1. Identification

Product identifier RP™ II Flow Improver

Recommended use of the chemical and restrictions on use

Recommended use Flow Improver.

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

Manufacturer/Importer/Supplier/Distributor information

Manufacturer LiquidPower Specialty Products Inc.

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e-mail SDS@LiquidPower.com

Website www.LiquidPower.com

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+(65)-31581349

2. Hazards identification

GHS classification

Physical hazards Not classified.

Health hazards Serious eye damage/eye irritation Category 2A

Environmental hazards Not classified.

GHS label elements, including precautionary statements

Pictograms

Signal word Warning

Hazard statements Causes serious eye irritation.

Precautionary statements

Prevention Wash thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection.

Response IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Storage Store in a well-ventilated place. Keep cool.

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

Other hazards which do not result in classification None known.

Supplemental information None known.

3. Composition/information on ingredients

Substance or mixture Mixture

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Common name and synonyms</th>
<th>CAS Number</th>
<th>Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohols, C7-9-iso-, C8-rich</td>
<td></td>
<td>68526-83-0</td>
<td>35 - 45</td>
</tr>
<tr>
<td>Octan-1-ol</td>
<td></td>
<td>111-87-5</td>
<td>2 - 10</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
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
Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Ingestion
Rinse mouth. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed
Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

Indication of immediate medical attention and special treatment needed
Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.

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

5. Fire-fighting measures

Suitable extinguishing media

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

Specific hazards arising from the chemical
During fire, gases hazardous to health may be formed.

Fire fighting equipment/instructions
Move containers from fire area if you can do so without risk.

Special protective equipment and precautions for firefighters
Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

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

General fire hazards
No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures
Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Environmental precautions
Avoid discharge into drains, water courses or onto the ground.

Methods and materials for containment and cleaning up
Avoid discharge into drains, water courses or onto the ground.

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

Precautions for safe handling
Avoid prolonged exposure. Avoid contact with eyes, skin, and clothing. Provide adequate ventilation. Wear appropriate personal protective equipment.

Conditions for safe storage, including any incompatibilities
Store in original tightly closed container. Store away from incompatible materials (see section 10 of the SDS).

8. Exposure controls/personal protection

Control parameters/Occupational exposure limits
No exposure limits noted for ingredient(s).

Appropriate engineering control 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. Provide eyewash station.

Individual protection measures, such as personal protective equipment
Eye/face protection
Wear safety glasses with side shields (or goggles). Wear face shield if there is risk of splashes.
Skin protection
Hand protection Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier.

Other Normal work clothing (long sleeved shirts and long pants) is recommended.
Respiratory protection In case of insufficient ventilation, wear suitable respiratory equipment.
Thermal hazards Not applicable.

General hygiene considerations 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.
Odour threshold Not available.

pH Not applicable.
Melting point/freezing point < -40 °C (< -40 °F)
Initial boiling point and boiling range 185 °C (365 °F)
Flash point 83.0 °C (181.4 °F)
Evaporation rate Less than water.
Flammability (solid, gas) Not applicable.
Flammability limit - lower (%) Not available.
Flammability limit - upper (%) Not available.
Vapour pressure 1 mmHg (37.8°C)
Vapour density < 1 (Air = 1)
Relative density 0.87 - 0.89 (15.6°C)

Solubility(ies)
Solubility (water) Negligible in water.

Partition coefficient (n-octanol/water) Not available.
Auto-ignition temperature Not available.
Decomposition temperature Not available.
Viscosity 175 cP 511s-1 (Non-Newtonian) (25 °C)

Other data
Explosive properties Not explosive.
Oxidising properties Not oxidising.

10. Stability and reactivity

Reactivity The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability Material is stable under normal conditions.
Possibility of hazardous reactions No dangerous reaction known under conditions of normal use.
Conditions to avoid Avoid temperatures exceeding the flash point. Contact with incompatible materials.
Incompatible materials Strong oxidising agents.
Hazardous decomposition products Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapours.

11. Toxicological information

Information on likely routes of exposure
Inhalation No adverse effects due to inhalation are expected.
Skin contact Prolonged skin contact may cause temporary irritation.
Eye contact Causes serious eye irritation.
Ingestion May cause discomfort if swallowed. However, ingestion is not likely to be a primary route of occupational exposure.
### Acute toxicity

Not expected to be acutely toxic.

