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

<table>
<thead>
<tr>
<th>Ashland</th>
<th>Regulatory Information Number</th>
<th>1-800-325-3751</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.O. Box 2219</td>
<td>Telephone</td>
<td>614-790-3333</td>
</tr>
<tr>
<td>Columbus, OH 43216</td>
<td>Emergency telephone number</td>
<td>1-800-ASHLAND (1-800-274-5263)</td>
</tr>
</tbody>
</table>

Product name: Valvoline Professional Series™ COMPLETE FUEL SYS CLNR FUEL SYSTEM CLEANER

Product code: 679741

Product Use Description: Industrial chemical

2. HAZARDS IDENTIFICATION

**Emergency Overview**

Appearance: liquid

**WARNING!** COMBUSTIBLE LIQUID AND VAPOR. MAY AFFECT THE CENTRAL NERVOUS SYSTEM CAUSING DIZZINESS, HEADACHE OR NAUSEA. MAY CAUSE EYE IRRITATION. MAY CAUSE ALLERGIC SKIN REACTION. MAY CAUSE SKIN AND RESPIRATORY TRACT IRRITATION. PROLONGED OR REPEATED CONTACT MAY DRY SKIN AND CAUSE DERMATITIS AND BURNS.

**Potential Health Effects**

**Exposure routes**

Inhalation, Skin absorption, Skin contact, Eye Contact, Ingestion

**Eye contact**

Can cause eye irritation. Symptoms include stinging, tearing, redness, and swelling of eyes.

**Skin contact**
Can cause skin irritation. Symptoms may include redness and burning of skin, and other skin damage. May cause allergic skin reaction. Prolonged or repeated contact may dry the skin. Symptoms may include redness, burning, and drying and cracking of skin, skin burns, and other skin damage.

**Ingestion**

Swallowing small amounts of this material during normal handling is not likely to cause harmful effects. Swallowing large amounts may be harmful. This material can get into the lungs during swallowing or vomiting. This results in lung inflammation and other lung injury.

**Inhalation**

It is possible to breathe this material under certain conditions of handling and use (for example, during heating, spraying, or stirring). Breathing small amounts of this material during normal handling is not likely to cause harmful effects. Breathing large amounts may be harmful. Symptoms are not expected at air concentrations below the recommended exposure limits, if applicable (see Section 8.).

**Aggravated Medical Condition**

Preexisting disorders of the following organs (or organ systems) may be aggravated by exposure to this material: Skin, Upper respiratory tract, lung (for example, asthma-like conditions), Kidney, immune system, eye, urinary system, Exposure to this material may aggravate any preexisting condition sensitive to a decrease in available oxygen, such as chronic lung disease, coronary artery disease or anemias. Individuals with erythrocyte glucose-6-phosphate dehydrogenase deficiency are particularly susceptible to hemolytic agents and rapidly develop hemolytic anemia from ingestion or inhalation of this material (or a component).

**Symptoms**

Signs and symptoms of exposure to this material through breathing, swallowing, and/or passage of the material through the skin may include: allergic skin reaction (delayed skin rash which may be followed by blistering, scaling and other skin effects), sweating, Fever, stomach or intestinal upset (nausea, vomiting, diarrhea), irritation (nose, throat, airways), Lung irritation, central nervous system depression (dizziness, drowsiness, weakness, fatigue, nausea, headache, unconsciousness), Abdominal pain, confusion, blood abnormalities (breakage of red blood cells), kidney damage, lung damage, respiratory failure

**Target Organs**

This material (or a component) has been shown to lower activity of certain immune system cells in experimental animals. The significance of this effect with respect to human health is uncertain. Overexposure to this material (or its components) has been suggested as a cause of the following effects in laboratory animals: mild, reversible liver effects, cataracts, anemia, nasal damage, eye damage,
central nervous system damage. Overexposure to this material (or its components) has been suggested as a cause of the following effects in humans: cataracts, eye damage.

Carcinogenicity
In a National Toxicology Program (NTP) study, lifetime inhalation exposure to naphthalene resulted in increases in tumors of the nose in rats. In a previous NTP study, lifetime exposure to naphthalene caused lung tumors in female mice. Male mice with the same exposure did not develop tumors. The relevance of this finding to humans is uncertain. Naphthalene is listed as carcinogenic by IARC (International Agency for Research on Cancer) and the National Toxicology Program (NTP).

Reproductive hazard
This material (or a component) causes harm to the fetus.

