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# N,N-Dimethylformamide ROTISOLV® ≥99,9 %, UV/IR-Grade



Replaces version of: 2022-10-20

Version: (GHS 4)

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

#### **Product identifier** 1.1

Identification of the substance N,N-Dimethylformamide ROTISOLV® ≥99,9 %,

UV/IR-Grade

Article number **CP79** CAS number 68-12-2

#### 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.

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

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
NSW Poisons Information Centre Childrens Hospital	Hawkesbury Road	2145 West- mead, NSW	131126	

# **SECTION 2: Hazards identification**

#### Classification of the substance or mixture 2.1

# Classification acc. to GHS

Section	Hazard class	Cat- egory	Hazard class and category	Hazard statement
2.6	Flammable liquid	3	Flam. Liq. 3	H226
3.1D	Acute toxicity (dermal)	4	Acute Tox. 4	H312
3.1I	Acute toxicity (inhal.)	4	Acute Tox. 4	H332
3.3	Serious eye damage/eye irritation	2	Eye Irrit. 2	H319

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Section	Hazard class	Cat- egory	Hazard class and category	Hazard statement
3.7	Reproductive toxicity	1B	Repr. 1B	H360D

For full text of abbreviations: see SECTION 16

# The most important adverse physicochemical, human health and environmental effects

The product is combustible and can be ignited by potential ignition sources.

#### 2.2 Label elements

# Labelling

Signal word Danger

# **Pictograms**

GHS02, GHS07, GHS08







# **Hazard statements**

H226 Flammable liquid and vapour

H312+H332 Harmful in contact with skin or if inhaled

H319 Causes serious eye irritation H360D May damage the unborn child

# **Precautionary statements**

#### **Precautionary statements - prevention**

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking

P261 Avoid breathing dust/fume/gas/mist/vapours/spray

P280 Wear protective gloves/protective clothing

# **Precautionary statements - response**

P302+P352 IF ON SKIN: Wash with plenty of soap and water

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact

lenses, if present and easy to do. Continue rinsing

P312 Call a POISON CENTER or doctor/physician if you feel unwell

P370+P378 In case of fire: Use sand, carbon dioxide or powder extinguisher for extinction

# **Precautionary statements - storage**

P403+P235 Store in a well-ventilated place. Keep cool

#### **Precautionary statements - disposal**

P501 Dispose of contents/container to industrial combustion plant

For professional users only

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# 2.3 Other hazards

#### 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%.

# **SECTION 3: Composition/information on ingredients**

#### 3.1 Substances

Name of substance N,N-Dimethylformamide

Molecular formula  $C_3H_7NO$ Molar mass  $73.09 \, ^g/_{mol}$ CAS No 68-12-2

# **SECTION 4: First aid measures**

# 4.1 Description of first aid measures



#### **General notes**

Take off contaminated clothing.

#### Following inhalation

Provide fresh air. In all cases of doubt, or when symptoms persist, seek medical advice.

# Following skin contact

Rinse skin with water/shower.

# Following eye contact

Irrigate copiously with clean, fresh water for at least 10 minutes, holding the eyelids apart. In case of eye irritation consult an ophthalmologist.

# Following ingestion

In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

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

Irritation, Gastrointestinal complaints, Headache, Vertigo, Dyspnoea, Dizziness

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

none

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# **SECTION 5: Firefighting measures**

# 5.1 Extinguishing media



# Suitable extinguishing media

co-ordinate firefighting measures to the fire surroundings! water spray, alcohol resistant foam, dry extinguishing powder, BC-powder, carbon dioxide (CO<sub>2</sub>)

# Unsuitable extinguishing media

water jet

# 5.2 Special hazards arising from the substance or mixture

Combustible. In case of insufficient ventilation and/or in use, may form flammable/explosive vapour-air mixture. Solvent vapours are heavier than air and may spread along floors. Places which are not ventilated, e.g. unventilated below ground level areas such as trenches, conduits and shafts, are particularly prone to the presence of flammable substances or mixtures. Vapours are heavier than air, spread along floors and form explosive mixtures with air. Vapours may form explosive mixtures with air

# **Hazardous combustion products**

In case of fire may be liberated: Nitrogen oxides (NOx), Carbon monoxide (CO), Carbon dioxide (CO<sub>2</sub>)

# 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

Use personal protective equipment as required. Avoid contact with skin, eyes and clothes. Do not breathe vapour/spray. Avoidance of ignition sources.

