SAFETY DATA SHEET

1. Identification

Product identifier: FS20000 - LUBRICITY ENHANCING FUEL FILTER

Other means of identification
- SDS number: LT16617
- Product code: FS20000

Recommended use: Lubricity enhancing fuel filter.

Recommended restrictions: No restrictions on use known.

Chemical family: Article. This product is considered an 'article' under 29 CFR Part 1910.1200.

Manufacturer
- Company name: Cummins Filtration
- Address: 1200 Fleetguard Road, Cookeville, TN, U.S.A. 38506
- Telephone: (931) 526 9551
- Website: www.cumminsfiltration.com
- E-Mail: fleetmaster.us@cummins.com

Supplier information: Refer to Manufacturer

Emergency phone number: Chemtrec 1-800-424-9300 (Within Continental U.S.); Chemtrec 703-527-3887 (Outside U.S.).

2. Hazard(s) Identification

This product is considered an 'article' under 29 CFR Part 1910.1200.

Physical hazards: This mixture does not meet the classification criteria according to OSHA Hazcom 2012.

Health hazards: This mixture does not meet the classification criteria according to OSHA Hazcom 2012.

Environmental hazards: Not currently regulated by OSHA, refer to Section 12 for additional information.

OSHA defined hazards: This mixture does not meet the classification criteria according to OSHA Hazcom 2012.

Label elements: None required according to OSHA Hazcom 2012.

Signal Word: None required according to OSHA Hazcom 2012.

Hazard statement(s): None required according to OSHA Hazcom 2012.

Precautionary statement(s)
- Prevention: None required according to OSHA Hazcom 2012.
- Response: None required according to OSHA Hazcom 2012.
- Storage: None required according to OSHA Hazcom 2012.
- Disposal: None required according to OSHA Hazcom 2012.

Hazard(s) not otherwise Classified (HNOC): No OSHA defined hazard classes.

Other hazards which do not result in classification:
- Toxic fumes, gases or vapors may evolve on burning. This product is considered an 'article' under 29 CFR Part 1910.1200. Under normal conditions of use, users of the product cannot be exposed to its harmful contents.
- However, if the article is damaged and/or material is released: If material is misted or if vapors are generated from heating, exposure may cause irritation of mucous membranes and the upper respiratory tract. If material is ingested, may cause irritation to mucous membranes. Direct eye contact may cause slight or mild, transient irritation. Direct skin contact may cause slight or mild, transient irritation.

Supplemental Information: Not applicable.
3. Composition/information on ingredients

Solid article. Solid filter assembly.

<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>Tall oil fatty acid</td>
<td>Not available.</td>
<td>Not reported</td>
<td>40.0 - 70.0</td>
</tr>
<tr>
<td>Polymer</td>
<td>Not available.</td>
<td>Not reported</td>
<td>30.0 - 60.0</td>
</tr>
</tbody>
</table>

The exact concentrations of the above listed chemicals are being withheld as a trade secret.

4. First-aid measures

**Inhalation**
None required under normal conditions. However, if the article is damaged and/or improperly used:
- If inhaled, move to fresh air. If breathing is difficult, give oxygen by qualified medical personnel only. If breathing has stopped, give artificial respiration. Get medical attention if irritation develops and persists.

**Skin contact**
None required under normal conditions. However, if the article is damaged and/or improperly used:
- For skin contact, wash with soap and water while removing contaminated clothing. Get medical attention if irritation develops and persists.

**Eye contact**
None required under normal conditions. However, if the article is damaged and/or improperly used:
- Rinse thoroughly with plenty of water, also under the eyelids. Remove contact lenses, if present and easy to do. Get medical attention if irritation develops and persists.

**Ingestion**
Not considered to be a hazard.
- If ingested, do not induce vomiting. Rinse mouth. Never give anything by mouth to an unconscious person. Obtain medical attention if symptoms develop and persist.