Other information
Infants are more sensitive than adults to the toxic effects of naphthalene. Diapers or cloths stored with mothballs and used directly on infants have caused skin rashes and illness. Naphthalene vapors from clothing or blankets that had been stored in or near the infant’s room have caused illness and death.

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Hazardous Components</th>
<th>CAS-No. / Trade Secret No.</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISTILLATES, SWEETENED MIDDLE</td>
<td>64741-86-2</td>
<td>&gt;=40-&lt;50%</td>
</tr>
<tr>
<td>POLYETHER AMINE</td>
<td></td>
<td>&gt;=30-&lt;40%</td>
</tr>
<tr>
<td>HYDROTREATED HEAVY NAPHTHA</td>
<td>64742-48-9</td>
<td>&gt;=15-&lt;20%</td>
</tr>
<tr>
<td>SOLVENT NAPHTHA (PETROLEUM), HEAVY AROMATIC</td>
<td>64742-94-5</td>
<td>&gt;=1.5-&lt;5%</td>
</tr>
<tr>
<td>NAPHTHALENE</td>
<td>91-20-3</td>
<td>&gt;=0.1-&lt;0.5%</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

Eyes
If symptoms develop, immediately move individual away from exposure and into fresh air. Flush eyes gently with water for at least 15 minutes while holding eyelids apart; seek immediate medical attention.
Skin
Remove contaminated clothing. Flush exposed area with large amounts of water. If skin is damaged, seek immediate medical attention. If skin is not damaged and symptoms persist, seek medical attention. Launder clothing before reuse.

Ingestion
Seek medical attention. If individual is drowsy or unconscious, do not give anything by mouth; place individual on the left side with the head down. Contact a physician, medical facility, or poison control center for advice about whether to induce vomiting. If possible, do not leave individual unattended.

Inhalation
If symptoms develop, move individual away from exposure and into fresh air. If symptoms persist, seek medical attention. If breathing is difficult, administer oxygen. Keep person warm and quiet; seek immediate medical attention.

Notes to physician
Hazards: Inhalation or ingestion of high levels of this material (or a component) may cause a hemolytic reaction. Complications of acute intravascular hemolysis include anemia, leukocytosis, fever, hemoglobinuria, jaundice, renal insufficiency, and sometimes disturbances in liver function. Fats, for example, baby oil on the skin or ingested oil, facilitate absorption of naphthalene. This material is an aspiration hazard. Potential danger from aspiration must be weighed against possible oral toxicity (See Section 2 - Swallowing) when deciding whether to induce vomiting.

Treatment: No information available.

5. FIREFIGHTING MEASURES

Suitable extinguishing media
Dry chemical, Carbon dioxide (CO2), Water spray

Hazardous combustion products
Aldehydes, carbon, carbon dioxide and carbon monoxide, Hydrocarbons, nitrogen oxides (NOx), Sulphur oxides

Precautions for fire-fighting
If product is heated above its flash point it will produce vapors sufficient to support combustion. Vapors are heavier than air and may travel along the ground and be ignited by heat, pilot
lights, other flames and ignition sources at locations near the point of release. Never use welding or cutting torch on or near drum (even empty) because product (even just residue) can ignite explosively. Wear full firefighting turn-out gear (full Bunker gear), and respiratory protection (SCBA). Use water spray to cool fire exposed containers and structures until fire is out if it can be done with minimal risk. Avoid spreading burning material with water used for cooling purposes.

NFPA Flammable and Combustible Liquids Classification
Combustible Liquid Class II

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
For personal protection see section 8. Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Ensure adequate ventilation. Eliminate all ignition sources (flares, flames including pilot lights, electrical sparks). Pay attention to the spreading of gases especially at ground level (heavier than air) and to the direction of the wind.

Environmental precautions
Prevent spreading over a wide area (e.g. by containment or oil barriers). Do not let product enter drains. Do not flush into surface water or sanitary sewer system. Local authorities should be advised if significant spillages cannot be contained.

Methods for cleaning up
Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

Other information
Comply with all applicable federal, state, and local regulations. Suppress (knock down) gases/vapours/mists with a water spray jet.

7. HANDLING AND STORAGE

Handling
Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid, and/or solid), all hazard precautions given in the data sheet must be observed. Static ignition hazard can result from handling and use. Electrically bond and ground all...
containers, personnel and equipment before transfer or use of material. Special precautions may be necessary to dissipate static electricity for non-conductive containers. Use proper bonding and grounding during product transfer as described in National Fire Protection Association document NFPA 77.

