / _{kg}	terrestrial organisms	soil	short-term (single instance)

8.2 Exposure controls

Individual protection measures (personal protective equipment)

Eye/face protection





Use safety goggle with side protection.

Skin protection





United Kingdom (en) Page 5 / 17



acc. to Regulation (EC) No. 1907/2006 (REACH)

n-Undecan ≥ 95%, for synthesis

article number: 8781



hand protection

Wear suitable gloves. Chemical protection gloves are suitable, which are tested according to EN 374. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves. The times are approximate values from measurements at 22 ° C and permanent contact. Increased temperatures due to heated substances, body heat etc. and a reduction of the effective layer thickness by stretching can lead to a considerable reduction of the breakthrough time. If in doubt, contact manufacturer. At an approx. 1.5 times larger / smaller layer thickness, the respective breakthrough time is doubled / halved. The data apply only to the pure substance. When transferred to substance mixtures, they may only be considered as a guide.

type of material

NBR (Nitrile rubber)

material thickness

>0,11 mm

breakthrough times of the glove material

>480 minutes (permeation: level 6)

other protection measures

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended.

Respiratory protection





Respiratory protection necessary at: Aerosol or mist formation. Type: A (against organic gases and vapours with a boiling point of > 65 °C , colour code: Brown).

Environmental exposure controls

Keep away from drains, surface and ground water.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state liquid
Colour colourless
Odour characteristic

Melting point/freezing point -26 °C at 1.013 hPa (ECHA)

Boiling point or initial boiling point and boiling 185,8 – 200,5 °C at 1.013 hPa (ECHA)

range

Flammability this material is combustible, but will not ignite

readily

Lower and upper explosion limit 0,6 vol% (LEL) - 6,5 vol% (UEL) Flash point 65 °C at 1.013 hPa (ECHA)

Auto-ignition temperature 240 °C

Decomposition temperature not relevant pH (value) not determined

United Kingdom (en) Page 6 / 17

acc. to Regulation (EC) No. 1907/2006 (REACH)

n-Undecan ≥ 95%, for synthesis

article number: 8781

Kinematic viscosity 1,597 mm²/s at 20 °C

Solubility(ies)

Water solubility $0,00002 \,^{9}/_{1}$ at 25 °C (ECHA)

Partition coefficient

Partition coefficient n-octanol/water (log value): 6,42 (pH value: 7, 25 °C) (ECHA)

Soil organic carbon/water (log KOC) 4,75 (ECHA)

Vapour pressure not determined

Density and/or relative density

Density $0,744 \, {}^{9}/_{cm^3}$ at 15 °C (ECHA)

Relative vapour density 5,4 (air = 1)

Particle characteristics not relevant (liquid)

Other safety parameters

Oxidising properties none

9.2 Other information

Information with regard to physical hazard hazard classes acc. to GHS

classes: (physical hazards): not relevant

Other safety characteristics:

Refractive index 1.417

SECTION 10: Stability and reactivity

10.1 Reactivity

This material is not reactive under normal ambient conditions.

If heated

Vapours may form explosive mixtures with air.

10.2 Chemical stability

The material is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

10.3 Possibility of hazardous reactions

Violent reaction with: strong oxidiser

10.4 Conditions to avoid

There are no specific conditions known which have to be avoided.

10.5 Incompatible materials

There is no additional information.

United Kingdom (en) Page 7 / 17

acc. to Regulation (EC) No. 1907/2006 (REACH)

n-Undecan ≥ 95%, for synthesis

article number: 8781



Hazardous combustion products: see section 5.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Classification acc. to GHS

Acute toxicity

Shall not be classified as acutely toxic.

GHS of the United Nations, annex 4. May be harmful in contact with skin.

Acute toxicity					
Exposure route	Endpoint	Value	Species	Method	Source
dermal	LD50	≥3.160 ^{mg} / _{kg}	rabbit		ECHA

Skin corrosion/irritation

Shall not be classified as corrosive/irritant to skin.

Serious eye damage/eye irritation

Shall not be classified as seriously damaging to the eye or eye irritant.

Respiratory or skin sensitisation

Shall not be classified as a respiratory or skin sensitiser.

Germ cell mutagenicity

Shall not be classified as germ cell mutagenic.

Carcinogenicity

Shall not be classified as carcinogenic.

Reproductive toxicity

Shall not be classified as a reproductive toxicant.

Specific target organ toxicity - single exposure

Shall not be classified as a specific target organ toxicant (single exposure).

Specific target organ toxicity - repeated exposure

Shall not be classified as a specific target organ toxicant (repeated exposure).

Aspiration hazard

May be fatal if swallowed and enters airways.