**Most important symptoms and effects, both acute and delayed**
This product is considered an ‘article’ under 29 CFR Part 1910.1200. Under normal conditions of use, users of the product cannot be exposed to its harmful contents. However, if the article is damaged and/or improperly used:
- If material is misted or if vapors are generated from heating, exposure may cause irritation of mucous membranes and the upper respiratory tract. Symptoms may include upper respiratory irritation, coughing and breathing difficulties.
- If material is ingested, may cause irritation to mucous membranes. May cause nausea, vomiting, and diarrhea.
- Direct eye contact may cause slight or mild, transient irritation. Symptoms may include stinging and tearing.
- Direct skin contact may cause slight or mild, transient irritation. Direct skin contact may cause temporary redness.

**Indication of any immediate medical attention and special treatment needed**
Provide general supportive measures and treat symptomatically.

**General Information**
Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. Fire-fighting measures

**Suitable extinguishing media**
Use media suitable to the surrounding fire such as water fog or fine spray, alcohol foams, carbon dioxide and dry chemical.

**Unsuitable extinguishing media**
None known.

**Specific hazards arising from the chemical**
Toxic fumes may be released during a fire. The pressure in sealed containers can increase under the influence of heat.

**Special protective equipment and precautions for fire-fighters**
Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. Firefighters should wear proper protective equipment and self-contained breathing apparatus with full face piece operated in positive pressure mode.

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Material name: FS20000 - LUBRICITY ENHANCING FUEL FILTER
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SAFETY DATA SHEET

Fire-fighting equipment/instructions
Move containers from fire area if safe to do so. Cool closed containers exposed to fire with water spray. Do not allow run-off from fire fighting to enter drains or water courses. Dike for water control.

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

General fire hazards
Not classified as flammable.

Hazardous combustion products
Carbon oxides; Aldehydes; Acids; irritating fumes and smoke.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures
Keep people away from and upwind of spill/leak. Restrict access to area until completion of clean-up. Wear appropriate protective equipment. Refer to protective measures listed in sections 7 and 8.

Methods and materials for containment and cleaning up
Ventilate the area. Remove all sources of ignition. Prevent further leakage or spillage if safe to do so. Pick up and transfer to properly labelled containers. For spilled liquids: absorb spill with inert, non-combustible material such as sand, then place into suitable containers. Contact the proper local authorities. For waste disposal, see Section 13 of the SDS.

Environmental precautions
Prevent product from entering drains, sewers, waterways and soil.

7. Handling and storage

Precautions for safe handling
Use with adequate ventilation. Wear suitable protective equipment during handling. Avoid breathing dust, fume or vapors. Avoid contact with skin, eyes and clothing. Keep away from extreme heat and direct flame. Keep away from incompatibles. Wash thoroughly after handling.

Conditions for safe storage, including any incompatibilities
Store in cool/well-ventilated place. Inspect periodically for damage or leaks. Do not store near any incompatible materials (see Section 10).

8. Exposure controls/personal protection

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

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

Appropriate engineering controls
Ensure adequate ventilation, especially in confined areas. Local exhaust ventilation is preferred to prevent contaminant dispersion into work area. In case of insufficient ventilation wear suitable respiratory equipment.

Individual protection measures, such as personal protective equipment

Eye / face protection
None required when used as intended. If contact is likely, safety glasses with side shields are recommended.

Skin protection

Hand protection
None required when used as intended. For prolonged or repeated contact use protective gloves. Advice should be sought from glove suppliers. Wear sufficient clothing to prevent skin contact.

Other
Ensure that eyewash stations and safety showers are close to the workstation location. Other equipment may be required depending on workplace standards.

Respiratory protection
If airborne concentrations are above the permissible exposure limit or are not known, use NIOSH-approved respirators. Use a NIOSH approved dust respirator if dust levels exceed exposure limits. Advice should be sought from respiratory protection specialists.

Thermal hazards
Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations
Avoid breathing dust, fume or vapors. Avoid contact with skin, eyes and clothing. Wash thoroughly after handling. Remove and wash contaminated clothing before re-use. Handle in accordance with good industrial hygiene and safety practice.
9. Physical and chemical properties

Appearance
- **Physical state**: Solid article.
- **Form**: Solid filter assembly.
- **Color**: Tan solid material

Odor: None.

Odor threshold: N/Av

pH: N/Av

Melting point /freezing point: N/Av

Initial boiling point and boiling range: N/Av

Flash point: > 204°C (400°F) (estimated)

Evaporation rate: N/Av

Flammability (solid, gas): Not considered flammable.

