1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Identification of the substance/preparation
RP™ II Flow Improver

Use of the substance/preparation
Flow Improver.

Version No.
01

CAS No.
Mixture

Manufacturer
LiquidPower Specialty Products Inc.

Address
One BriarLake Plaza
2000 W Sam Houston Pkwy S
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1.713.339.8703 or 1.800.897.2774

Website
www.LiquidPower.com

Emergency telephone
+1 703.527.3887 (USA)
+1 800.424.9300 (USA)

2. HAZARDS IDENTIFICATION

This preparation is classified as dangerous according to Directive 1999/45/EC and its amendments.

Classification
Xi;R36, R52/53

Physical hazards
Not classified as a physical hazard.

Health hazards
Irritating to eyes.

Environmental hazards
Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS No.</th>
<th>Percent</th>
<th>EC-No.</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohols, C7-9-iso-, C8-rich</td>
<td>68526-83-0</td>
<td>35 - 45</td>
<td>271-231-4</td>
<td>Xi;R36/38, R52/53</td>
</tr>
<tr>
<td>Propane -1,2 -diol</td>
<td>57-55-6</td>
<td>15 - 20</td>
<td>200-338-0</td>
<td></td>
</tr>
<tr>
<td>Octan-1-ol</td>
<td>111-87-5</td>
<td>2 - 10</td>
<td>203-917-6</td>
<td>Xi;R36, R52/53</td>
</tr>
</tbody>
</table>

Composition comments
All concentrations are in percent by weight. Components not listed are either non-hazardous or are below reportable limits.

4. FIRST-AID MEASURES

Inhalation
If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. 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
Flush eyes with water as a precaution. Get medical attention if irritation develops and persists.

Ingestion
Rinse mouth. If ingestion of a large amount does occur, call a poison control centre immediately.

General advice
If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

Extinguishing media which must not be used for safety reasons
Do not use water jet as an extinguisher, as this will spread the fire.

Unusual fire & explosion hazards
None known.

Specific hazards
During fire, gases hazardous to health may be formed.

Special protective equipment for fire-fighters
Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions
Move containers from fire area if you can do so without risk.

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

Hazardous combustion products
Carbon monoxide and carbon dioxide. During fire, gases hazardous to health may be formed.

6. ACCIDENTAL RELEASE MEASURES

Containment procedures
Refer to attached safety data sheets and/or instructions for use. Use water spray to reduce vapours or divert vapour cloud drift. Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Prevent entry into waterways, sewer, basements or confined areas.

Personal precautions
Keep unnecessary personnel away. Keep upwind. Keep out of low areas. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. For personal protection, see section 8 of the SDS.

Environmental precautions
Avoid release to the environment. Refer to special instructions/safety data sheets. Contact local authorities in case of spillage to drain/aquatic environment. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground.

Methods for cleaning up
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. For waste disposal, see section 13 of the SDS.

7. HANDLING AND STORAGE

Handling
Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. Avoid release to the environment.

Storage
Use appropriate container to avoid environmental contamination. Store in original tightly closed container. Store away from incompatible materials (see section 10 of the SDS).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure limits
Kenya. OEL-RL. Recommended Limit for Hazardous Chemical Substances (The Factories and Other Places of Work Rules in 2007 of the Factories and Other Places of Work Act (CAP. 514))

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propane -1,2 -diol (CAS 57-55-6)</td>
<td>TWA</td>
<td>470 mg/m3</td>
<td>Total vapour and particulates.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 mg/m3</td>
<td>Particulate.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>150 ppm</td>
<td>Total vapour and particulates.</td>
</tr>
</tbody>
</table>

South Africa. Recommended Exposure Limits (RELs) Regulations for Hazardous Chemical Substances, Table 2

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
<td></td>
<td></td>
<td>150 ppm</td>
<td>Total vapour and particulates.</td>
</tr>
</tbody>
</table>

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

Recommended limit values

Recommended monitoring procedures
Not available.

Engineering measures
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.

Personal protective equipment

Respiratory protection
When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

Hand protection
Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier.

Eye protection
If contact is likely, safety glasses with side shields are recommended. Wear face shield if there is risk of splashes.
Normal work clothing (long sleeved shirts and long pants) is recommended.

Use personal protective equipment as required.

Environmental manager must be informed of all major releases.

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.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance
- Physical state: Liquid.
- Form: Liquid.
- Colour: White.

Odour: Sweet, pungent.

pH: Not applicable.

Melting point/freezing point: < -40 °C (< -40 °F)

Boiling point, initial boiling point, and boiling range: 185 °C (365 °F)

Flash point: 83.0 °C (181.4 °F)

Auto-ignition temperature: Not available.