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

### Symptoms

Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

### Skin corrosion/irritation

Prolonged skin contact may cause temporary irritation.

### Corrosivity

RP™ II Flow Improver

<table>
<thead>
<tr>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>OECD 404</td>
<td>Result: Very slight irritant</td>
</tr>
<tr>
<td></td>
<td>Species: Rabbit</td>
</tr>
</tbody>
</table>

### Serious eye damage/eye irritation

Causes serious eye irritation.

### Respiratory or skin sensitisation

#### 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

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).

#### Aspiration hazard

Not an aspiration hazard.

#### Chronic effects

None known.

#### Relevant negative data

No data available.

#### Other information

None known.

### 12. Ecological information

The product is 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.

<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
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<tbody>
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<td>Alcohols, C7-9-iso-, C8-rich (CAS 68526-83-0)</td>
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<tr>
<td><strong>Aquatic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Algae</td>
<td>ErC50</td>
<td>Pseudokirchnerella subcapitata</td>
</tr>
<tr>
<td>Crustacea</td>
<td>LC50</td>
<td>Daphnia magna</td>
</tr>
<tr>
<td>Fish</td>
<td>LC50</td>
<td>Pimephales promelas</td>
</tr>
<tr>
<td><strong>Chronic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crustacea</td>
<td>EC10</td>
<td>Ceriodaphnia dubia</td>
</tr>
<tr>
<td>Fish</td>
<td>EC10</td>
<td>Pimephales promelas</td>
</tr>
</tbody>
</table>
Components | Species | Test Results
--- | --- | ---
Octan-1-ol (CAS 111-87-5) | Aquatic Fathead minnow (Pimephales promelas) | LC50 12.3 - 13.4 mg/l, 96 hours

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

Bioaccumulative potential
The product is not expected to bioaccumulate.

Octanol/water partition coefficient log Kow
Octan-1-ol (CAS 111-87-5) 3

Mobility in soil
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
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.

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

15. Regulatory information
Safety, health and environmental regulations specific for the product in question
Controlled Narcotic Drugs (Misuse of Drugs Act, First Schedule, Part I, II & III)
Not regulated.
Controlled Specified Drugs (Misuse of Drugs Act, Fourth Schedule)
Not regulated.
Not regulated.
Chemical Weapons Prohibition (Act)
Not applicable.
Environmental Protection and Management (Hazardous Substances) Regulations
Not applicable.
Environmental Public Health Act
Not applicable.

International regulations
Montreal Protocol
Not applicable.
Stockholm Convention
Not applicable.
Rotterdam Convention
Not applicable.
Kyoto Protocol
Not applicable.
Basel Convention
Not applicable.
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>Australia</td>
<td>Australian Inventory of Chemical Substances (AICS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Domestic Substances List (DSL)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Non-Domestic Substances List (NDSL)</td>
<td>Yes</td>
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<tr>
<td>China</td>
<td>Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European Inventory of Existing Commercial Chemical Substances (EINECS)</td>
<td>Yes</td>
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<tr>
<td>Europe</td>
<td>European List of Notified Chemical Substances (ELINCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Japan</td>
<td>Inventory of Existing and New Chemical Substances (ENCS)</td>
<td>No</td>
</tr>
<tr>
<td>Korea</td>
<td>Existing Chemicals List (ECL)</td>
<td>Yes</td>
</tr>
<tr>
<td>New Zealand</td>
<td>New Zealand Inventory</td>
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</tr>
<tr>
<td>Philippines</td>
<td>Philippine Inventory of Chemicals and Chemical Substances (PICCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Taiwan</td>
<td>Taiwan Chemical Substance Inventory (TCSI)</td>
<td>Yes</td>
</tr>
<tr>
<td>United States &amp; Puerto Rico</td>
<td>Toxic Substances Control Act (TSCA) Inventory</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).

16. Other information

References
- HSDB® - Hazardous Substances Data Bank
- IARC Monographs. Overall Evaluation of Carcinogenicity

Issued by
Not available.

Prepared by
Not available.

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
12-May-2017

Revision date
12-February-2018

Key/legend
Not applicable.