Symptoms related to the physical, chemical and toxicological characteristics

If swallowed

aspiration hazard

If in eyes

Data are not available.

If inhaled

Data are not available.

United Kingdom (en) Page 8 / 17



acc. to Regulation (EC) No. 1907/2006 (REACH)

ROTH

n-Undecan ≥ 95%, for synthesis

article number: 8781

• If on skin

Data are not available.

Other information

none

11.2 Endocrine disrupting properties

Does not contain an endocrine disruptor (ED) at a concentration of \geq 0,1%.

11.3 Information on other hazards

There is no additional information.

SECTION 12: Ecological information

12.1 Toxicity

Shall not be classified as hazardous to the aquatic environment.

Aquatic toxicity (acute)				
Endpoint	Value	Species	Source	Exposure time
LL50	>100 ^{mg} / _l	fish	ECHA	24 h
EL50	100 ^{mg} / _l	aquatic invertebrates	ECHA	48 h

12.2 Persistence and degradability

Theoretical Oxygen Demand: 3,48 $^{\rm mg}/_{\rm mg}$ Theoretical Carbon Dioxide: 3,097 $^{\rm mg}/_{\rm mg}$

Biodegradation

The substance is readily biodegradable.

Process of degradability			
Process	Degradation rate	Time	
oxygen depletion	7,3 %	4 d	
carbon dioxide generation	0 %	3 d	

12.3 Bioaccumulative potential

The substance fulfils the very bioaccumulative criterion.

n-octanol/water (log KOW)	6,42 (pH value: 7, 25 °C) (ECHA)
---------------------------	----------------------------------

12.4 Mobility in soil

Henry's law constant	195.509 Pa m³/ _{mol}
The Organic Carbon normalised adsorption coefficient	4,75 (ECHA)

12.5 Results of PBT and vPvB assessment

Data are not available.

United Kingdom (en) Page 9 / 17

acc. to Regulation (EC) No. 1907/2006 (REACH)

n-Undecan ≥ 95%, for synthesis

article number: 8781



12.6 Endocrine disrupting properties

Does not contain an endocrine disruptor (ED) at a concentration of $\geq 0.1\%$.

12.7 Other adverse effects

Data are not available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods



This material and its container must be disposed of as hazardous waste. Dispose of contents/container in accordance with local/regional/national/international regulations.

Sewage disposal-relevant information

Do not empty into drains.

Waste treatment of containers/packagings

It is a dangerous waste; only packagings which are approved (e.g. acc. to ADR) may be used. Handle contaminated packages in the same way as the substance itself. Completely emptied packages can be recycled.

13.2 Relevant provisions relating to waste

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

Properties of waste which render it hazardous

HP 5 specific target organ toxicity (STOT)/aspiration toxicity

13.3 Remarks

Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities. Please consider the relevant national or regional provisions. Non-contaminated packages may be recycled.

SECTION 14: Transport information

14.1 UN number or ID number

ADRRID	UN 2330
IMDG-Code	UN 2330
ICAO-TI	UN 2330

14.2 UN proper shipping name

ADRRID	UNDECANE
IMDG-Code	UNDECANE
ICAO-TI	Undecane

14.3 Transport hazard class(es)

ADRRID	3
IMDG-Code	3
ICAO-TI	3

United Kingdom (en) Page 10 / 17

acc. to Regulation (EC) No. 1907/2006 (REACH)

n-Undecan ≥ 95%, for synthesis

article number: 8781

14.4 Packing group

ADRRID III

IMDG-Code III

ICAO-TI III

14.5 Environmental hazards non-environmentally hazardous acc. to the dan-

gerous goods regulations

14.6 Special precautions for user

Provisions for dangerous goods (ADR) should be complied within the premises.

14.7 Maritime transport in bulk according to IMO instruments

The cargo is not intended to be carried in bulk.

14.8 Information for each of the UN Model Regulations

Agreement concerning the International Carriage of Dangerous Goods by Road (ADR)Additional information

Proper shipping name UNDECANE

Particulars in the transport document UN2330, UNDECANE, 3, III, (D/E)

Classification code F1
Danger label(s) 3



Excepted quantities (EQ) E1

Limited quantities (LQ) 5 L

Transport category (TC) 3

Tunnel restriction code (TRC) D/E

Hazard identification No 30

Emergency Action Code 3Y

Regulations concerning the International Carriage of Dangerous Goods by Rail (RID)Additional information

Classification code F1

Danger label(s) 3



Excepted quantities (EQ) E1

Limited quantities (LQ) 5 L

Transport category (TC) 3

Hazard identification No 30

United Kingdom (en) Page 11 / 17



acc. to Regulation (EC) No. 1907/2006 (REACH)

