

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

1.1. Product identifier

Trade name or designation of the mixture LP™ 200W Flow Improver

Registration number -

Synonyms None.

Issue date 11-May-2017

Version number 06

Revision date 13-July-2021

Supersedes date 20-December-2019

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

Identified uses Flow Improver.

Uses advised against Other uses are not recommended unless an assessment is completed, prior to commencement of that use, which demonstrates that the use will be controlled.

1.3. Details of the supplier of the safety data sheet

Only Representative of a non-Community Manufacturer Penman Consulting Limited

Manufacturer

Address

Aspect House,
Wayland Avenue
Grove Business Park
Wantage, Oxon
OX12 9FF
United Kingdom

Telephone +44(0) 1367 718 474

E-mail pcltd02@penmanconsulting.com

Manufacturer LiquidPower Specialty Products Inc.

Address

One BriarLake Plaza
2000 W Sam Houston Pkwy S
Suite 400
Houston, TX 77042

Telephone 1.713.339.8703 or 1.800.897.2774

E-mail SDS@LiquidPower.com

Website www.LiquidPower.com

1.4. Emergency telephone number +1 703.527.3887 (USA)

+1 800.424.9300 (USA)

CHEMTREC UK +44 870 820 0418

+44 203 807 3798

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

The mixture has been assessed and/or tested for its physical, health and environmental hazards and the following classification applies.

Classification according to Regulation (EC) No 1272/2008 as amended

Health hazards

Specific target organ toxicity - repeated exposure Category 2 (kidneys)

H373 - May cause damage to organs (kidneys) through prolonged or repeated exposure.

2.2. Label elements

Hazard pictograms



Signal word

Warning

Hazard statements

H373

May cause damage to organs (kidneys) through prolonged or repeated exposure.

Precautionary statements

Prevention

P260

Do not breathe vapour/spray.

Response

P314

Get medical advice/attention if you feel unwell.

Storage

Not assigned.

Disposal

P501

Dispose of contents/container in accordance with local/regional/national/international regulations.

Supplemental information on the label

None.

2.3. Other hazards

This mixture does not contain substances assessed to be vPvB / PBT according to Regulation (EC) No 1907/2006, Annex XIII.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

General information

| Chemical name | % | CAS-No. / EC No. | REACH Registration No. | Index No. | Notes |
|-----------------|---------|-----------------------|------------------------|--------------|-------|
| Ethylene glycol | 10 - 15 | 107-21-1 203-473-3 | 01-2119456816-28-0093 | 603-027-00-1 | # |

Classification: Acute Tox. 4;H302, STOT RE 2;H373

Composition comments

All concentrations are in percent by weight. Components not listed are either non-hazardous or are below reportable limits. The full text for all H-statements is displayed in section 16.

SECTION 4: First aid measures

General information

Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

4.1. Description of first aid measures

Inhalation

Move to fresh air. Call a physician if symptoms develop or persist.

Skin contact

Wash off with soap and water. Get medical attention if irritation develops and persists.

Eye contact

Rinse with water. Get medical attention if irritation develops and persists.

Ingestion

Rinse mouth. Get medical attention if symptoms occur.

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

Direct contact with eyes may cause temporary irritation. Prolonged exposure may cause chronic effects.

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

Treat symptomatically. Symptoms may be delayed.

SECTION 5: Firefighting measures

General fire hazards

No unusual fire or explosion hazards noted.

5.1. Extinguishing media

Suitable extinguishing media

Water spray. Alcohol resistant foam. Powder. Carbon dioxide (CO₂).

Unsuitable extinguishing media

Do not use water jet as an extinguisher, as this will spread the fire.

5.2. Special hazards arising from the substance or mixture

Closed containers can burst violently when heated, due to excess pressure build-up.

5.3. Advice for firefighters

Special protective equipment for firefighters

Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Special fire fighting procedures

Move containers from fire area if you can do it without risk.

Specific methods

Use standard firefighting procedures and consider the hazards of other involved materials.

SECTION 6: Accidental release measures**6.1. Personal precautions, protective equipment and emergency procedures****For non-emergency personnel**

Wear appropriate personal protective equipment.

For emergency responders

Keep unnecessary personnel away.

6.2. Environmental precautions

Prevent further leakage or spillage if safe to do so.

