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#### **SECTION 1. PRODUCT AND COMPANY IDENTIFICATION**

Product name : LINEVOL 11

Product code : V9335

CAS-No. : 112-42-5

Synonyms : Undecanol, 1-

Manufacturer or supplier's details

Manufacturer/Supplier : Shell CAPSA

Av. Roque Saenz Peña 788

Buenos Aires, 1383

Argentina

Telephone : (+54 11) 4130-2168

Telefax : (+54 11) 4130-2180

Contact for Safety Data Sheet :

Emergency telephone number : En Argentina: (+11 15) 4970-7391 / 4970-7390 / 5062-6601 /

4973-7368; Desde el exterior: (+54 911) 4970-7391 / 4970-

7390 / 5062/6601

Recommended use of the chemical and restrictions on use

Recommended use : Feedstock for plasticiser or other alcohol derivative.

Restrictions on use : This product must not be used in applications other than the

above without first seeking the advice of the supplier.

Other information : LINEVOL is a trademark owned by Shell Trademark Man-

agement B.V. and Shell Brands Inc. and used by affiliates of

Royal Dutch Shell plc.

#### **SECTION 2. HAZARDS IDENTIFICATION**

**GHS Classification** 

Skin irritation : Category 3

Eye irritation : Category 2

Aspiration hazard : Category 2

Short-term (acute) aquatic

hazard

: Category 1

Long-term (chronic) aquatic

hazard

: Category 2

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#### **GHS** label elements

Hazard pictograms







Signal word : Warning

Hazard statements : PHYSICAL HAZARDS:

Not classified as a physical hazard under GHS criteria.

**HEALTH HAZARDS:** 

H316 Causes mild skin irritation.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
ENVIRONMENTAL HAZARDS:
H400 Very toxic to aquatic life.

H411 Toxic to aquatic life with long lasting effects.

Precautionary statements : **Prevention:** 

P264 Wash hands thoroughly after handling.

P280 Wear protective gloves/ protective clothing/ eye protec-

tion/ face protection.

P273 Avoid release to the environment.

Response:

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and

easy to do. Continue rinsing.

P337 + P313 If eye irritation persists: Get medical advice/ at-

tention

P332 + P313 If skin irritation occurs: Get medical advice/ atten-

tion.

P301 + P310 IF SWALLOWED: Immediately call a POISON

CENTER/ doctor.

P331 Do NOT induce vomiting.

P391 Collect spillage.

Storage:

P405 Store locked up.

Disposal:

P501 Dispose of contents and container to appropriate waste site or reclaimer in accordance with local and national regula-

tions.

## Other hazards which do not result in classification

Repeated exposure may cause skin dryness or cracking.

Harmful: May cause lung damage if swallowed.

#### **SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

Substance / Mixture : Substance

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## **Hazardous components**

Chemical name	CAS-No.	Classification	Concentration (% w/w)
Undecan-1-ol	112-42-5	Skin Irrit.3; H316 Eye Irrit.2; H319 Asp. Tox.2; H305 Aquatic Acute1; H400 Aquatic Chronic2; H411	<= 100

For explanation of abbreviations see section 16.

#### **SECTION 4. FIRST-AID MEASURES**

General advice : Not expected to be a health hazard when used under normal

conditions.

If inhaled : No treatment necessary under normal conditions of use. If

symptoms persist, obtain medical advice.

In case of skin contact : Remove contaminated clothing. Immediately flush skin with

large amounts of water for at least 15 minutes, and follow by washing with soap and water if available. If redness, swelling, pain and/or blisters occur, transport to the nearest medical

facility for additional treatment.

In case of eye contact : Immediately flush eye(s) with plenty of water.

Remove contact lenses, if present and easy to do. Continue

rinsing.

Transport to the nearest medical facility for additional treat-

ment.

If swallowed : In general no treatment is necessary unless large quantities

are swallowed, however, get medical advice.

Most important symptoms and effects, both acute and

delayed

: Not considered to be an inhalation hazard under normal con-

ditions of use.

Possible respiratory irritation signs and symptoms may include a temporary burning sensation of the nose and throat, cough-

ing, and/or difficulty breathing.

Skin irritation signs and symptoms may include a burning sen-

sation, redness, or swelling.

Eye irritation signs and symptoms may include a burning sen-

sation, redness, swelling, and/or blurred vision. No specific hazards under normal use conditions.

Ingestion may result in nausea, vomiting and/or diarrhoea.

