**NOTICE:** Recently Summit discontinued the Wind Turbine Cleaner and replaced it with the Varnasolv product. We include both in these instructions for your convenience:

# Gearbox Cleanout Procedure

**CONTENTS**
- Procedure for removing sludgy oil from a H-W gearbox
- Procedure for getting replacement oil from H-W
- History of currently recommended Synthetic Oil
- Summit Letter: Varnasolv HV replaces Wind Turbine Cleaner
- Product Data Sheet, Varnasolv
- Wind Turbine Cleaner MSD Sheet
- Product Data Sheet, Wind Turbine Cleaner
- Wind Turbine Cleaner MSD Sheet
- Mobil SHC 636 Synthetic Lubricant MSD Sheet

## Sludgy Oil

Attached please find the **MSDS sheets** and **Instructions (Product Data Sheets)** for:

1. Varnasolv HV. (Equipment Varnish Cleaner)
2. Summit Wind Turbine Cleaner (Varnish and Sludge Gearbox Cleaner)

Read the Clean-Out Procedure Instructions on the Product Data Sheets before proceeding.

Deviate from the Instructions in the following ways:

1. Do Not Drain the Oil Level down to add the Cleaner.
2. Add Cleaner per the Chart Below.

### Machine Size

<table>
<thead>
<tr>
<th>Approximate Gear Box Volume</th>
<th>Add Cleaner Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>(gallon)</td>
<td>(liter)</td>
</tr>
<tr>
<td>34</td>
<td>3/4</td>
</tr>
<tr>
<td>43/44</td>
<td>1</td>
</tr>
<tr>
<td>53/54</td>
<td>1 1/2</td>
</tr>
<tr>
<td>63/64</td>
<td>2</td>
</tr>
<tr>
<td>74</td>
<td>4</td>
</tr>
</tbody>
</table>

Then, per the Clean-Out Procedure Instructions Run the Elevator Machine for at least 48 hours. The goal is to get the oil hot so that it will properly drain.

Drain the oil while hot and replace with fresh oil per the Hollister-Whitney Lubrication Instructions Procedure. If Hot Oil will not drain, refer to the chart above and add a second application of the cleaner to the Gearbox, and Run the Elevator Machine for another 24 hours. If Hot Oil will not drain at this point, contact Hollister-Whitney for assistance.

Getting Oil and/or Gearbox Cleaner from H-W

1) Machines must be checked by Qualified Mechanic.

2) Change oil at the normal recommended time. Procedure for this is Bulletin #1150, found at http://www.hollisterwhitney.com/techsupport/Bulletins/

3) If oil is coagulated, sludgy, etc.
   a) Get Contract Serial # (A#) from machine data tag and contact H-W.
   b) With the Contract Serial #, Contact H-W Sales (sales@hwec.com) for New Oil and/or Gearbox Cleaner.
   c) Customer Issues PO in writing to H-W Sales for new oil, cleaner, etc. Customer must reference Contract Serial #.
   d) New Oil, Cleaner, etc. is sent to the customer.

Concerning Mobil SHC 636

Hollister-Whitney now recommends the use of Mobil SHC 636 (described below). It is fully compatible with the mineral based EP 8, ISO Grade 680 gear oils used in the past.

Hollister-Whitney has used the Mobil Synthetic SHC636 for the better part of 25 years. In the past it was always delegated to those jobs that were of "higher" capacity, or had "inefficient" gearing... and would be shipped in the machine from Hollister-Whitney if that determination had been made at the time of Machine Assembly.

The "standard" oil used at Hollister-Whitney used to be a mineral based "normal" 680 viscosity gear oil. Many applications of this oil were successfully converted to SHC 636 after the fact in the field simply by the customer draining the old 680 oil out and replacing it with the SHC 636.

Hollister-Whitney no longer recommends any normal mineral based 680 gear oils.