6.3. Methods and material for containment and cleaning up

Use water spray to reduce vapours or divert vapour cloud drift.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use.

6.4. Reference to other sections

For personal protection, see section 8 of the SDS. For waste disposal, see section 13 of the SDS.

SECTION 7: Handling and storage**7.1. Precautions for safe handling**

Avoid contact with skin and eyes. Avoid prolonged exposure. Wear appropriate personal protective equipment. Wash thoroughly after handling. Change contaminated clothing. Handle in accordance with good industrial hygiene and safety practices.

7.2. Conditions for safe storage, including any incompatibilities

Keep containers tightly closed in a dry, cool and well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS). Store away from incompatible materials. Protect against physical damage.

7.3. Specific end use(s)

Flow Improver.

SECTION 8: Exposure controls/personal protection**8.1. Control parameters****Occupational exposure limits****UK. EH40 Workplace Exposure Limits (WELs)**

| Components | Type | Value | Form |
|--------------------------------|------|-----------|--------------|
| Ethylene glycol (CAS 107-21-1) | STEL | 104 mg/m3 | Vapour. |
| | | 40 ppm | Vapour. |
| | TWA | 52 mg/m3 | Vapour. |
| | | 10 mg/m3 | Particulate. |
| | | 20 ppm | Vapour. |

Biological limit values

No biological exposure limits noted for the ingredient(s).

Recommended monitoring procedures

Follow standard monitoring procedures.

Derived no effect levels (DNELs)**General Population**

| Components | Value | Assessment factor | Notes |
|--------------------------------|----------------------------------|-------------------|-------|
| Ethylene glycol (CAS 107-21-1) | Long-term, Systemic, Dermal | 53 mg/kg bw/day | 84 |
| | Short-term, Systemic, Inhalation | 7 mg/m3 | 10 |
| | | | |

Workers

| Components | Value | Assessment factor | Notes |
|--------------------------------|----------------------------------|-------------------|-------|
| Ethylene glycol (CAS 107-21-1) | Long-term, Systemic, Dermal | 106 mg/kg bw/day | 42 |
| | Short-term, Systemic, Inhalation | 35 mg/m3 | 2 |
| | | | |

Predicted no effect concentrations (PNECs)

| Components | Value | Assessment factor | Notes |
|--------------------------------|------------|-------------------|-------|
| Ethylene glycol (CAS 107-21-1) | Freshwater | 10 mg/l | 10 |
| | | | |

| | | |
|-------------------------|------------|-----|
| Marine water | 1 mg/l | 100 |
| Sediment (freshwater) | 37 mg/kg | |
| Sediment (marine water) | 3.7 mg/kg | |
| Soil | 1.53 mg/kg | |
| STP | 199.5 mg/l | 10 |

Exposure guidelines

UK EH40 WEL: Skin designation

Ethylene glycol (CAS 107-21-1)

Can be absorbed through the skin.

8.2. Exposure controls

Appropriate engineering controls

Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

General information

Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.

Eye/face protection

Wear safety glasses with side shields (or goggles). Eye protection should meet standard EN 166.

Skin protection

- Hand protection

Wear appropriate chemical resistant gloves. Nitrile or neoprene gloves are recommended.

- Other

Normal work clothing (long sleeved shirts and long pants) is recommended.

Respiratory protection

In case of inadequate ventilation or risk of inhalation of vapours, use suitable respiratory equipment with gas filter (type A2).

Thermal hazards

Not applicable.

Hygiene measures

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

Environmental exposure controls

Inform appropriate managerial or supervisory personnel of all environmental releases.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance

Physical state

Liquid.

Form

Liquid.

Colour

White.

Odour

Mild.

Odour threshold

Not available.

pH

8 - 11

Melting point/freezing point

-10 °C (14 °F)

Initial boiling point and boiling range

105 °C (221 °F)

Flash point

Not available.

Evaporation rate

Not available.

Flammability (solid, gas)

Not applicable. Not flammable.

Upper/lower flammability or explosive limits

Explosive limit - lower (%)

Not applicable.

Explosive limit – upper (%)

Not applicable.

Vapour pressure

23.9 mmHg (25°C)

Vapour density

< 1 (Air = 1)

Relative density

0.87 - 0.99 (15.6°C)

Solubility(ies)

Solubility (water)

Disperses completely.