Defatting dermatitis signs and symptoms may include a burn-

ing sensation and/or a dried/cracked appearance.

Protection of first-aiders : When administering first aid, ensure that you are wearing the

appropriate personal protective equipment according to the

incident, injury and surroundings.

Notes to physician : IMMEDIATE TREATMENT IS EXTREMELY IMPORTANT!

Call a doctor or poison control center for guidance.

Treat symptomatically.

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#### **SECTION 5. FIRE-FIGHTING MEASURES**

Suitable extinguishing media : Alcohol-resistant foam, water spray or fog. Dry chemical pow-

der, carbon dioxide, sand or earth may be used for small fires

only.

Unsuitable extinguishing

media

: Do not use water in a jet.

Specific hazards during fire-

fighting

: Carbon monoxide may be evolved if incomplete combustion

Will float and can be reignited on surface water.

The vapour is heavier than air, spreads along the ground and

distant ignition is possible.

Specific extinguishing meth-

ods

Standard procedure for chemical fires.

Clear fire area of all non-emergency personnel. Keep adjacent containers cool by spraying with water.

Special protective equipment

for firefighters

Proper protective equipment including chemical resistant gloves are to be worn; chemical resistant suit is indicated if large contact with spilled product is expected. Self-Contained Breathing Apparatus must be worn when approaching a fire in a confined space. Select fire fighter's clothing approved to

relevant Standards (e.g. Europe: EN469).

#### **SECTION 6. ACCIDENTAL RELEASE MEASURES**

Personal precautions, protec: : tive equipment and emergency procedures

Observe all relevant local and international regulations. Notify authorities if any exposure to the general public or the

environment occurs or is likely to occur.

Local authorities should be advised if significant spillages

cannot be contained.

Avoid contact with spilled or released material. Immediately remove all contaminated clothing. For guidance on selection of personal protective equipment see Section 8 of this Safety Data Sheet. For guidance on disposal of spilled material see

Section 13 of this Safety Data Sheet. Stay upwind and keep out of low areas. Be ready for fire or possible exposure.

**Environmental precautions** 

Prevent from spreading or entering into drains, ditches or riv-

ers by using sand, earth, or other appropriate barriers.

Use appropriate containment to avoid environmental contami-

nation.

Ventilate contaminated area thoroughly.

Methods and materials for containment and cleaning up For large liquid spills (> 1 drum), transfer by mechanical means such as vacuum truck to a salvage tank for recovery or

safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak

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> up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely For small liquid spills (< 1 drum), transfer by mechanical means to a labeled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.

Additional advice : For guidance on selection of personal protective equipment

see Section 8 of this Safety Data Sheet.

For guidance on disposal of spilled material see Section 13 of

this Safety Data Sheet.

#### **SECTION 7. HANDLING AND STORAGE**

**General Precautions** : Avoid breathing of or direct contact with material. Only use in

> well ventilated areas. Wash thoroughly after handling. For guidance on selection of personal protective equipment see

Section 8 of this Safety Data Sheet.

Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this

material.

Ensure that all local regulations regarding handling and stor-

age facilities are followed.

Advice on safe handling : Avoid contact with skin, eyes and clothing.

Do not empty into drains.

Sudden Release of Pressure Hazard

Avoidance of contact : Copper.

Copper alloys.

Strong oxidising agents.

Aluminum

**Product Transfer** : Keep containers closed when not in use. Do not use com-

pressed air for filling discharge or handling.

Storage

Conditions for safe storage : Refer to section 15 for any additional specific legislation cov-

ering the packaging and storage of this product.

Other data : Bulk storage tanks should be diked (bunded).

> Vapours from tanks should not be released to atmosphere. Breathing losses during storage should be controlled by a

suitable vapour treatment system.

Nitrogen blanket recommended for large tanks (capacity 100

m3 or higher).

Insulation (lagging) will minimize heat loss in areas of low

ambient temperature.

Tanks should be fitted with heating coils in areas where ambient conditions can result in handling temperatures below the

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freezing point/pour point of the product.

Packaging material : Suitable material: Stainless steel., Epoxy resins, Polyester.

Unsuitable material: Aluminum, Copper., Copper alloys.

Container Advice : Containers, even those that have been emptied, can contain

explosive vapours. Do not cut, drill, grind, weld or perform

similar operations on or near containers.

Specific use(s) : Not applicable

Ensure that all local regulations regarding handling and stor-

age facilities are followed.