Storage
Store in a cool, dry, ventilated area.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

General advice
These recommendations provide general guidance for handling this product. Personal protective equipment should be selected for individual applications and should consider factors which affect exposure potential, such as handling practices, chemical concentrations and ventilation. It is ultimately the responsibility of the employer to follow regulatory guidelines established by local authorities.

Exposure controls
Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below exposure guidelines (if applicable) or below levels that cause known, suspected or apparent adverse effects.

Eye protection
Wear chemical splash goggles when there is the potential for exposure of the eyes to liquid, vapor or mist.

Skin and body protection
Wear normal work clothing including long pants, long-sleeved shirts and foot covering to prevent direct contact of the product with the skin. Launder clothing before reuse. If skin irritation develops, contact your facility health and safety professional or your local safety equipment supplier to determine the proper personal protective equipment for your use. Wear resistant gloves (consult your safety equipment supplier). Discard gloves that show tears, pinholes, or signs of wear.

Respiratory protection
Respiratory protection is not required under normal conditions of use.
Valvoline Professional Series™ COMPLETE
FUEL SYS CLNR FUEL SYSTEM CLEANER
679741

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Physical state</th>
<th>liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boiling point/boiling range</td>
<td>365 °F / 185 °C Calculated Phase Transition Liquid/Gas</td>
</tr>
<tr>
<td>Flash point</td>
<td>108.0 °F / 42.2 °C Calculated Flash Point</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>1.131 hPa Calculated Vapor Pressure</td>
</tr>
<tr>
<td>Density</td>
<td>0.870 g/cm³ @ 68 °F / 20 °C</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

Stability
Stable.

Conditions to avoid
excessive heat

Incompatible products
Strong oxidizing agents

Hazardous decomposition products
Aldehydes, carbon dioxide and carbon monoxide, Hydrocarbons

Hazardous reactions
Product will not undergo hazardous polymerization.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure:
Inhalation
Skin absorption
Skin contact
Eye Contact

**Product**

Ingestion

Acute oral toxicity: no data available

Acute inhalation toxicity: no data available

Acute dermal toxicity: no data available

Skin corrosion/irritation: no data available

Serious eye damage/eye irritation: no data available

Respiratory or skin sensitisation: no data available

Target Organ Systemic Toxicant - Repeated exposure: Target Organs: This material (or a component) has been shown to lower activity of certain immune system cells in experimental animals. The significance of this effect with respect to human health is uncertain. Overexposure to this material (or its components) has been suggested as a cause of the following effects in laboratory animals: mild, reversible liver effects, cataracts, anemia, nasal damage, eye damage, central nervous system damage. Overexposure to this material (or its components) has been suggested as a cause of the following effects in humans: cataracts, eye damage

**Components:**

**DISTILLATES, SWEETENED MIDDLE:**

Acute oral toxicity: LD 50 Rat: > 5,000 mg/kg

**POLYETHER AMINE:**

Respiratory or skin: Classification: May cause sensitization by skin contact.
sensitisation 

Result: May cause sensitization by skin contact.

**SOLVENT NAPHTHA (PETROLEUM), HEAVY AROMATIC:**

Acute oral toxicity : LD 50 Rat: 3,000 mg/kg

Acute inhalation toxicity: LC 50 Rat: > 3,800 mg/m3
Exposure time: 4 h

Acute dermal toxicity : LD 50 Rabbit: > 3,000 mg/kg

**NAPHTHALENE:**

Acute oral toxicity : LD50 Oral Rat: 2,200 mg/kg

Acute dermal toxicity : LD50 Dermal Rabbit: > 2.0 g/kg

---

**12. ECOLOGICAL INFORMATION**

Ecotoxicity

**Product:**

no data available

**Components:**

**NAPHTHALENE:**

Toxicity to fish : LC 50 (Rainbow trout, donaldson trout (Oncorhynchus mykiss)): 0.91 - 2.82 mg/l
Exposure time: 96 h
Test Method: static test

Toxicity to daphnia and other aquatic invertebrates : EC 50 (Water flea (Daphnia magna)): 1.09 - 3.4 mg/l
Exposure time: 48 h
Test Method: static test
Persistence and degradability