The SHC 636 is NON-GLYCOL based, and is fully compatible with the normal mineral based 680 gear oils.
February 27, 2018

Ottsen Oil Company
1041 19th St. SW
Cedar Rapids, IA  52404

RE: Summit Wind Turbine Cleaner

To Whom It May Concern:

Summit Brand Wind Turbine Cleaner has been replaced with the Summit Brand Varnasolv HV (high viscosity). Product Data Sheet is available if needed.

Should you have any questions, please contact me or your Summit Sales Manager.

Best regards,

Dan Myrick
Chief Technology Officer
Kluber Lubrication/Summit Brand
LUBRICATION SYSTEM CLEANER

VARNASOLV Series
Equipment Varnish Cleaner

The use of petroleum lubricants, mainly automatic transmission fluid (ATF), in rotary screw compressors, rotary vane compressors and other high temperature equipment, results in varnish and carbon formation. The varnish and carbon deposited throughout the equipment can cause many serious operational problems, resulting in excessively high maintenance costs.

**Varnasolv** can help reduce the problems caused by varnish and carbon. **Varnasolv** should be added to the existing lubricant to remove and suspend varnish while the equipment is running. Using **Varnasolv** eliminates the need for disassembling the equipment for cleaning. For maximum benefit, use **Varnasolv** before each lubricant change. **Varnasolv** is NSF Registered HX-2

Additional applications for **Varnasolv** include cleaning hydraulic systems, gearboxes, and high temperature chains. **Varnasolv** can also be used for cleaning Heat Transfer systems with temperatures up to 400°F.

**Varnasolv HV** is blended to a higher viscosity for minimal dilution when used in gear box lubricants.

**HOW TO USE VARNASOLV**
Cleaning Hydrocarbon Deposits from Equipment
**Initial Clean-Out Method**

Add one gallon of **Varnasolv** concentrate to each ten gallons of oil in the unit, first draining enough oil to allow adding the Varnasolv. Continue to run the equipment for 20 to 40 hours, allowing the treated oil to disperse and suspend the varnish. To avoid redepósiting the suspended contaminants, drain the oil while warm and replace filters. Refill with new oil.

**Packing:** **Varnasolv** is available in cases (six gallons), five gallon pails or 55 gallon drums.

**Physical Properties**

<table>
<thead>
<tr>
<th>PRODUCTS</th>
<th>Varnasolv</th>
<th>Varnasolv HV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viscosity:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>@ 40°C, cSt</td>
<td>32.0</td>
<td>207.59</td>
</tr>
<tr>
<td>@ 100°C, cSt</td>
<td>5.23</td>
<td>29.02</td>
</tr>
<tr>
<td>Viscosity Index</td>
<td>95</td>
<td>180</td>
</tr>
<tr>
<td>Specific Gravity, 60°F</td>
<td>0.9738</td>
<td>0.9472</td>
</tr>
<tr>
<td>Density, lbs/gal</td>
<td>8.1098</td>
<td>7.8883</td>
</tr>
<tr>
<td>Flash Point, °F (°C)</td>
<td>480(249)</td>
<td>500(260)</td>
</tr>
<tr>
<td>Fire Point, °F (°C)</td>
<td>505(263)</td>
<td>535(279)</td>
</tr>
<tr>
<td>Pour Point, °F (°C)</td>
<td>0(-18)</td>
<td>21(-6)</td>
</tr>
<tr>
<td>NSF Registered, °F (°C)</td>
<td>HX-2</td>
<td>-</td>
</tr>
</tbody>
</table>

**Shelf Life:** Product shelf life is 5 years from the date of manufacture, after which the product should be recertified prior to use.
SAFETY DATA SHEET

Issue Date 29-Jul-2016  Revision Date 29-Jul-2016  Version 2

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

Product identifier
Product Name        Varnasolv HV

Other means of identification
Product code:        340378
Synonyms            None

Recommended use of the chemical and restrictions on use
Recommended Use      Lubricant.
Uses advised against No information available