ROTH

n-Undecan ≥ 95%, for synthesis

article number: 8781

International Maritime Dangerous Goods Code (IMDG) - Additional information

Proper shipping name UNDECANE

Particulars in the shipper's declaration UN2330, UNDECANE, 3, III

Marine pollutant Danger label(s) 3



Special provisions (SP)
Excepted quantities (EQ) E1

Limited quantities (LQ) 5 L

EmS F-E, S-E

Stowage category A

International Civil Aviation Organization (ICAO-IATA/DGR) - Additional information

Proper shipping name Undecane

Particulars in the shipper's declaration UN2330, Undecane, 3, III

Danger label(s) 3



Excepted quantities (EQ) E1
Limited quantities (LQ) 10 L

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture Relevant provisions of the European Union (EU)

Seveso Directive

2012/18/EU (Seveso III)			
No	Dangerous substance/hazard categories	Qualifying quantity (tonnes) for the application of lower and upper-tier requirements	Notes
	not assigned		

Deco-Paint Directive

VOC content	100 %
VOC content	744 ⁹ / _l

Industrial Emissions Directive (IED)

United Kingdom (en) Page 12 / 17

acc. to Regulation (EC) No. 1907/2006 (REACH)



n-Undecan ≥ 95%, for synthesis

article number: 8781

VOC content	100 %
VOC content	744 ⁹ / _I

Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)

not listed

Regulation concerning the establishment of a European Pollutant Release and Transfer Register (PRTR)

not listed

Water Framework Directive (WFD)

not listed

Regulation on the marketing and use of explosives precursors

not listed

Regulation on drug precursors

not listed

Regulation on substances that deplete the ozone layer (ODS)

not listed

Regulation concerning the export and import of hazardous chemicals (PIC)

not listed

Regulation on persistent organic pollutants (POP)

not listed

National regulations(GB)

List of substances subject to authorisation (GB REACH, Annex 14) / SVHC - candidate list not listed

Restrictions according to GB REACH, Annex 17

Dangerous substances with restrictions (GB REACH, Annex 17)			
Name of substance	Name acc. to inventory	CAS No	No
n-Undecan	this product meets the criteria for classi- fication in accordance with Regulation No 1272/2008/EC		3

Other information

Directive 94/33/EC on the protection of young people at work. Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers.

National inventories

Country	Inventory	Status
AU	AIIC	substance is listed
CA	DSL	substance is listed
CN	IECSC	substance is listed
EU	ECSI	substance is listed

United Kingdom (en) Page 13 / 17

acc. to Regulation (EC) No. 1907/2006 (REACH)

n-Undecan ≥ 95%, for synthesis

article number: 8781



Country	Inventory	Status
EU	REACH Reg.	substance is listed
JP	CSCL-ENCS	substance is listed
KR	KECI	substance is listed
MX	INSQ	substance is listed
NZ	NZIoC	substance is listed
PH	PICCS	substance is listed
TR	CICR	substance is listed
TW	TCSI	substance is listed
US	TSCA	substance is listed (ACTIVE)
VN	NCI	substance is listed

Legend

AIIC
CICR
CSCL-ENCS
DSL
ECSI
IECSC
INSQ
KECI Australian Inventory of Industrial Chemicals

AIIC
CICR
Chemical Inventory of Industrial Chemicals
CICR
Chemical Inventory and Control Regulation
CSCL-ENCS
List of Existing and New Chemical Substances (CSCL-ENCS)
DSL
Domestic Substances List (DSL)
ECSI
EC Substance Inventory (EINECS, ELINCS, NLP)
IECSC
Inventory of Existing Chemical Substances Produced or Imported in China
INSQ
National Inventory of Chemical Substances
KECI
Korea Existing Chemicals Inventory
NCI
National Chemical Inventory
NZIOC
NEW Zealand Inventory of Chemicals
PICCS
Philippine Inventory of Chemicals and Chemical Substances (PICCS)
REACH Reg.
REACH registered substances
TCSI
Taiwan Chemical Substance Inventory

Taiwan Chemical Substance Inventory TCSI

TSCA Toxic Substance Control Act

15.2 Chemical safety assessment

No Chemical Safety Assessment has been carried out for this substance.