#### **SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION**

#### Components with workplace control parameters

Contains no substances with occupational exposure limit values. Contains no components with occupational exposure limit values.

#### **Biological occupational exposure limits**

No biological limit allocated.

#### **Monitoring Methods**

Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate.

Validated exposure measurement methods should be applied by a competent person and samples analysed by an accredited laboratory.

Examples of sources of recommended exposure measurement methods are given below or contact the supplier. Further national methods may be available.

National Institute of Occupational Safety and Health (NIOSH), USA: Manual of Analytical Methods http://www.cdc.gov/niosh/

Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods http://www.osha.gov/

Health and Safety Executive (HSE), UK: Methods for the Determination of Hazardous Substances http://www.hse.gov.uk/

Institut für Arbeitsschutz Deutschen Gesetzlichen Unfallversicherung (IFA) , Germany http://www.dguv.de/inhalt/index.jsp

L'Institut National de Recherche et de Securité, (INRS), France http://www.inrs.fr/accueil

#### **Engineering measures**

: Adequate ventilation to control airborne concentrations below the exposure guidelines/limits.

Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated.

Eye washes and showers for emergency use.

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances.

Appropriate measures include:

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#### General Information:

Always observe good personal hygiene measures, such as washing hands after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

Define procedures for safe handling and maintenance of controls

Educate and train workers in the hazards and control measures relevant to normal activities associated with this product.

Ensure appropriate selection, testing and maintenance of equipment used to control exposure, e.g. personal protective equipment, local exhaust ventilation.

Drain down system prior to equipment break-in or maintenance.

Retain drain downs in sealed storage pending disposal or subsequent recycle.

Do not ingest. If swallowed, then seek immediate medical assistance.

#### Personal protective equipment

Respiratory protection

If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are unsuitable (e.g. airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus.

Where air-filtering respirators are suitable, select an appropriate combination of mask and filter.

If air-filtering respirators are suitable for conditions of use: Select a filter suitable for the combination of organic gases and vapours and particles [Type A/Type P boiling point >65°C (149°F)].

Hand protection Remarks

: Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from the following materials may provide suitable chemical protection. Longer term protection: Nitrile rubber gloves. Incidental contact/Splash protection: PVC or neoprene rubber gloves. For continuous contact we recommend gloves with breakthrough time of more than 240 minutes with preference for > 480 minutes where suitable gloves can be identified. For short-term/splash protection we recommend the same but recognize that suitable gloves offering this level of protection may not be available and in this case a lower breakthrough time maybe acceptable so long as appropriate maintenance and replacement regimes are followed. Glove thickness is not a good predictor of glove re-

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sistance to a chemical as it is dependent on the exact composition of the glove material. Glove thickness should be typically greater than 0.35 mm depending on the glove make and model. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended.

Eye protection : Wear goggles for use against liquids and gas.

Wear full face shield if splashes are likely to occur.

Skin and body protection : Skin protection is not required under normal conditions of

use.

For prolonged or repeated exposures use impervious clothing

over parts of the body subject to exposure.

If repeated and/or prolonged skin exposure to the substance is likely, then wear suitable gloves tested to relevant Stand-

ard, and provide employee skin care programmes.

Thermal hazards : Not applicable

Protective measures : Personal protective equipment (PPE) should meet recom-

mended national standards. Check with PPE suppliers.

Hygiene measures : Wash hands before eating, drinking, smoking and using the

toilet.

Launder contaminated clothing before re-use.

#### **Environmental exposure controls**

General advice : Local guidelines on emission limits for volatile substances

must be observed for the discharge of exhaust air containing

vapour.

Minimise release to the environment. An environmental assessment must be made to ensure compliance with local envi-

ronmental legislation.

Information on accidental release measures are to be found in

section 6.

#### **SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

Appearance : Liquid.