Lower flammability/explosive limit: N/Av

Upper flammability/explosive limit: N/Av

Vapor pressure: N/Av

Vapor density: N/Av

Relative density: N/Av

Solubility(ies)
- Other solubility(ies): N/Av
- Solubility (water): Insoluble.

Partition coefficient (n-octanol/water): N/Av

Auto-ignition temperature: N/Av

Decomposition temperature: N/Av

Viscosity: N/Av

Other information
- Explosive properties: Not explosive
- Oxidizing properties: None known.
- Specific gravity: N/Av
- VOC: N/Av
- Volatilities %: N/Av
- Other physical/chemical data: No additional information.

10. Stability and reactivity

Reactivity: Not normally reactive.

Chemical stability: Stable under normal conditions.

Possibility of hazardous reactions: Hazardous polymerization does not occur. No dangerous reaction known under conditions of normal use.

Conditions to avoid: Avoid excessive heat, sparks and open flame. Do not use in areas without adequate ventilation. Avoid contact with incompatible materials.

Incompatible materials: Strong oxidizing agents; Strong bases; Reducing agents.

Hazardous decomposition products: None known, refer to hazardous combustion products in Section 5.
11. Toxicological information

Information on likely routes of exposure

| Routes of entry inhalation | If material is misted or if vapors are generated from heating, exposure may cause irritation of mucous membranes and the upper respiratory tract. |
| Routes of entry skin & eye | Causes little or no irritation. |
| Routes of entry Ingestion | Not an expected route of entry. |
| Routes of exposure skin absorption | Not expected to be absorbed through the skin. |

Most important symptoms/effects, acute and delayed

This product is considered an 'article' under 29 CFR Part 1910.1200. Under normal conditions of use, users of the product cannot be exposed to its harmful contents. However, if the article is damaged and/or improperly used:

- If material is misted or if vapors are generated from heating, exposure may cause irritation of mucous membranes and the upper respiratory tract. Symptoms may include upper respiratory irritation, coughing and breathing difficulties.
- If material is ingested, may cause irritation to mucous membranes. May cause nausea, vomiting, and diarrhea.
- Direct eye contact may cause slight or mild, transient irritation. Symptoms may include stinging and tearing.
- Direct skin contact may cause slight or mild, transient irritation. Direct skin contact may cause temporary redness.

Information on toxicological effects

Acute toxicity

Not expected to be hazardous by OSHA criteria. There is no available data for the product itself, only for the ingredients. See below for individual ingredient acute toxicity data.

<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tall oil fatty acid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute Dermal</td>
<td>Rabbit</td>
<td>&gt; 2000 mg/kg (supplier)</td>
</tr>
<tr>
<td>LD50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC50</td>
<td>Rat</td>
<td>N/Av</td>
</tr>
<tr>
<td>Oral LD50</td>
<td>Rat</td>
<td>&gt; 5000 mg/kg (supplier)</td>
</tr>
<tr>
<td>Polymer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute Dermal</td>
<td>Rabbit</td>
<td>N/Av</td>
</tr>
<tr>
<td>LD50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC50</td>
<td>Rat</td>
<td>N/Av</td>
</tr>
<tr>
<td>Oral LD50</td>
<td>Rat</td>
<td>N/Av</td>
</tr>
</tbody>
</table>

Skin Corrosion/Irritation

Not expected to be hazardous by OSHA criteria.

Serious eye damage/Irritation

Not expected to be hazardous by OSHA criteria.

Respiratory or skin sensitization

Not expected to be a skin or respiratory sensitizer.

Germ cell mutagenicity

No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity

No components are listed as carcinogens by ACGIH, IARC, OSHA or NTP.
SAFETY DATA SHEET

Reproductive toxicity
Not expected to cause reproductive effects.

Specific target organ toxicity - single exposure
Not expected to be hazardous by OSHA criteria.

Specific target organ toxicity - repeated exposure
Not expected to be hazardous by OSHA criteria.

Chronic effects
This product is considered an ‘article’ under 29 CFR Part 1910.1200. Under normal conditions of use, users of the product cannot be exposed to its harmful contents. However, if the article is damaged and/or improperly used: Prolonged or repeated contact may cause drying, cracking and defatting of the skin.

Aspiration toxicity
Not expected to be hazardous by OSHA criteria.