Partition coefficient (n-octanol/water)

Not available.

Auto-ignition temperature

Not available.

Decomposition temperature

Not available.

Viscosity

160 cP 511s-1 (Non-Newtonian) (25°C)

| | |
|-------------------------------|-----------------|
| Explosive properties | Not explosive. |
| Oxidising properties | Not oxidising. |
| 9.2. Other information | |
| Particle size | Not applicable. |

SECTION 10: Stability and reactivity

| | |
|---|---|
| 10.1. Reactivity | The product is stable and non-reactive under normal conditions of use, storage and transport. |
| 10.2. Chemical stability | Material is stable under normal conditions. |
| 10.3. Possibility of hazardous reactions | No dangerous reaction known under conditions of normal use. |
| 10.4. Conditions to avoid | Excessive heat. Contact with incompatible materials. |
| 10.5. Incompatible materials | Strong oxidising agents. |
| 10.6. Hazardous decomposition products | No hazardous decomposition products are known. |

SECTION 11: Toxicological information

General information Occupational exposure to the substance or mixture may cause adverse effects.

Information on likely routes of exposure

| | |
|---------------------|--|
| Inhalation | Prolonged inhalation may be harmful. |
| Skin contact | Prolonged skin contact may cause temporary irritation. |
| Eye contact | Direct contact with eyes may cause temporary irritation. |
| Ingestion | Under normal conditions of intended use, this material does not pose a risk to health. However: Ingestion of ethylene glycol may result in nausea, vomiting, abdominal cramps, blindness, liver damage, irritation, reproductive effects, nerve damage, convulsions, edema of the lung, cardiopulmonary effects (metabolic acidosis), pneumonia and kidney failure which could result in death. The single lethal dose of ethylene glycol for humans is about 100 ml. Inhalation of high levels of vapors or mists for prolonged periods of time may also result in toxic effects. |

Symptoms Direct contact with eyes may cause temporary irritation. Prolonged exposure may cause chronic effects.

11.1. Information on toxicological effects

Acute toxicity May be harmful if swallowed.

| Components | Species | Test Results |
|--|---|---------------------|
| Ethylene glycol (CAS 107-21-1) | | |
| Acute | | |
| Dermal | | |
| LD50 | Mouse | > 3500 mg/kg |
| Inhalation | | |
| <i>Aerosol</i> | | |
| LC50 | Rat | > 2.5 mg/l, 6 Hours |
| Oral | | |
| LD50 | Rat | 7712 mg/kg |
| Skin corrosion/irritation | Prolonged skin contact may cause temporary irritation. | |
| Serious eye damage/eye irritation | Direct contact with eyes may cause temporary irritation. | |
| Respiratory sensitisation | No information available on the mixture. However, none of the components are classified in respect of this hazard (or are present at a level below the concentration threshold for classification). | |
| Skin sensitisation | No information available on the mixture. However, none of the components are classified in respect of this hazard (or are present at a level below the concentration threshold for classification). | |
| Germ cell mutagenicity | No information available on the mixture. However, none of the components are classified in respect of this hazard (or are present at a level below the concentration threshold for classification). | |
| Carcinogenicity | No information available on the mixture. However, none of the components are classified in respect of this hazard (or are present at a level below the concentration threshold for classification). | |
| Reproductive toxicity | No information available on the mixture. However, none of the components are classified in respect of this hazard (or are present at a level below the concentration threshold for classification). | |

| | |
|---|---|
| Specific target organ toxicity - single exposure | No information available on the mixture. However, none of the components are classified in respect of this hazard (or are present at a level below the concentration threshold for classification). |
| Specific target organ toxicity - repeated exposure | May cause damage to organs (kidneys) through prolonged or repeated exposure. |
| Aspiration hazard | Not an aspiration hazard. |
| Mixture versus substance information | No information available. |
| Other information | None known. |

SECTION 12: Ecological information

12.1. Toxicity The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

| Components | Species | Test Results |
|--------------------------------|---------|---|
| Ethylene glycol (CAS 107-21-1) | | |
| Aquatic | | |
| <i>Acute</i> | | |
| Crustacea | EC50 | Ceriodaphnia dubia 10000 mg/l, 48 Hours |
| Fish | LC50 | Oncorhynchus mykiss 24591 mg/l, 96 Hours |
| <i>Chronic</i> | | |
| Crustacea | NOEC | Ceriodaphnia dubia 3469 mg/l, 7 days |
| Fish | NOEC | Oncorhynchus mykiss 14692 mg/l, 12 days |

12.2. Persistence and degradability No data is available on the degradability of this product.

12.3. Bioaccumulative potential

Partition coefficient

n-octanol/water (log Kow)

Ethylene glycol (CAS 107-21-1) -1.36

Bioconcentration factor (BCF) Not available.