Colour : Water white

Odour : mild

Odour Threshold : Data not available

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pH : Not applicable

Melting / freezing point : 15,6 °C / 60,1 °F

pour point 11,1 °C / 52,0 °F

Boiling point/boiling range : 245,0 °C / 473,0 °F

Flash point : 121,1 °C / 250,0 °F

Evaporation rate : Data not available

Flammability

Flammability (solid, gas) : Not classified as a flammability hazard

Lower explosion limit and upper explosion limit / flammability limit

Upper explosion limit : Data not available

Lower explosion limit : Data not available

Vapour pressure : 0,4137 Pa (25 °C / 77 °F)

Relative vapour density : 4,5

Relative density : 0,831 (25,0 °C / 77,0 °F)

Method: ASTM D4052

Density : 0,831 g/cm3Method: ASTM D4052

Solubility(ies)

Water solubility : 19,1 mg/l (25 °C / 77 °F

)

Partition coefficient: n-

octanol/water

: Data not available

Auto-ignition temperature : Data not available

Decomposition temperature : Data not available

Viscosity

Viscosity, dynamic : Data not available

Viscosity, kinematic : 18,0 mm2/s (25,0 °C / 77,0 °F)

Method: ASTM D445

11,0 mm2/s (37,8 °C / 100,0 °F)

Method: ASTM D445

Oxidizing properties : Not applicable

Surface tension : Data not available

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Conductivity: > 10,000 pS/m, This material is not

expected to be a static accumulator.

Molecular weight : 172 g/mol

#### **SECTION 10. STABILITY AND REACTIVITY**

Reactivity : Stable at normal ambient temperature and pressure.

May oxidise in the presence of air.

Chemical stability : The product is chemically stable.

Stable under normal conditions.

Possibility of hazardous reac-

tions

: None known.

Conditions to avoid : Extremes of temperature and direct sunlight.

Incompatible materials : Copper.

Copper alloys.

Strong oxidising agents.

Aluminum

Hazardous decomposition

products

: None expected under normal use conditions.

#### **SECTION 11. TOXICOLOGICAL INFORMATION**

Basis for assessment : Information given is based on product testing, and/or similar

products, and/or components.

Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual com-

ponent(s).

Information on likely routes of :

exposure

Exposure may occur via inhalation, ingestion, skin absorption,

skin or eye contact, and accidental ingestion.

#### **Acute toxicity**

#### **Components:**

Undecan-1-ol:

Acute oral toxicity : LD50 (Rat): > 5000 mg/kg

Remarks: Low toxicity

Acute inhalation toxicity : Remarks: Low toxicity

Based on available data, the classification criteria are not met.

Acute dermal toxicity : LD50 (Rabbit): > 5000 mg/kg

Remarks: Low toxicity

#### Skin corrosion/irritation

#### Components:

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#### Undecan-1-ol:

Remarks: Causes mild skin irritation.

#### Serious eye damage/eye irritation

## **Components:**

Undecan-1-ol:

Remarks: Causes serious eye irritation.

#### Respiratory or skin sensitisation

#### **Components:**

Undecan-1-ol:

Remarks: Not a sensitiser.

Based on available data, the classification criteria are not met.

#### Germ cell mutagenicity

#### **Components:**

Undecan-1-ol:

Genotoxicity in vivo : Remarks: No evidence of mutagenic activity.

#### Carcinogenicity

#### **Components:**

Undecan-1-ol:

Remarks: Not a carcinogen.

Based on available data, the classification criteria are not met.

Material	GHS/CLP Carcinogenicity Classification
Undecan-1-ol	No carcinogenicity classification.

#### Reproductive toxicity

#### STOT - single exposure

## **Components:**

Undecan-1-ol:

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

## STOT - repeated exposure

## **Components:**

Undecan-1-ol:

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

#### **Aspiration toxicity**

## **Components:**

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#### Undecan-1-ol:

Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis which can be fatal.

#### **Further information**

## **Components:**

Undecan-1-ol:

Remarks: Classifications by other authorities under varying regulatory frameworks may exist.

#### **SECTION 12. ECOLOGICAL INFORMATION**

Basis for assessment Information given is based on product testing, and/or similar

products, and/or components.

Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual com-

ponent(s).

## **Ecotoxicity**

#### Components:

Undecan-1-ol:

Toxicity to fish (Acute toxici-: Remarks: LC/EC/IC50 >1 - <=10 mg/l

Toxic

Toxicity to crustacean (Acute

: Remarks: Very toxic. toxicity) LC/EC/IC50 < 1 mg/l

Toxicity to algae/aquatic

plants (Acute toxicity)

: Remarks: LC/EC/IC50 >1 - <=10 mg/l

Toxic

M-Factor (Acute aquatic tox-

icity)

ty)

: 1

Toxicity to fish (Chronic tox-

icity)

: Remarks: Data not available

Toxicity to crusta-

cean(Chronic toxicity) Toxicity to bacteria

: Remarks: NOEC/NOEL > 0.01 - <=0.1 mg/l

: Remarks: LC/EC/IC50 > 100 mg/l

Practically non toxic:

Based on available data, the classification criteria are not met.