# **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.

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#### 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. Avoid exposure.

# Measures to prevent fire as well as aerosol and dust generation



Keep away from sources of ignition - No smoking.

Take precautionary measures against static discharge.

# Advice on general occupational hygiene

Wash hands before breaks and after work. Keep away from food, drink and animal feedingstuffs. When using do not smoke.

# 7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed.

# **Incompatible substances or mixtures**

Observe hints for combined storage.

# **Consideration of other advice:**

Ground/bond container and receiving equipment.

#### **Ventilation requirements**

Keep any substance that emits harmful vapours or gases in a place that allows these to be permanently extracted. Use local and general ventilation.

# 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)

Cou ntr y	Name of agent	CAS No	Identi- fier	TW A [pp m]	TWA [mg/ m³]	STE L [pp m]	STEL [mg/ m³]	Ceil ing- C [pp m]	Ceil- ing-C [mg/ m³]	Nota- tion	Source
AU	N,N-dimethylform- amide	68-12-2	WES	10	30					H	WES

Notation

Ceiling-C Ceiling value is a limit value above which exposure should not occur

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**Notation** 

H STEL Absorbed through the skin

Short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute period (unless otherwise specified)

TWA Time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8

hours time-weighted average (unless otherwise specified)

#### **Human health values**

Relevant DNI	Relevant DNELs and other threshold levels						
Endpoint	Threshold level	Protection goal, route of exposure	Used in	Exposure time			
DNEL	6 mg/m³	human, inhalatory	worker (industry)	chronic - systemic effects			
DNEL	1.1 mg/kg bw/ day	human, dermal	worker (industry)	chronic - systemic effects			

#### **Environmental values**

Relevant	Relevant PNECs and other threshold levels					
End- point	Threshold level	Organism	Environmental com- partment	Exposure time		
PNEC	44 <sup>mg</sup> / <sub>l</sub>	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)		
PNEC	111 <sup>mg</sup> / <sub>kg</sub>	aquatic organisms	freshwater sediment	short-term (single instance)		
PNEC	11.1 <sup>mg</sup> / <sub>kg</sub>	aquatic organisms	marine sediment	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





# 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.

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# type of material

Butyl caoutchouc (butyl rubber)

#### material thickness

≥0,5 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 like: - amine

Odour threshold 0.329 ppm

Melting point/freezing point -61 °C

Boiling point or initial boiling point and boiling

range

153 °C at 1,013 hPa

Flammability flammable liquid in accordance with GHS criteria

Lower and upper explosion limit 70 g/m³ (LEL) - 500 g/m³ (UEL) /

2.2 vol% (LEL) - 16 vol% (UEL)

Flash point 57.5 °C at 1,013 hPa (ECHA)

Auto-ignition temperature 435 °C at 1,013 hPa

Decomposition temperature >350 °C

pH (value) 7 (in aqueous solution: 200 <sup>g</sup>/<sub>l</sub>, 20 °C)

Kinematic viscosity  $0.8947 \, ^{\text{mm}^2} /_{\text{s}}$  at 20 °C

Dynamic viscosity 0.85 mPa s at 20 °C

Solubility(ies)

Water solubility miscible in any proportion

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Partition coefficient

Partition coefficient n-octanol/water (log value): -1.01 (TOXNET)

Vapour pressure 3.77 hPa at 20 °C

Density and/or relative density

Density  $0.95 \, {}^{g}/_{cm^3}$  at 20  ${}^{\circ}\text{C}$ 

Relative vapour density 2.52 (air = 1)

Particle characteristics not relevant (liquid)

Other safety parameters

Oxidising properties none

9.2 Other information

Information with regard to physical hazard

classes:

There is no additional information.