12.4. Mobility in soil This product is water soluble and may disperse in soil.

12.5. Results of PBT and vPvB assessment This mixture does not contain substances assessed to be vPvB / PBT according to Regulation (EC) No 1907/2006, Annex XIII.

12.6. Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Residual waste Dispose in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

EU waste code 16 03 05*
This code has been assigned based upon the most common uses for this material and may not reflect contaminants resulting from actual use. Waste generators/producers are responsible for assessing the actual process used when generating the waste and its contaminants in order to assign the proper waste disposal code.

Disposal methods/information This material, if discarded as produced, should be assigned the following hazardous waste properties: HP 5.

Waste material from this product should not be exposed to waste streams or sumps containing any concentration of hydrocarbon. This will cause formation of gelled substances that may plug pipes. Collect and reclaim or dispose in sealed containers at licensed waste disposal site.

Special precautions Dispose in accordance with all applicable regulations.

SECTION 14: Transport information

ADR

14.1. - 14.6.: Not regulated as dangerous goods.

RID

14.1. - 14.6.: Not regulated as dangerous goods.

ADN

14.1. - 14.6.: Not regulated as dangerous goods.

IATA

14.1. - 14.6.: Not regulated as dangerous goods.

IMDG

14.1. - 14.6.: Not regulated as dangerous goods.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not established.

SECTION 15: Regulatory information**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture****Retained direct EU regulations**

Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I and II, as amended
Not listed.

Regulation (EU) 2019/1021 On persistent organic pollutants (recast), as amended
Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 1 as amended
Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 2 as amended
Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 3 as amended
Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex V as amended
Not listed.

Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry, as amended
Not listed.

Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA
Not listed.

Authorisations

Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorisation, as amended
Not listed.

Restrictions on use

Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended
Not listed.

Other EU regulations

Directive 2012/18/EU on major accident hazards involving dangerous substances, as amended
Not listed.

Other regulations

This product is classified and labelled in accordance with the retained CLP Regulation (EU) No 1272/2008, as amended for Great Britain. This Safety Data Sheet is compiled in accordance with REACH Regulation (EC) No 1907/2006, as amended by UK REACH Regulations SI 2019/758.

National Registration Information - UK OSPAR (Cefas) - 25875

15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out for the mixture. The chemical safety assessment has been carried out for the components of the mixture listed in section 3 of the SDS. Exposure scenarios relevant for these substances are annexed to this eSDS.

SECTION 16: Other information**List of abbreviations**

EC50: Effective Concentration, 50%.
LC50: Lethal Concentration, 50%.
LD50: Lethal Dose, 50%.
NOEC: No observed effect concentration.
PBT: Persistent, bioaccumulative, toxic.
STEL: Short term exposure limit.
TWA: Time weighted average.
vPvB: very Persistent, very Bioaccumulative.

References

HSDB® - Hazardous Substances Data Bank
IARC Monographs. Overall Evaluation of Carcinogenicity
EPA: AQUIRE database

Information on evaluation method leading to the classification of mixture

The classification for health and environmental hazards is derived by a combination of calculation methods and test data, if available.

Full text of any H-statements not written out in full under Sections 2 to 15

H302 Harmful if swallowed.
H373 May cause damage to organs through prolonged or repeated exposure by ingestion.

Revision information

None.

Training information

Follow training instructions when handling this material.

Issued by

LiquidPower Specialty Products Inc.
One BriarLake Plaza
2000 West Sam Houston Parkway S
Suite 400
Houston, TX 77042
United States
1.713.339.8703
SDS@LiquidPower.com

Disclaimer

LiquidPower Specialty Products Inc. cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.