Further information
None known or reported by the manufacturer.

12. Ecological information

Ecotoxicity
No data is available on the product itself. The product should not be allowed to enter drains or water courses, or be deposited where it can affect ground or surface waters. See the following tables for individual ingredient ecotoxicity data.

Ecotoxicity data:

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS No</th>
<th>Toxicity to Fish</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>LC50 / 96h</td>
<td>NOEC / 21 day</td>
<td>M Factor</td>
</tr>
<tr>
<td>Tall oil fatty acid</td>
<td>Not reported</td>
<td>N/Av</td>
<td>N/Av</td>
<td>N/Av</td>
</tr>
<tr>
<td>Polymer</td>
<td>Not reported</td>
<td>N/Av</td>
<td>N/Av</td>
<td>N/Av</td>
</tr>
</tbody>
</table>

Toxicity to Daphnia

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS No</th>
<th>Toxicity to Daphnia</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>EC50 / 48h</td>
<td>NOEC / 21 day</td>
<td>M Factor</td>
</tr>
<tr>
<td>Tall oil fatty acid</td>
<td>Not reported</td>
<td>N/Av</td>
<td>N/Av</td>
<td>N/Av</td>
</tr>
<tr>
<td>Polymer</td>
<td>Not reported</td>
<td>N/Av</td>
<td>N/Av</td>
<td>N/Av</td>
</tr>
</tbody>
</table>

Toxicity to Algae

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS No</th>
<th>Toxicity to Algae</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>EC50 / 96h or 72h</td>
<td>NOEC / 96h or 72h</td>
<td>M Factor</td>
</tr>
<tr>
<td>Tall oil fatty acid</td>
<td>Not reported</td>
<td>N/Av</td>
<td>N/Av</td>
<td>N/Av</td>
</tr>
<tr>
<td>Polymer</td>
<td>Not reported</td>
<td>N/Av</td>
<td>N/Av</td>
<td>N/Av</td>
</tr>
</tbody>
</table>

Persistence and degradability
No data is available on the product itself.

Bioaccumulation potential
The product itself has not been tested.

Mobility in soil
The product itself has not been tested.

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 consideration

Disposal instructions
Handle waste according to recommendations in Section 7.

Local disposal regulations
Dispose in accordance with all applicable federal, state, territory and local regulations.
SAFETY DATA SHEET

Hazardous waste code
If this product, as supplied, becomes a waste in the United States, it may meet the criteria of a hazardous waste as defined under RCRA, Title 40 CFR 261. It is the responsibility of the waste generator to determine the proper waste identification and disposal method. For disposal of unused or waste material, check with local, state and federal environmental agencies.

Waste from residues / unused products
Dispose of contents/container in accordance with local regulation.

Contaminated packaging
Empty containers should be taken for local recycling or waste disposal.

14. Transport information

49CFR/DOT
Not regulated as dangerous goods

ICAO/IATA
Not regulated as dangerous goods

IMDG
Not regulated as dangerous goods

General information
Appropriate advice on safety must accompany the package.
This product does not meet the criteria for an environmentally hazardous mixture, according to the IMDG Code. See Section 12 for more environmental information.

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

15. Regulatory information

US Federal Information:
Components listed below are present on the following U.S. Federal chemical lists:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Tall oil fatty acid</td>
<td>Not reported</td>
<td>Yes</td>
<td>None.</td>
<td>None.</td>
<td>No</td>
</tr>
<tr>
<td>Polymer</td>
<td>Not reported</td>
<td>N/Av</td>
<td>N/Av</td>
<td>N/Av</td>
<td>N/Av</td>
</tr>
</tbody>
</table>

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Immediate Hazard - NO
Delayed Hazard - NO
Fire Hazard - NO
Pressure Hazard - NO
Reactivity Hazard - NO

US state regulations

The following chemicals are specifically listed by individual States:

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS #</th>
<th>California Proposition 65 Listed</th>
<th>Type of Toxicity</th>
<th>State &quot;Right to Know&quot; Lists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tall oil fatty acid</td>
<td>Not reported</td>
<td>No</td>
<td>N/Av</td>
<td>N/Ap</td>
</tr>
<tr>
<td>Polymer</td>
<td>Not reported</td>
<td>No</td>
<td>N/Av</td>
<td>No</td>
</tr>
</tbody>
</table>

Material name: FS20000 - LUBRICITY ENHANCING FUEL FILTER
SDS No. LT16617  Version #: 1  Issue date: 06-01-2015
Canadian Information:
Canadian Environmental Protection Act (CEPA) information: All ingredients listed appear on the Domestic Substances List (DSL).