Other safety characteristics:

Miscibility completely miscible with water

Gas group (explosion group)

Maximum Experimental Safe Gap value; MESG >

0,9 mm

Maximum explosion pressure 7.2 bar Refractive index 1.431

# **SECTION 10: Stability and reactivity**

#### 10.1 Reactivity

It's a reactive substance. Risk of ignition.

#### If heated

Risk of ignition. 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, Permanganates, for example potassium permanganate, Phosphorus oxides (e.g. P2O5)

#### 10.4 Conditions to avoid

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep away from heat. Decompostion takes place from temperatures above: >350 °C.

# 10.5 Incompatible materials

different plastics, copper, tin

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# 10.6 Hazardous decomposition products

Hazardous combustion products: see section 5. Release of: Formaldehyde. Ammonia (NH3).

# **SECTION 11: Toxicological information**

# 11.1 Information on toxicological effects

#### Classification acc. to GHS

# **Acute toxicity**

Harmful in contact with skin. Harmful if inhaled.

GHS of the United Nations, annex 4. May be harmful if swallowed.

Acute toxicity					
Exposure route	Endpoint	Value	Species	Method	Source
oral	LD50	3,010 <sup>mg</sup> / <sub>kg</sub>	rat		ECHA
dermal	LD50	>3,160 <sup>mg</sup> / <sub>kg</sub>	rat		ECHA

#### Skin corrosion/irritation

Shall not be classified as corrosive/irritant to skin.

# Serious eye damage/eye irritation

Causes serious eye irritation.

# 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

May damage the unborn child.

# 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**

Shall not be classified as presenting an aspiration hazard.

# Symptoms related to the physical, chemical and toxicological characteristics

# If swallowed

gastrointestinal complaints

# • If in eyes

Causes serious eye irritation

#### If inhaled

irritant effects, cough, Dyspnoea

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72 h

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• If on skin

risk of absorption via the skin

Other information

Other adverse effects: Cardiovascular system, Liver and kidney damage, Headache, Vertigo, Dizziness

# 11.2 Endocrine disrupting properties

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

# **SECTION 12: Ecological information**

# 12.1 Toxicity

Shall not be classified as hazardous to the aquatic environment.

>1,000 <sup>mg</sup>/<sub>I</sub>

Aquatic toxicity (acu	ute)			
Endpoint	Value	Species	Source	Exposure time
LC50	7,100 <sup>mg</sup> / <sub>l</sub>	fish	ECHA	96 h
EC50	13,100 <sup>mg</sup> / <sub>l</sub>	aquatic invertebrates	ECHA	48 h

algae

**ECHA** 

#### **Aquatic toxicity (chronic) Endpoint Value Species Source Exposure** time LC50 >102 <sup>mg</sup>/<sub>I</sub> **ECHA** 21 d EC50 3,721 mg/1 aquatic invertebrates **ECHA** 21 d

# 12.2 Persistence and degradability

ErC50

Theoretical Oxygen Demand (without nitrification): 1.532  $^{mg}/_{mg}$  Theoretical Oxygen Demand (with nitrification): 2.408  $^{mg}/_{mg}$  Theoretical Carbon Dioxide: 1.806  $^{mg}/_{mg}$ 

Process of degradability		
Process	Degradation rate	Time
biotic/abiotic	>90 %	28 d
DOC removal	1 %	1 d

# 12.3 Bioaccumulative potential

Does not significantly accumulate in organisms.

n-octanol/water (log KOW)	-1.01 (TOXNET)
BCF	0.3 – 1.2 (ECHA)

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# 12.4 Mobility in soil

Henry's law constant	0.377 Pa m³/ <sub>mol</sub> at 25 °C (ECHA)
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# 12.5 Results of PBT and vPvB assessment

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

# 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

Only packagings which are approved (e.g. acc. to the Dangerous Goods Regulations) may be used. Handle contaminated packages in the same way as the substance itself. Completely emptied packages can be recycled.