**Product:**
no data available

**Components:**

**HYDROTREATED HEAVY NAPHTHA:**
Biodegradability : Not readily biodegradable.

Bioaccumulative potential

**Product:**
no data available

**Components:**

**NAPHTHALENE:**
Bioaccumulation : Species: Rainbow trout,donaldson trout (Oncorhynchus mykiss)
Exposure time: 16 d
Concentration: 0.023 mg/l
Bioconcentration factor (BCF): 25
Method: Flow through

Partition coefficient: n-octanol/water : log Pow: 3.30

Mobility in soil

**Product:**
no data available

**Components:**

**NAPHTHALENE:**
13. DISPOSAL CONSIDERATIONS

Waste disposal methods
Dispose of in accordance with all applicable local, state and federal regulations.

14. TRANSPORT INFORMATION

REGULATION

<table>
<thead>
<tr>
<th>ID NUMBER</th>
<th>PROPER SHIPPING NAME</th>
<th>*HAZARD CLASS</th>
<th>SUBSIDIARY HAZARDS</th>
<th>PACKING GROUP</th>
<th>MARINE POLLUTANT / LTD. QTY.</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

U.S. DOT - ROAD
Not dangerous goods

U.S. DOT - RAIL
Not dangerous goods

U.S. DOT - INLAND WATERWAYS
Not dangerous goods

TRANSPORT CANADA - ROAD
Not dangerous goods

TRANSPORT CANADA - RAIL
Not dangerous goods

TRANSPORT CANADA - INLAND WATERWAYS
Not dangerous goods

INTERNATIONAL MARITIME DANGEROUS GOODS

<table>
<thead>
<tr>
<th>UN</th>
<th>1993</th>
<th>FLAMMABLE LIQUID, N.O.S.</th>
<th>3</th>
<th>(HYDROTREATED HEAVY NAPHTHA)</th>
<th>III</th>
<th>LIMITED QUANTITY</th>
</tr>
</thead>
</table>

Surface tension : 31.8 mN/m
### INTERNATIONAL AIR TRANSPORT ASSOCIATION - CARGO

<table>
<thead>
<tr>
<th>UN</th>
<th>Description</th>
<th>Class</th>
<th>Division</th>
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</thead>
<tbody>
<tr>
<td>1993</td>
<td>Flammable liquid, n.o.s. (HYDROTREATED HEAVY NAPHTHA)</td>
<td>3</td>
<td>III</td>
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</tbody>
</table>

### INTERNATIONAL AIR TRANSPORT ASSOCIATION - PASSENGER

<table>
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<tr>
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<th>Description</th>
<th>Class</th>
<th>Division</th>
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</thead>
<tbody>
<tr>
<td>1993</td>
<td>Flammable liquid, n.o.s. (HYDROTREATED HEAVY NAPHTHA)</td>
<td>3</td>
<td>III</td>
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</tbody>
</table>

### MEXICAN REGULATION FOR THE LAND TRANSPORT OF HAZARDOUS MATERIALS AND WASTES

<table>
<thead>
<tr>
<th>UN</th>
<th>Description</th>
<th>Class</th>
<th>Division</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993</td>
<td>LIQUIDO INFLAMABLE, N.E.P. (HYDROTREATED HEAVY NAPHTHA)</td>
<td>3</td>
<td>III</td>
</tr>
</tbody>
</table>

*ORM = ORM-D, CBL = COMBUSTIBLE LIQUID

Dangerous goods descriptions (if indicated above) may not reflect quantity, end-use or region-specific exceptions that can be applied. Consult shipping documents for descriptions that are specific to the shipment.

### 15. REGULATORY INFORMATION

**California Prop. 65**

| WARNING! This product contains a chemical known to the State of California to cause cancer. | NAPHTHALENE BENZENE |
| WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm. | BENZENE |

**SARA Hazard Classification**

**SARA 311/312 Classification**
- Fire Hazard
- Acute Health Hazard
- Chronic Health Hazard

**SARA 313 Component(s)**
### New Jersey RTK Label Information

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISTILLATES, SWEETENED MIDDLE</td>
<td>64741-86-2</td>
</tr>
<tr>
<td>POLYETHER AMINE</td>
<td></td>
</tr>
<tr>
<td>GASOLINE ADDITIVE</td>
<td></td>
</tr>
<tr>
<td>HYDROTREATED HEAVY NAPHTHA</td>
<td>64742-48-9</td>
</tr>
<tr>
<td>SOLVENT NAPHTHA (PETROLEUM), HEAVY AROMATIC</td>
<td>64742-94-5</td>
</tr>
</tbody>
</table>