International Inventories
Components listed below are present on the following International Inventory lists:

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS #</th>
<th>European EINECs</th>
<th>Australia AICS</th>
<th>Philippines PICCS</th>
<th>Japan ENCS</th>
<th>Korea KECI/KECL</th>
<th>China IECSC</th>
<th>NewZealand IOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tall oil fatty acid</td>
<td>Not reported</td>
<td>Listed</td>
<td>Listed</td>
<td>Listed</td>
<td>Listed</td>
<td>Listed</td>
<td>Listed</td>
<td>N/Av</td>
</tr>
<tr>
<td>Polymer</td>
<td>Not reported</td>
<td>N/Av</td>
<td>N/Av</td>
<td>N/Av</td>
<td>N/Av</td>
<td>N/Av</td>
<td>N/Av</td>
<td>N/Av</td>
</tr>
</tbody>
</table>

16. Other information, including date of preparation or last revision

Issue date: 06/01/2015
Version #: 1

Legend

ACGIH: American Conference of Governmental Industrial Hygienists
AICS: Australian Inventory of Chemical Substances
CA: California
CAS: Chemical Abstract Services
CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR: Code of Federal Regulations
CSA: Canadian Standards Association
DOT: Department of Transportation
EC50: Effective Concentration 50%.
EINECS: European Inventory of Existing Commercial Chemical Substances
ENCS: Existing and New Chemical Substances
EPA: Environmental Protection Agency
HSDB: Hazardous Substances Data Bank
IARC: International Agency for Research on Cancer
IBC: Intermediate Bulk Container
IECSC: Inventory of Existing Chemical Substances
IMDG: International Maritime Dangerous Goods
IOC: Inventory of Chemicals
KECI: Korean Existing Chemicals Inventory
KECL: Korean Existing Chemicals List
LC: Lethal Concentration
LD: Lethal Dose
MA: Massachusetts
MN: Minnesota
N/Ap: Not Applicable
N/Av: Not Available
NIOSH: National Institute of Occupational Safety and Health
NJ: New Jersey
NOEC: No observable effect concentration
NTP: National Toxicology Program
OECD: Organisation for Economic Co-operation and Development
OSHA: Occupational Safety and Health Administration
PA: Pennsylvania
PEL: Permissible exposure limit
PICCS: Philippine Inventory of Chemicals and Chemical Substances
RCRA: Resource Conservation and Recovery Act
RI: Rhode Island
RTECS: Registry of Toxic Effects of Chemical Substances
SARA: Superfund Amendments and Reauthorization Act
SDS: Safety Data Sheet
STEL: Short Term Exposure Limit
TDG: Canadian Transportation of Dangerous Goods Act & Regulations
TLV: Threshold Limit Values
Other special considerations for handling

Provide adequate information, instruction and training for operators.

Disclaimer

Prepared by: ICC The Compliance Center Inc.
http://www.thecompliancecenter.com

The information in this SDS was obtained from sources, which we believe are reliable. However, since the conditions of handling and use are beyond our control, we assume no liability for damages incurred by use of this material. This SDS was prepared, and is to be used, for this product only. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that may exist. If the product is used as a component in another product, this information may not be applicable. Users of this product should satisfy themselves that the conditions and methods of use assure the product is used safely. No representations or warranties, either expressed or implied, of any nature are made hereunder with respect to the information contained herein. It is the responsibility of the user to comply with any and all federal, state, or local laws and regulations that may exist. Nothing contained herein is to be construed as a recommendation for use in violation of any applicable laws or regulations.

Bibliography

1. ACGIH, Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices for 2015.
3. Canadian Centre for Occupational Health and Safety, CCInfoWeb databases, 2015 (Chempendium, HSDB and RTECs).
4. Material Safety Data Sheets from manufacturer.
5. US EPA Title III List of Lists - March 2015 version.