Details of the supplier of the safety data sheet
Supplier Address
Klüber Lubrication NA LP
9010 County Road 2120
Tyler, Texas 75707
Phone: (903) 534-8021
Fax: (903) 581-4376

Emergency telephone number
Emergency Telephone   CHEMTREC: 1-800-424-0300; INTERNATIONAL: (703) 527-3887

2. HAZARD IDENTIFICATION

Classification

OSHA Regulatory Status
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Serious eye damage/eye irritation Category 2A

Label Elements

EMERGENCY OVERVIEW

Signal word
Warning

Hazard statements
Causes serious eye irritation
Appearance: Oil  
Physical state: Liquid  
Odor: Mild

Precautionary Statements - Prevention
Wear eye/face protection

Eyes: 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

Hazardous not otherwise classified (HNOCC)
Other information:
• Causes mild skin irritation
• Harmful to aquatic life with long lasting effects

3. COMPOSITION/INFORMATION ON INGREDIENTS
This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No</th>
<th>Weight %</th>
<th>Trade Secret</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary alcohol ethoxylate</td>
<td>84133-50-6</td>
<td>10 - 40%</td>
<td>*</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

First aid measures
Eye contact: Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Call a physician immediately.
Skin contact: Wash off immediately with soap and plenty of water. Remove and wash contaminated clothing before re-use. If skin irritation persists, call a physician.
Inhalation: Move to fresh air. If symptoms persist, call a physician.
Ingestion: Call a physician immediately. Do not induce vomiting without medical advice.

Most important symptoms and effects, both acute and delayed
Symptoms: No information available.

Indication of any immediate medical attention and special treatment needed

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media:
Carbon dioxide (CO2). Dry chemical. Water spray mist or foam.
Unsuitable extinguishing media: Do not use a solid water stream as it may scatter and spread fire.

**Specific hazards arising from the chemical:**

Thermal decomposition can lead to release of irritating gases and vapors. Water may be used to cool closed containers. Collect contaminated fire extinguishing water separately. Do not allow to enter drains or surface water.

**Explosion data:**

- Sensitivity to Mechanical Impact: None.
- Sensitivity to Static Discharge: None.

**Special protective equipment for firefighters:**
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

---

## 6. ACCIDENTAL RELEASE MEASURES

### Personal precautions, protective equipment and emergency procedures

**Personal precautions:**
Avoid contact with skin, eyes and clothing. Use personal protective equipment. Remove all sources of ignition.

**Environmental precautions**

**Environmental precautions:**
Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system.

**Methods and material for containment and cleaning up**

**Methods for containment:**
Prevent further leakage or spillage if safe to do so.

**Methods for cleaning up:**
Absorb spill with inert material (e.g. dry sand or earth), then place in a chemical waste container.

---

## 7. HANDLING AND STORAGE

### Precautions for safe handling

**Handling**
Spilling onto the container’s outside will make container slippery. Avoid contact with eyes and skin. Handle in accordance with good industrial hygiene and safety practice.

**Conditions for safe storage, including any incompatibilities**

**Storage Conditions**
Keep containers dry and tightly closed to avoid moisture absorption and contamination.

---

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Control parameters

**Exposure Guidelines**
Contains mineral oil, vegetable oil, and/or synthetic oil. Under conditions which may generate mists, observe the OELs PEL of 5 mg/m³, ACGIH STEL of 10 mg/m³.