### Pennsylvania RTK Label Information

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISTILLATES, SWEETENED MIDDLE</td>
<td>64741-86-2</td>
</tr>
<tr>
<td>POLYETHER AMINE</td>
<td></td>
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<tr>
<td>GASOLINE ADDITIVE</td>
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<tr>
<td>HYDROTREATED HEAVY NAPHTHA</td>
<td>64742-48-9</td>
</tr>
<tr>
<td>SOLVENT NAPHTHA (PETROLEUM), HEAVY AROMATIC</td>
<td>64742-94-5</td>
</tr>
</tbody>
</table>

### Notification status

<table>
<thead>
<tr>
<th>Description</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>US. Toxic Substances Control Act</td>
<td>y (positive listing)</td>
</tr>
<tr>
<td>Australia. Industrial Chemical (Notification and Assessment) Act</td>
<td>y (positive listing)</td>
</tr>
<tr>
<td>New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand</td>
<td>n (Negative listing)</td>
</tr>
<tr>
<td>Japan. Kashin-Hou Law</td>
<td>n (Negative listing)</td>
</tr>
<tr>
<td>Korea. Toxic Chemical Control Law (TCCL) List</td>
<td>y (positive listing)</td>
</tr>
<tr>
<td>Philippines. The Toxic Substances and Hazardous and Nuclear Waste Control Act</td>
<td>n (Negative listing)</td>
</tr>
<tr>
<td>China. Inventory of Existing Chemical Substances</td>
<td>y (positive listing)</td>
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</tbody>
</table>

### Reportable quantity - Product

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>US. EPA CERCLA Hazardous Substances (40 CFR 302)</td>
<td>48473 lbs</td>
</tr>
</tbody>
</table>

### Reportable quantity-Components

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAPHTHALENE</td>
<td>91-20-3</td>
</tr>
<tr>
<td></td>
<td>100 lbs</td>
</tr>
</tbody>
</table>
16. OTHER INFORMATION

The information accumulated herein is believed to be accurate but is not warranted to be whether originating with the company or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. This MSDS has been prepared by Ashland's Environmental Health and Safety Department (1-800-325-3751).

List of abbreviations and acronyms that could be, but not necessarily are, used in this safety data sheet:
ACGIH: American Conference of Industrial Hygienists
BEI: Biological Exposure Index
CAS: Chemical Abstracts Service (Division of the American Chemical Society).
CMR: Carcinogenic, Mutagenic or Toxic for Reproduction
FG: Food grade
GHS: Globally Harmonized System of Classification and Labeling of Chemicals.
H-statement: Hazard Statement
IATA: International Air Transport Association.
IATA-DGR: Dangerous Goods Regulation by the “International Air Transport Association” (IATA).
ICAO: International Civil Aviation Organization
ICAO-TI (ICAO): Technical Instructions by the “International Civil Aviation Organization”
IMDG: International Maritime Code for Dangerous Goods
ISO: International Organization for Standardization
logPow: octanol-water partition coefficient
LCxx: Lethal Concentration, for xx percent of test population
LDxx: Lethal Dose, for xx percent of test population.
ICxx: Inhibitory Concentration for xx of a substance
Ecxx: Effective Concentration of xx
N.O.S.: Not Otherwise Specified
OECD: Organization for Economic Co-operation and Development
OEL: Occupational Exposure Limit
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679741

P-Statement : Precautionary Statement
PBT : Persistent, Bioaccumulative and Toxic
PPE : Personal Protective Equipment
STEL : Short-term exposure limit
STOT : Specific Target Organ Toxicity
TLV : Threshold Limit Value
TWA : Time-weighted average
vPvB : Very Persistent and Very Bioaccumulative
WEL : Workplace Exposure Level

CERCLA : Comprehensive Environmental Response, Compensation, and Liability Act
DOT : Department of Transportation
FIFRA : Federal Insecticide, Fungicide, and Rodenticide Act
HMIRC : Hazardous Materials Information Review Commission
HMIS : Hazardous Materials Identification System
NFPA : National Fire Protection Association
NIOSH : National Institute for Occupational Safety and Health
OSHA : Occupational Safety and Health Administration
PMRA : Health Canada Pest Management Regulatory Agency
RTK : Right to Know
WHMIS : Workplace Hazardous Materials Information System