SAFETY DATA SHEET

1. Identification

Product identifier: LP™ Arctic Grade™ Flow Improver

Other means of identification: None.

Recommended use: Flow Improver.

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

Manufacturer/Importer/Supplier/Distributor information

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
Emergency telephone: +1 703.527.3887

2. Hazard(s) identification

Physical hazards: Flammable liquids
Category 4
Health hazards: Serious eye damage/eye irritation
Category 2A
Environmental hazards: Hazardous to the aquatic environment, acute hazard
Category 3
Hazardous to the aquatic environment, long-term hazard
Category 3

OSHA defined hazards: Not classified.

Label elements

Signal word: Warning
Hazard statement: Combustible liquid. Causes serious eye irritation. Harmful to aquatic life with long lasting effects.
Precautionary statement
Prevention: Keep away from flames and hot surfaces. No smoking. Wash thoroughly after handling. Avoid release to the environment. 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. If eye irritation persists: Get medical advice/attention. In case of fire: Use alcohol-resistant foam, carbon dioxide, dry powder or water fog to extinguish.
Storage: Store in a well-ventilated place. Keep cool.
Disposal: Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC): None known.
Supplemental information: None known.

3. Composition/information on ingredients

Mixtures

LP™ Arctic Grade™ Flow Improver

937352  Version #: 04  Revision date: 31-May-2019  Issue date: 16-May-2017
Chemical name | CAS number | %
--- | --- | ---
Alcohols, C7-9-iso-, C8-rich | 68526-83-0 | 35 - 45
1,2-Propylene glycol | 57-55-6 | 15 - 20
Octan-1-ol | 111-87-5 | 2 - 10

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

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. Get medical attention if irritation develops and persists.

**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.

**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**
Water fog. Alcohol resistant foam. Dry chemical powder. Carbon dioxide (CO2).

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

**Specific hazards arising from the chemical**
The product is combustible, and heating may generate vapors which may form explosive vapor/air mixtures. During fire, gases hazardous to health may be formed.

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

**Fire fighting equipment/instructions**
In case of fire and/or explosion do not breathe fumes. 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.

**General fire hazards**
Combustible liquid.

6. Accidental release measures

**Personal precautions, protective equipment and emergency procedures**
Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). 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.

**Methods and materials for containment and cleaning up**
Use water spray to reduce vapors or divert vapor cloud drift. Eliminate all ignition sources (no smoking, flames, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material. Prevent product from entering drains.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Following product recovery, flush area with water.

Small Spills: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

**Environmental precautions**
Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

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SDS US
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7. Handling and storage

**Precautions for safe handling**
Keep away from open flames, hot surfaces and sources of ignition. When using do not smoke. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. Avoid release to the environment. Observe good industrial hygiene practices.

**Conditions for safe storage, including any incompatibilities**
Keep away from heat, sparks and open flame. Store in a cool, dry place out of direct sunlight. Store in original tightly closed container. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

**Occupational exposure limits**

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,2-Propylene glycol (CAS 57-55-6)</td>
<td>TWA</td>
<td>10 mg/m³</td>
<td>Aerosol.</td>
</tr>
<tr>
<td>Octan-1-ol (CAS 111-87-5)</td>
<td>TWA</td>
<td>265 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Octan-1-ol (CAS 111-87-5)</td>
<td></td>
<td>50 ppm</td>
<td></td>
</tr>
</tbody>
</table>

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

**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. Provide easy access to water supply and eye wash facilities.

**Individual protection measures, such as personal protective equipment**

- **Eye/face protection**: Wear safety glasses with side shields (or goggles). Wear a face shield if there is a risk of splashing.
- **Skin protection**
  - **Hand protection**: Wear appropriate chemical resistant gloves. Nitrile, butyl rubber or Viton (fluoroelastomers) gloves are recommended.
- **Skin protection**
  - **Other**: Normal work clothing (long sleeved shirts and long pants) is recommended.
- **Respiratory protection**: In case of accident and/or inadequate ventilation, use respiratory protection with organic vapor cartridge.
- **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.
- **Color**: White.
- **Odor**: Sweet, pungent.
- **Odor threshold**: Not available.
- **pH**: Not applicable.
- **Melting point/freezing point**: < -40 °F (< -40 °C)
- **Initial boiling point and boiling range**: 365 °F (185 °C)
- **Flash point**: 181.4 °F (83.0 °C)
- **Evaporation rate**: Less than water.
- **Flammability (solid, gas)**: Not applicable.
- **Upper/lower flammability or explosive limits**
  - **Flammability limit - lower (%)**: Not available.
Flammability limit - upper (%)
Not available.

Vapor pressure
1 mmHg (37.8°C)

Vapor 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
150 cP @ 511s-1 (Non-Newtonian) (25 °C)

Other information
Explosive properties
Not explosive.

Oxidizing properties
Not oxidizing.

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 heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Contact with incompatible materials.

Incompatible materials
Strong oxidizing agents.

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

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.