**Appropriate engineering controls**

**Engineering measures to reduce exposure:**
Ensure adequate ventilation, especially in confined areas.

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

**Respiratory protection:**
In case of mist, spray or aerosol exposure wear suitable personal respiratory protection and protective suit.
9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Values</th>
<th>Remarks + Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melting point/freezing point</td>
<td>No information available</td>
<td>No applicable</td>
</tr>
<tr>
<td>Flash point</td>
<td>260 °C / 500 °F Cleveland Open Cup</td>
<td></td>
</tr>
<tr>
<td>Flammability</td>
<td>No information available</td>
<td>No applicable</td>
</tr>
<tr>
<td>Upper flammability limit</td>
<td>No information available</td>
<td>No applicable</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>No information available</td>
<td>No applicable</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>&lt; 1.0</td>
<td>No information available</td>
</tr>
<tr>
<td>Solubility in other solvents</td>
<td>No information available</td>
<td>No applicable</td>
</tr>
<tr>
<td>Autoignition temperature</td>
<td>No information available</td>
<td>No applicable</td>
</tr>
<tr>
<td>Kinematic Viscosity</td>
<td>No information available</td>
<td>No applicable</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>No information available</td>
<td>No applicable</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>No information available</td>
<td>No applicable</td>
</tr>
</tbody>
</table>

Other information

<table>
<thead>
<tr>
<th>Property</th>
<th>Values available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Softening point</td>
<td>No information available</td>
</tr>
<tr>
<td>Molecular weight</td>
<td>No information available</td>
</tr>
<tr>
<td>VOC Content (%)</td>
<td>No information available</td>
</tr>
<tr>
<td>Density</td>
<td>No information available</td>
</tr>
<tr>
<td>Bulk density</td>
<td>No information available</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

Reactivity
Not applicable

Chemical stability

<table>
<thead>
<tr>
<th>Stability</th>
<th>Stable under normal conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possibility of Hazardous Reactions</td>
<td>None under normal processing.</td>
</tr>
<tr>
<td>Hazardous polymerization</td>
<td>Hazardous polymerization does not occur.</td>
</tr>
</tbody>
</table>
11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

- Product does not present an acute toxicity hazard based on known or supplied information.

Eye contact

Moderately irritating to the eyes.

Skin contact

Prolonged contact may cause redness and irritation.

Inhalation

Vapors and/or aerosols which may be formed at elevated temperatures may be irritating to eyes and respiratory tract.

Ingestion

Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.

<table>
<thead>
<tr>
<th>Components</th>
<th>Oral LD50</th>
<th>Dermal LD50</th>
<th>Inhalation LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary alcohol ethoxylate - 8x133-50-6</td>
<td>2100 mg/kg (rat)</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Information on toxicological effects

Delayed and immediate effects as well as chronic effects from short and long-term exposure

- Serious eye damage/eye irritation: Irritating to eyes.
- Sensitization: No sensitization responses were observed.
- Mutagenic effects: Did not show mutagenic or teratogenic effects in animal experiments.
- Carcinogenicity: This product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.
- Reproductive toxicity: This product does not contain any known or suspected reproductive hazards.
- STOT - Single Exposure: None under normal use conditions.
- STOT - Repeated Exposure: None under normal use conditions.
- Aspiration hazard: Not applicable.

Numerical measures of toxicity - Product Information

The following values are calculated based on chapter 3.1 of the GHS document:

- ATEmix (oral): 12784 mg/kg
- ATEmix (dermal): 8660 mg/kg

12. ECOLOGICAL INFORMATION

Ecotoxicity

Harmful to aquatic life with long lasting effects

0.5% of the mixture consists of components(s) of unknown hazards to the aquatic environment.

<table>
<thead>
<tr>
<th>Component</th>
<th>Secondary alcohol ethoxylate - 8x133-50-6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algae/aquatic plants</td>
<td>-</td>
</tr>
</tbody>
</table>
Persistence and degradability
Readily biodegradable, according to appropriate OECD test. (based on components).

Bioaccumulation
No information available.

Mobility
The product is insoluble and floats on water.

13. DISPOSAL CONSIDERATIONS

Waste treatment methods
Disposal of wastes
Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated packaging
Do not reuse container.