#### Persistence and degradability

## Components:

Undecan-1-ol:

Biodegradability : Remarks: Readily biodegradable.

Oxidises rapidly by photo-chemical reactions in air.

## Bioaccumulative potential

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Partition coefficient: n-

octanol/water

: Remarks: Data not available

**Components:** 

Undecan-1-ol:

Bioaccumulation : Remarks: Bioaccumulation is unlikely to occur due to metabo-

lism and excretion.

Mobility in soil

**Components:** 

Undecan-1-ol:

Mobility : Remarks: Floats on water.

If product enters soil, it will be highly mobile and may contam-

inate groundwater.

Other adverse effects

no data available

#### **SECTION 13. DISPOSAL CONSIDERATIONS**

## **Disposal methods**

Waste from residues : Recover or recycle if possible.

It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal meth-

ods in compliance with applicable regulations.

Do not dispose into the environment, in drains or in water

courses.

Waste product should not be allowed to contaminate soil or

water.

Disposal should be in accordance with applicable regional,

national, and local laws and regulations.

Local regulations may be more stringent than regional or na-

tional requirements and must be complied with.

Contaminated packaging : Drain container thoroughly.

After draining, vent in a safe place away from sparks and fire.

Residues may cause an explosion hazard.
Do not puncture, cut, or weld uncleaned drums.
Send to drum recoverer or metal reclaimer.

#### **SECTION 14. TRANSPORT INFORMATION**

#### **International Regulations**

ADR

UN number : 3082

Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,

N.O.S.

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(Undecan-1-ol)

Class : 9
Packing group : III
Labels : 9
Hazard Identification Number : 90
Environmentally hazardous : yes

**IATA-DGR** 

UN/ID No. : UN 3082

Proper shipping name : Environmentally hazardous substances, liquid, n.o.s.

(Undecan-1-ol)

Class : 9
Packing group : III
Labels : 9

**IMDG-Code** 

UN number : UN 3082

Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,

N.O.S.

(Undecan-1-ol)

Class : 9
Packing group : III
Labels : 9
Marine pollutant : yes

## Maritime transport in bulk according to IMO instruments

Pollution category : X Ship type : 2

Product name : Undecyl alcohol

Special precautions for user

Remarks : Special Precautions: Refer to Section 7, Handling & Storage,

for special precautions which a user needs to be aware of or

needs to comply with in connection with transport.

**Additional Information**: This product may be transported under nitrogen blanketing.

Nitrogen is an odourless and invisible gas. Exposure to nitrogen enriched atmospheres displaces available oxygen which may cause asphyxiation or death. Personnel must observe strict safety precautions when involved with a confined space entry. Transport in bulk according to Annex II of Marpol and

the IBC Code

## **SECTION 15. REGULATORY INFORMATION**

# Safety, health and environmental regulations/legislation specific for the substance or mix-

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

#### The components of this product are reported in the following inventories:

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AIIC	: Listed	
DSL	: Listed	
IECSC	: Listed	
ENCS	: Listed	
KECI	: Listed	
NZIoC	: Listed	
PICCS	: Listed	
TSCA	: Listed	
TCSI	: Listed	

#### **SECTION 16. OTHER INFORMATION**

#### **Full text of H-Statements**

H305 May be harmful if swallowed and enters airways.

H316 Causes mild skin irritation. H319 Causes serious eye irritation. H400 Very toxic to aquatic life.

H411 Toxic to aquatic life with long lasting effects.

#### Full text of other abbreviations

Aquatic Acute Short-term (acute) aquatic hazard Aquatic Chronic Long-term (chronic) aquatic hazard

Asp. Tox. Aspiration hazard Eye Irrit. Eye irritation Skin Irrit. Skin irritation

Abbreviations and Acronyms : The standard abbreviations and acronyms used in this docu-

ment can be looked up in reference literature (e.g. scientific

dictionaries) and/or websites.

## **Further information**

Training advice : Provide adequate information, instruction and training for op-

erators.

Other information : A vertical bar (|) in the left margin indicates an amendment

from the previous version.

Sources of key data used to compile the Safety Data

Sheet

 The quoted data are from, but not limited to, one or more sources of information (e.g. toxicological data from Shell Health Services, material suppliers' data, CONCAWE, EU

IUCLID date base, EC 1272 regulation, etc).

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

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