SECTION 16: Other information

Indication of changes (revised safety data sheet)

Section	Former entry (text/value)	Actual entry (text/value)	Safety- relev- ant
2.2	Labelling of packages where the contents do not exceed 125 ml: Signal word: Danger		yes
2.2		Labelling of packages where the contents do not exceed 125 ml: change in the listing (table)	yes
2.2		Labelling of packages where the contents do not exceed 125 ml: change in the listing (table)	yes
2.2		Labelling of packages where the contents do not exceed 125 ml: change in the listing (table)	yes
2.2		Labelling of packages where the contents do not exceed 125 ml: change in the listing (table)	yes

United Kingdom (en) Page 14 / 17

acc. to Regulation (EC) No. 1907/2006 (REACH)

n-Undecan ≥ 95%, for synthesis

article number: 8781



Section	Former entry (text/value)	Actual entry (text/value)	Safety- relev- ant
2.3		Endocrine disrupting properties: Does not contain an endocrine disruptor (ED) at a concentration of ≥ 0,1%.	yes
14.8		Regulations concerning the International Car- riage of Dangerous Goods by Rail (RID)Addition- al information	yes
14.8		Classification code: F1	yes
14.8		Danger label(s): 3	yes
14.8		Danger label(s): change in the listing (table)	yes
14.8		Excepted quantities (EQ): E1	yes
14.8		Limited quantities (LQ): 5 L	yes
14.8		Transport category (TC):	yes
14.8		Hazard identification No: 30	yes
15.1	Restrictions according to REACH, Annex XVII		yes
15.1		Dangerous substances with restrictions (REACH, Annex XVII): change in the listing (table)	yes
15.1	List of substances subject to authorisation (REACH, Annex XIV)/SVHC - candidate list: Not listed.		yes
15.1	VOC content: 100 % , 744 ^g / _l	VOC content: 100 %	yes
15.1		VOC content: 744 ^g / _l	yes
15.1		National regulations(GB)	yes
15.1		List of substances subject to authorisation (GB REACH, Annex 14) / SVHC - candidate list: not listed	yes
15.1		Restrictions according to GB REACH, Annex 17	yes
15.1		Dangerous substances with restrictions (GB REACH, Annex 17): change in the listing (table)	yes
15.1		National inventories: change in the listing (table)	yes

United Kingdom (en) Page 15 / 17

acc. to Regulation (EC) No. 1907/2006 (REACH)

n-Undecan ≥ 95%, for synthesis

article number: 8781

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Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations	
ADR	Accord relatif au transport international des marchandises dangereuses par route (Agreement concern- ing the International Carriage of Dangerous Goods by Road)	
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)	
DGR	Dangerous Goods Regulations (see IATA/DGR)	
EC No	The EC Inventory (EINECS, ELINCS and the NLP-list) is the source for the seven-digit EC number, an identifier of substances commercially available within the EU (European Union)	
ED	Endocrine disruptor	
EINECS	European Inventory of Existing Commercial Chemical Substances	
EL50	Effective Loading 50 %: the EL50 corresponds to the loading rate required to produce a response in 50% of the test organisms	
ELINCS	European List of Notified Chemical Substances	
EmS	Emergency Schedule	
GB REACH	The REACH etc. (Amendment etc.) (EU Exit) Regulations 2019, SI 2019/758 (as amended)	
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations	
IATA	International Air Transport Association	
IATA/DGR	Dangerous Goods Regulations (DGR) for the air transport (IATA)	
ICAO	International Civil Aviation Organization	
ICAO-TI	Technical instructions for the safe transport of dangerous goods by air	
IMDG	International Maritime Dangerous Goods Code	
IMDG-Code	International Maritime Dangerous Goods Code	
LD50	Lethal Dose 50 %: the LD50 corresponds to the dose of a tested substance causing 50 % lethality during specified time interval	
LEL	Lower explosion limit (LEL)	
LL50	Lethal Loading 50 %: the LL50 corresponds to the loading rate causing 50 % lethality	
NLP	No-Longer Polymer	
PBT	Persistent, Bioaccumulative and Toxic	
PNEC	Predicted No-Effect Concentration	
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals	
RID	Règlement concernant le transport International ferroviaire des marchandises Dangereuses (Regulations concerning the International carriage of Dangerous goods by Rail)	
UEL	Upper explosion limit (UEL)	
VOC	Volatile Organic Compounds	
vPvB	Very Persistent and very Bioaccumulative	

Key literature references and sources for data

Agreement concerning the International Carriage of Dangerous Goods by Road (ADR). Regulations concerning the International Carriage of Dangerous Goods by Rail (RID). International Maritime Dangerous Goods Code (IMDG). Dangerous Goods Regulations (DGR) for the air transport (IATA).

United Kingdom (en) Page 16 / 17

acc. to Regulation (EC) No. 1907/2006 (REACH)



n-Undecan ≥ 95%, for synthesis

article number: 8781

List of relevant phrases (code and full text as stated in section 2 and 3)

Code	Text
H304	May be fatal if swallowed and enters airways.

Disclaimer

This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product.

United Kingdom (en) Page 17 / 17