14. TRANSPORT INFORMATION

DOT
Not Regulated by any means of transportation

15. REGULATORY INFORMATION

International Inventories
TSCA:
Listed in TSCA

DSL:
All of the components in this product are listed in DSL

EINECS/ELINCS
This product complies with EINECS/ELINCS

CHINA:
This product complies with China IECSC.

KECL:
This product complies with Korea KECL.

PICCS:
This product does not comply with Philippines PICCS.

AICS:
All the constituents of this material are listed on the Australian AICS

Legend:
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances
Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

SARA 311/312 Hazard Categories

<table>
<thead>
<tr>
<th>Hazard Category</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Health Hazard</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chronic Health Hazard</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Fire Hazard</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Sudden release of pressure hazard</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Reactive Hazard</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

CWA (Clean Water Act)
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

CERCLA
This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 356). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

State Regulations (RTK)

California Proposition 65
This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations

U.S. EPA Label Information
EPA Pesticide Registration Number Not applicable

16. OTHER INFORMATION

NFPA:
Health: 2
Flammability: 1
Instability 0
NFPA/HMIS * for Carc, Muta Tera, Specific Organ *
HMIS health rating:
Health: 2
Flammability: 1
Physical hazards 0
Personal protection B

Issue Date 29-Jul-2016
Revision Date 29-Jul-2016
Revision Note Not applicable
Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet
Wind Turbine Cleaner
Varnish and Sludge Cleaner

Wind turbine gearbox lubricants perform in difficult environments. Shock loading, extended oil drain service intervals, temperature and humidity extremes can rapidly break down the best formulated lubricants, producing varnish and sludge as natural decomposition by-products. Summit’s Wind Turbine Cleaner is the most effective lubricating system conditioner available to clean and remove these performance robbing deposits.

Clean-Out Procedure:
Simply replace 10% of the existing oil charge with an equal amount of Summit Wind Turbine Cleaner, and then operate normally for a minimum of 48 hours. As the warm oil is drained from the gearbox reservoir, the varnish, sludge, and carbonaceous gunk in suspension will be removed. If installed, check oil filters and change after the cleaning procedure. A thorough periodic cleaning of the gearbox lubricating system before a scheduled oil change ensures peak lubricant performance and restores the system to like-new condition.

Summit’s Wind Turbine Cleaner is compatible with all commonly used lubricants, mineral or synthetic; and, all common elastomers, paints and plastics. Please consult your Summit representative for more information.

<table>
<thead>
<tr>
<th>PHYSICAL PROPERTIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viscosity, 40ºC, cSt</td>
</tr>
<tr>
<td>Specific Gravity, 60ºF</td>
</tr>
<tr>
<td>Density, 60ºF</td>
</tr>
<tr>
<td>Flash Point</td>
</tr>
</tbody>
</table>
1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

Product Name: Wind Turbine Cleaner
Article Code: 340281
Synonyms: No information available
Chemical characterisation: No data is available on the product itself.

Supplier:
Summit Industrial Products
9010 County Road 2120
Tyler, Texas 75707
Phone: (903) 534-8021
Fax: (903) 581-4376

Emergency telephone number CHEMTREC: 1-800-424-9300

2. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No</th>
<th>ACGIH (TWA mg/m³):</th>
<th>OSHA (TWA mg/m³):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glycols, polyethylene, mono(1,1,3,3-tetramethyl)phenyl] ether</td>
<td>9036-19-5</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

3. HAZARDS IDENTIFICATION

Properties affecting health: Harmful by inhalation
Harmful in contact with skin

Principle routes of exposure: Skin.

Skin contact: Contact causes skin irritation.

Eye contact: Contact with eyes may cause irritation.

Inhalation: May cause irritation of respiratory tract.

Ingestion: Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea. Risk of product entering the lungs on vomiting after ingestion

4. FIRST AID MEASURES

General advice: If symptoms persist, call a physician.

Skin contact: Wash off immediately with soap and plenty of water. Remove and wash contaminated clothing before re-use. If skin irritation persists, call a physician.
Inhalation: Move to fresh air. If symptoms persist, call a physician.