# Relevant provisions relating to waste(Basel Convention)

# Properties of waste which render it hazardous

**H3** Flammable liquids

#### 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

UN RTDGUN 2265IMDG-CodeUN 2265ICAO-TIUN 2265

# 14.2 UN proper shipping name

UN RTDGN,N-DIMETHYLFORMAMIDEIMDG-CodeN,N-DIMETHYLFORMAMIDEICAO-TIN,N-Dimethylformamide

# 14.3 Transport hazard class(es)

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UN RTDG3IMDG-Code3ICAO-TI3

14.4 Packing group

UN RTDG 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

There is no additional information.

14.7 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

# Transport informationNational regulationsAdditional information(UN RTDG)

UN number 2265
Class 3
Packing group III
Danger label(s) 3



Special provisions (SP)

UN RTDG

Excepted quantities (EQ)

ŪN RTDG

Limited quantities (LQ) 5 l

UN RTDG

Emergency Action Code 2Y

# International Maritime Dangerous Goods Code (IMDG) - Additional information

Proper shipping name N,N-DIMETHYLFORMAMIDE

Particulars in the shipper's declaration UN2265, N,N-DIMETHYLFORMAMIDE, 3, III,

57.5°C c.c.

Marine pollutant -

Danger label(s) 3



Special provisions (SP) -

Excepted quantities (EQ) E1

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Limited quantities (LQ) 5 L

EmS F-E, S-D

Stowage category A

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

Proper shipping name N,N-Dimethylformamide

Particulars in the shipper's declaration UN2265, N,N-Dimethylformamide, 3, III

Danger label(s)



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

There is no additional information.

# National regulations(Australia)

# Australian Inventory of Chemical Substances(AICS)

Substance is listed.

# 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
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

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Legend

AIIC CICR CSCL-ENCS Australian Inventory of Industrial Chemicals

Chemical Inventory and Control Regulation
List of Existing and New Chemical Substances (CSCL-ENCS)

CSCL-ENCS
DSL
Domestic Substances List (DSL)
ECSI ECSI ECS 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
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
2.3		Endocrine disrupting properties: Does not contain an endocrine disruptor (ED) at a concentration of ≥ 0,1%.	yes
14.8		Emergency Action Code: 2Y	yes
15.1		National inventories: change in the listing (table)	yes

# **Abbreviations and acronyms**

Abbr.	Descriptions of used abbreviations
BCF	Bioconcentration factor
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)
Ceiling-C	Ceiling value
DGR	Dangerous Goods Regulations (see IATA/DGR)
DNEL	Derived No-Effect Level
EC50	Effective Concentration 50 %. The EC50 corresponds to the concentration of a tested substance causing 50 % changes in response (e.g. on growth) during a specified time interval
ED	Endocrine disruptor
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
EmS	Emergency Schedule
ErC50	≡ EC50: in this method, that concentration of test substance which results in a 50 % reduction in either growth (EbC50) or growth rate (ErC50) relative to the control
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
IATA	International Air Transport Association

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Abbr.	Descriptions of used abbreviations
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
LC50	Lethal Concentration 50%: the LC50 corresponds to the concentration of a tested substance causing 50 % lethality during a specified time interval
LD50	Lethal Dose 50 %: the LD50 corresponds to the dose of a tested substance causing 50 % lethality during a specified time interval
LEL	Lower explosion limit (LEL)
NLP	No-Longer Polymer
PBT	Persistent, Bioaccumulative and Toxic
PNEC	Predicted No-Effect Concentration
ppm	Parts per million
STEL	Short-term exposure limit
TWA	Time-weighted average
UEL	Upper explosion limit (UEL)
UN RTDG	UN Recommendations on the Transport of Dangerous Good
vPvB	Very Persistent and very Bioaccumulative
WES	Safe Work Australia: Workplace exposure standards for airborne contaminants

# Key literature references and sources for data

Safe Work Australia's Code of Practice for Labelling of Workplace Hazardous Chemicals (under WHS Regulations).

UN Recommendations on the Transport of Dangerous Good. International Maritime Dangerous Goods Code (IMDG). Dangerous Goods Regulations (DGR) for the air transport (IATA).

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

Code	Text
H226	Flammable liquid and vapour.
H312	Harmful in contact with skin.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H360D	May damage the unborn child.

# Disclaimer

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

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