Combustion characteristics (solid, gas)
- Flammability limit - lower (%): Not available.
- Flammability limit - upper (%): Not available.
- Vapour pressure: 1 mmHg (37.8°C)
- Vapour density: < 1 (Air = 1)
- Evaporation rate: Less than water.

Solubility (water): Negligible in water.

Partition coefficient (n-octanol/water): Not available.

Decomposition temperature: Not available.

Viscosity: 175 cP 511s-1 (Non-Newtonian) (25 °C)

Other data
- Relative density: 0.87 - 0.89 (15.6°C)

10. STABILITY AND REACTIVITY

Reactivity: The product is stable and non-reactive under normal conditions of use, storage and transport.

Conditions to avoid: Avoid temperatures exceeding the flash point. Contact with incompatible materials.

Hazardous decomposition products: Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapours.

Stability: Material is stable under normal conditions.

Materials to avoid: Strong oxidising agents.

Hazardous polymerisation: No dangerous reaction known under conditions of normal use.

11. TOXICOLOGICAL INFORMATION

Toxicological data

<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Octan-1-0l (CAS 111-87-5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dermal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Guinea pig</td>
<td>&gt; 500 mg/kg</td>
</tr>
<tr>
<td></td>
<td>Rabbit</td>
<td>&gt; 5 g/kg</td>
</tr>
</tbody>
</table>

Acute toxicity: Not expected to be acutely toxic.

Routes of exposure: Inhalation. Skin contact. Eye contact.
Toxicological information
Occupational exposure to the substance or mixture may cause adverse effects.

Chronic toxicity
None known.

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).

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).

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).

Reproductivity
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).

Epidemiology
No epidemiological data is available for this product.

Human experience
No data available.

Further information
None known.

12. ECOLOGICAL INFORMATION

Ecotoxicological data

<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohols, C7-9-iso-, C8-rich (CAS 68526-83-0)</td>
<td>Aquatic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Acute</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Algae</td>
<td>ErC50</td>
</tr>
<tr>
<td></td>
<td>Crustacea</td>
<td>LC50</td>
</tr>
<tr>
<td></td>
<td>Fish</td>
<td>LC50</td>
</tr>
<tr>
<td></td>
<td>Chronic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Crustacea</td>
<td>EC10</td>
</tr>
<tr>
<td></td>
<td>Fish</td>
<td>EC10</td>
</tr>
<tr>
<td>Octan-1-ol (CAS 111-87-5)</td>
<td>Aquatic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fish</td>
<td>LC50</td>
</tr>
</tbody>
</table>

Ecotoxicity
Harmful to aquatic life with long lasting effects.

Environmental effects
Harmful to aquatic organisms.

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

Bioaccumulation
The product is not expected to bioaccumulate.

Bioaccumulative potential
Octanol/water partition coefficient log Kow

| Octan-1-ol (CAS 111-87-5) | 3 |

Mobility
Expected to have low mobility in soil and sediments with adsorption being the predominant physical process.

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.

13. DISPOSAL CONSIDERATIONS

Disposal instructions
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.

Waste from residues / unused products
Dispose of 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.

14. TRANSPORT INFORMATION

IATA
Not regulated as dangerous goods.
IMDG
Not regulated as dangerous goods.
Transport in bulk according to Not established.
Annex II of MARPOL 73/78 and the IBC Code

15. REGULATORY INFORMATION

Labelling
Symbol(s)

Irritant

R-phrase(s)
R36 Irritating to eyes.
R52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

S-phrase(s)
S23 Do not breathe gas/fumes/vapour/spray.
S25 Avoid contact with eyes.
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S60 This material and its container must be disposed of as hazardous waste.
S61 Avoid release to the environment. Refer to special instructions/ Safety data sheets.

16. OTHER INFORMATION

Wording of the R-phrases in sections 2 and 3
R36 Irritating to eyes.
R36/38 Irritating to eyes and skin.
R52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

International Inventories

<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe</td>
<td>European Inventory of Existing Commercial Chemical</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Substances (EINECS)</td>
<td></td>
</tr>
<tr>
<td>Europe</td>
<td>European List of Notified Chemical Substances (ELINCS)</td>
<td>Yes</td>
</tr>
</tbody>
</table>

* A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

Recommended use
Use in accordance with supplier’s recommendations.

Recommended restrictions
Other uses are not recommended unless an assessment demonstrates potential exposures will be controlled.

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.

Issue date
13-February-2018

Revision date
-