Annex to the extended Safety Data Sheet (eSDS)

Table of contents

| | |
|---|----|
| 1. ES Mining, (without offshore industries) (SU2a) Offshore industries (SU2b) Use in onshore and offshore pipeline operations | 10 |
|---|----|

1. ES 1: Mining, (without offshore industries) (SU2a) Offshore industries (SU2b) Use in onshore and offshore pipeline operations

1.1. Title section

ES Name: Use in onshore and offshore pipeline operations

Sector(s) of use: Mining, (without offshore industries) (SU2a) Offshore industries (SU2b)

Environment

1: Use of non-reactive processing aid at industrial site (no inclusion into or onto article) ERC4

Worker

2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC2

3: Transfer of substance or mixture (charging/discharging) at dedicated facilities PROC8b

4: Laboratory activities PROC15

1.2. Conditions of use affecting exposure

1.2.2. Control of worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

Product (article) characteristics

Liquid

1230 Pa

Covers concentrations up to 100 %

Amount used (or contained in articles), frequency and duration of use/exposure

Duration: > 4 h/day Frequency: <= 160 days per year

Technical and organisational conditions and measures

No specific measures identified.

Conditions and measures related to personal protection, hygiene and health evaluation

No specific measures identified.

Other conditions affecting workers exposure

Outdoor use

Industrial use

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes a good basic standard of occupational hygiene is implemented

1.2.3. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

Product (article) characteristics

Liquid

1230 Pa

Covers concentrations up to 100 %

Amount used (or contained in articles), frequency and duration of use/exposure

Duration: Avoid using product more than 1 h/day Frequency: <= 160 days per year

Technical and organisational conditions and measures

No specific measures identified.

Conditions and measures related to personal protection, hygiene and health evaluation

No specific measures identified.

Other conditions affecting workers exposure

Outdoor use

Industrial use

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes a good basic standard of occupational hygiene is implemented

1.2.4. Control of worker exposure: Laboratory activities (PROC15)

Product (article) characteristics

Liquid

1230 Pa

Covers concentrations up to 100 %

Amount used (or contained in articles), frequency and duration of use/exposure

Duration: Avoid using product more than 1 h/day Frequency: <= 160 days per year

Technical and organisational conditions and measures

No specific measures identified.

Conditions and measures related to personal protection, hygiene and health evaluation

No specific measures identified.

Other conditions affecting workers exposure

Indoor use

Industrial use

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes a good basic standard of occupational hygiene is implemented

1.3. Exposure estimation and reference to its source

1.3.1. Environmental release and exposure: Use of non-reactive processing aid at industrial site (no inclusion into or onto article) (ERC4)

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

1.3.2. Worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

| Route of exposure and type of effects | Exposure estimate | Method | RCR |
|---------------------------------------|-----------------------|------------------------|------|
| inhalative, systemic, long-term | 1,8 mg/m ³ | ECETOC TRA worker v2.0 | 0,05 |
| dermal, systemic, long-term | 1,4 mg/kg bw/day | ECETOC TRA worker v2.0 | 0,01 |
| combined routes, systemic, long-term | | | 0,06 |

1.3.3. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

| Route of exposure and type of effects | Exposure estimate | Method | RCR |
|---------------------------------------|-----------------------|------------------------|------|
| inhalative, systemic, long-term | 1,8 mg/m ³ | ECETOC TRA worker v2.0 | 0,05 |
| dermal, systemic, long-term | 1,37E1 mg/kg bw/day | ECETOC TRA worker v2.0 | 0,13 |
| combined routes, systemic, long-term | | | 0,18 |

1.3.4. Worker exposure: Laboratory activities (PROC15)

| Route of exposure and type of effects | Exposure estimate | Method | RCR |
|---------------------------------------|-----------------------|------------------------|-------|
| inhalative, systemic, long-term | 2,6 mg/m ³ | ECETOC TRA worker v2.0 | 0,07 |
| dermal, systemic, long-term | 3,4E-1 mg/kg bw/day | ECETOC TRA worker v2.0 | <0,01 |
| combined routes, systemic, long-term | | | 0,08 |

1.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

In the chemical safety assessment performed according to Article 14(3) in connection with Annex I section 3 (Environmental Hazard Assessment) and section 4 (PBT/ vPvB Assessment) no hazard was identified. Therefore according to REACH Annex I (5.0) an exposure estimation and risk characterization is not necessary. Consequently all identified uses of the substance are assessed as safe for the environment.