Eye contact: Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. If symptoms persist, call a physician.

Ingestion: Drink 1 or 2 glasses of water. Do not induce vomiting. Consult a physician.

### 5. FIRE-FIGHTING MEASURES

**Suitable extinguishing media:**
Carbon dioxide (CO2), Dry chemical, Water spray mist or foam

**Extinguishing media which must not be used for safety reasons:**
No information available..

**Special protective equipment for firefighters:**
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

**Specific hazards:** No information available.

**Unusual hazards:** No hazards resulting from the material as supplied

**Specific methods:** In the event of fire, cool tanks with water spray

**Flash point:** >335 (°F)

**Method:** Cleveland Open Cup

**Autoignition temperature:** No information available

**Flammability Limits in Air:**
- **Lower** No information available
- **Upper** No information available

### 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions:** Use personal protective equipment

**Environmental precautions:** Do not flush into surface water or sanitary sewer system.

**Methods for cleaning up:** Absorb spill with inert material (e.g. dry sand or earth), then place in a chemical waste container.

### 7. HANDLING AND STORAGE

**Handling**

<table>
<thead>
<tr>
<th>Technical measures/precautions:</th>
<th>Use only in area provided with appropriate exhaust ventilation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safe handling advice:</td>
<td>Spilling onto the container’s outside will make container slippery.</td>
</tr>
</tbody>
</table>

**Storage**

<table>
<thead>
<tr>
<th>Technical measures/storage conditions:</th>
<th>Keep containers dry and tightly closed to avoid moisture absorption and contamination.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incompatible products:</td>
<td>No special restrictions on storage with other products.</td>
</tr>
</tbody>
</table>

### 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Engineering measures to reduce exposure:**
Ensure adequate ventilation, especially in confined areas.

**Personal Protective Equipment**

<table>
<thead>
<tr>
<th>Respiratory protection:</th>
<th>In case of mist, spray or aerosol exposure wear suitable personal respiratory protection and protective suit.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand protection:</td>
<td>Nitrile rubber.</td>
</tr>
</tbody>
</table>
Skin and body protection: Usual safety precautions while handling the product will provide adequate protection against this potential effect.
Eye protection: Safety glasses
Hygiene measures: Avoid contact with skin, eyes and clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Physical State:</th>
<th>Liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color:</td>
<td>Clear</td>
</tr>
<tr>
<td>Specific gravity:</td>
<td>&lt;1.0</td>
</tr>
<tr>
<td>Boiling point/range:</td>
<td>&gt;500 °F</td>
</tr>
<tr>
<td>Evaporation rate:</td>
<td>Not determined</td>
</tr>
<tr>
<td>Vapor density:</td>
<td>Not determined</td>
</tr>
<tr>
<td>Vapor pressure:</td>
<td>&lt; 0.035 mm Hg @ 300 °F</td>
</tr>
<tr>
<td>Solubility:</td>
<td>Insoluble</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

Stability: Stable
Polymerization: Hazardous polymerisation does not occur.
Hazardous decomposition products: Carbon oxides
Materials to avoid: Oxidising agents (strong).
Conditions to avoid: Stable at normal conditions

11. TOXICOGOLOGICAL INFORMATION

Acute toxicity: No data available

12. ECOLOGICAL INFORMATION

Mobility: No information available.
Bioaccumulative potential: No information available.
Ecotoxicity effects: No data available.
Aquatic toxicity: No information available

13. DISPOSAL CONSIDERATIONS

Waste from residues / unused products: In accordance with local and national regulations.
Contaminated packaging: Empty containers should be taken for local recycling, recovery or waste disposal

14. TRANSPORT INFORMATION

DOT Proper shipping name: Not Applicable
TDG (Canada) Proper shipping name: Not Applicable

IMO / IMDG

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## 14. TRANSPORT INFORMATION