Symptoms related to the physical, chemical and toxicological characteristics
Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

Information on toxicological effects

Acute toxicity
Not expected to be acutely toxic.

Components
Species
Test Results

1,2-Propylene glycol (CAS 57-55-6)

Acute
Dermal
LD50
Rabbit
20800 mg/kg

Oral
LD50
Rat
22000 mg/kg

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

Acute
Dermal
LD50
Guinea pig
> 500 mg/kg

Oral
LD50
Rabbit
> 5 g/kg

Skin corrosion/irritation
Prolonged skin contact may cause temporary irritation.
Corrosivity

LP™ Arctic Grade™ Flow Improver

OECD 404
Result: Very slight irritant
Species: Rabbit

Serious eye damage/eye irritation
Causes serious eye irritation.

Respiratory or skin sensitization

Respiratory sensitization
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 sensitization
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).

IARC Monographs. Overall Evaluation of Carcinogenicity
Not listed.

NTP Report on Carcinogens
Not listed.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)
Not listed.

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.

Further information
None known.

12. Ecological information

Ecotoxicity
Harmful to aquatic life with long lasting effects.

<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,2-Propylene glycol (CAS 57-55-6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquatic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Algae</td>
<td>EC50</td>
<td>Selenastrum capricornutum</td>
</tr>
<tr>
<td>Crustacea</td>
<td>LC50</td>
<td>Ceriodaphnia</td>
</tr>
<tr>
<td>Fish</td>
<td>LC50</td>
<td>Pimephales promelas</td>
</tr>
<tr>
<td>Alcohols, C7-9-iso-, C8-rich (CAS 68526-83-0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquatic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</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>Chronic</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>
<tr>
<td>Components</td>
<td>Species</td>
<td>Test Results</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>----------------------------------------</td>
<td>---------------------------------------</td>
</tr>
<tr>
<td>Octan-1-ol (CAS 111-87-5)</td>
<td>Fathead minnow (Pimephales promelas)</td>
<td>12.3 - 13.4 mg/l, 96 hours</td>
</tr>
</tbody>
</table>

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

**Bioaccumulative potential**
The product is not expected to bioaccumulate.

**Partition coefficient n-octanol / water (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

**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.

**Local disposal regulations**
Dispose in accordance with all applicable regulations.

**Hazardous waste code**
The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

**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

**DOT**
- **UN number**: NA1993
- **UN proper shipping name**: Combustible liquid, n.o.s. (Alcohols, C7-9-iso-, C8-rich, Octan-1-ol)
- **Transport hazard class(es)**:
  - Class: - Combustible Liquid
  - Subsidiary risk: -
  - Packing group: III
- **Special precautions for user**: The combustible classification does not apply to non-bulk packagings. Read safety instructions, SDS and emergency procedures before handling.
- **Special provisions**: 148, IB3, T1, TP1

**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 applicable.

### 15. Regulatory information

**US federal regulations**
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

- **TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**
  Not regulated.
- **CERCLA Hazardous Substance List (40 CFR 302.4)**
  Not listed.
- **SARA 304 Emergency release notification**
  Not regulated.
  Not listed.
- **Toxic Substances Control Act (TSCA)**
  All components of the mixture on the TSCA 8(b) inventory are designated "active".
Superfund Amendments and Reauthorization Act of 1986 (SARA)
SARA 302 Extremely hazardous substance
Not listed.
SARA 311/312 Hazardous chemical
Classified hazard categories
- Flammable (gases, aerosols, liquids, or solids)
- Serious eye damage or eye irritation
SARA 313 (TRI reporting)
Not regulated.

Other federal regulations
Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
Not regulated.
Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
Not regulated.
Safe Drinking Water Act (SDWA)
Not regulated.

US state regulations
US. Massachusetts RTK - Substance List
Not regulated.
US. New Jersey Worker and Community Right-to-Know Act
1,2-Propylene glycol (CAS 57-55-6)
US. Pennsylvania Worker and Community Right-to-Know Law
1,2-Propylene glycol (CAS 57-55-6)
Octan-1-ol (CAS 111-87-5)
US. Rhode Island RTK
1,2-Propylene glycol (CAS 57-55-6)
Octan-1-ol (CAS 111-87-5)
California Proposition 65
California Safe Drinking Water and Toxic Enforcement Act of 2016 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins. For more information go to www.P65Warnings.ca.gov.

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>No</td>
</tr>
<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>
</tr>
<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>
<td>Yes</td>
</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>No</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, including date of preparation or last revision

Issue date: 16-May-2017
Revision date: 31-May-2019
Version #: 04
Further information: NFPA Hazard Scale: 0 = Minimal  1 = Slight  2 = Moderate  3 = Serious  4 = Severe
NFPA ratings

List of abbreviations

- EC50: Effective Concentration, 50%.
- ErC50: EC50 in terms of reduction of growth rate.
- LD50: Lethal Dose, 50%.
- LC50: Lethal Concentration, 50%.
- TWA: Time weighted average.

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.