**Proper shipping name:** Not Applicable

### ICAO

**Proper shipping name:** Not Applicable

### IATA

**Proper shipping name:** Not Applicable

---

## 15. REGULATORY INFORMATION

### International Inventories

- **PICCS:** This product complies with phill
- **TSCA:** Listed in TSCA
- **DSL:** AII of the components in this product are listed in DSL
- **ENCS:** This product does not comply with JIPENCS
- **CHINA:** This product complies with china:
- **AICS:** All the constituents of this material are listed on the Australian Inventory of Chemical Substances (AICS).
- **KECL:** This product complies with korea:
- **EINECS/ELINCS:** This product complies with EINECS/ELINCS

### U.S. Regulations:

- **Sara (311, 312) hazard class:**

### Canada

**WHMIS hazard class:**

- D2B  Toxic materials

**WHMIS graphic:**

---

## 16. OTHER INFORMATION

### NFPA

<table>
<thead>
<tr>
<th>Health</th>
<th>Fiammability</th>
<th>Instability</th>
</tr>
</thead>
<tbody>
<tr>
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<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

### HMIS

<table>
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<th>Health</th>
<th>Fiammability</th>
<th>Physical Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

**NFPA symbol:**

---

**Reason for revision:** Not applicable

**Prepared by:** Health & Safety

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MATERIAL SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: MOBIL SHC 636
Product Description: Synthetic Base Stocks and Additives
Product Code: 201560500580, 602995-00, 970921
Intended Use: Circulating/gear oil

COMPANY IDENTIFICATION

Supplier: EXXON MOBIL CORPORATION
3225 GALLOWS RD.
FAIRFAX, VA.  22037     USA
24 Hour Health Emergency 609-737-4411
Transportation Emergency Phone 800-424-9300
ExxonMobil Transportation No. 281-834-3296
Product Technical Information 800-662-4525, 800-947-9147

SECTION 2 COMPOSITION / INFORMATION ON INGREDIENTS

No Reportable Hazardous Substance(s) or Complex Substance(s).

SECTION 3 HAZARDS IDENTIFICATION

This material is not considered to be hazardous according to regulatory guidelines (see (M)SDS Section 15).

POTENTIAL HEALTH EFFECTS

Low order of toxicity. Excessive exposure may result in eye, skin, or respiratory irritation. High-pressure injection under skin may cause serious damage.

NFPA Hazard ID: Health: 0 Flammability: 1 Reactivity: 0
HMIS Hazard ID: Health: 0 Flammability: 1 Reactivity: 0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 4 FIRST AID MEASURES

INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use
adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

SKIN CONTACT
Wash contact areas with soap and water. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

EYE CONTACT
Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION
First aid is normally not required. Seek medical attention if discomfort occurs.

SECTION 5  FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA
Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

Inappropriate Extinguishing Media: Straight Streams of Water

FIRE FIGHTING
Fire Fighting Instructions: Evacuate area. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Hazardous Combustion Products: Smoke, Fume, Aldehydes, Sulfur oxides, Incomplete combustion products, Oxides of carbon

FLAMMABILITY PROPERTIES
Flash Point [Method]: >210°C (410°F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D

SECTION 6  ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES
In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. US regulations require reporting releases of this material to the environment which exceed the applicable reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. The National Response Center can be reached at (800)424-8802.
PROTECTIVE MEASURES

Avoid contact with spilled material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.

SPILL MANAGEMENT

Land Spill: Stop leak if you can do it without risk. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do it without risk. Confine the spill immediately with booms. Warn other shipping. Remove from the surface by skimming or with suitable absorbents. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Large Spills: Dike far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7 HANDLING AND STORAGE

HANDLING

Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source). When the material is handled in bulk, an electrical spark could ignite any flammable vapors from liquids or residues that may be present (e.g., during switch-loading operations). Use proper bonding and/or ground procedures. However, bonding and grounds may not eliminate the hazard from static accumulation. Consult local applicable standards for guidance. Additional references include American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practice on Static Electricity) or CENELEC CLC/TR 50404 (Electrostatics - Code of practice for the avoidance of hazards due to static electricity).

Static Accumulator: This material is a static accumulator.

STORAGE

The container choice, for example storage vessel, may effect static accumulation and dissipation. Do not store in open or unlabelled containers.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limits/standards for materials that can be formed when handling this product: When mists/aerosols can occur the following are recommended: 5 mg/m³ - ACGIH TLV (inhalable fraction), 5 mg/m³ - OSHA PEL.
NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

No special requirements under ordinary conditions of use and with adequate ventilation.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

No special requirements under ordinary conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

No protection is ordinarily required under normal conditions of use.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact.

Specific Hygiene Measures: 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. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

ENVIRONMENTAL CONTROLS

Comply with applicable environmental regulations limiting discharge to air, water and soil. Protect the environment by applying appropriate control measures to prevent or limit emissions.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Note: Physical and chemical properties are provided for safety, health and environmental considerations only
and may not fully represent product specifications. Contact the Supplier for additional information.

**GENERAL INFORMATION**
- Physical State: Liquid
- Color: Orange
- Odor: Characteristic
- Odor Threshold: N/D

**IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION**
- Relative Density: 0.867
- Flash Point [Method]: >210°C (410°F) [ASTM D-92]
- Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
- Autoignition Temperature: N/D
- Boiling Point / Range: > 316°C (600°F)
- Vapor Density (Air = 1): > 2 at 101 kPa
- Vapor Pressure: < 0.013 kPa (0.1 mm Hg) at 20 °C
- Evaporation Rate (n-butyl acetate = 1): N/D
- pH: N/A
- Log Pow (n-Octanol/Water Partition Coefficient): > 3.5
- Solubility in Water: Negligible
- Viscosity: 680 cSt (680 mm²/sec) at 40 °C
- Oxidizing Properties: See Hazards Identification Section.

**OTHER INFORMATION**
- Freezing Point: N/D
- Melting Point: N/A
- Pour Point: -30°C (-22°F)
- Decomposition Temperature: N/D

### SECTION 10 STABILITY AND REACTIVITY

**STABILITY:** Material is stable under normal conditions.

**CONDITIONS TO AVOID:** Excessive heat. High energy sources of ignition.

**MATERIALS TO AVOID:** Strong oxidizers

**HAZARDOUS DECOMPOSITION PRODUCTS:** Material does not decompose at ambient temperatures.

**HAZARDOUS POLYMERIZATION:** Will not occur.

### SECTION 11 TOXICOLOGICAL INFORMATION

**ACUTE TOXICITY**

<table>
<thead>
<tr>
<th>Route of Exposure</th>
<th>Conclusion / Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation</td>
<td></td>
</tr>
<tr>
<td>Toxicity (Rat): LC50 &gt; 5000 mg/m3</td>
<td>Minimally Toxic. Based on test data for structurally similar materials.</td>
</tr>
<tr>
<td>Irritation: No end point data.</td>
<td>Negligible hazard at ambient/normal handling temperatures. Based on assessment of the components.</td>
</tr>
</tbody>
</table>
Ingestion

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxicity (Rat): LD50 &gt; 5000 mg/kg</td>
<td>Minimally Toxic. Based on test data for structurally similar materials.</td>
</tr>
</tbody>
</table>

Skin

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxicity (Rabbit): LD50 &gt; 5000 mg/kg</td>
<td>Minimally Toxic. Based on test data for structurally similar materials.</td>
</tr>
<tr>
<td>Irritation (Rabbit): Data available.</td>
<td>Negligible irritation to skin at ambient temperatures. Based on test data for structurally similar materials.</td>
</tr>
</tbody>
</table>

Eye

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Irritation (Rabbit): Data available.</td>
<td>May cause mild, short-lasting discomfort to eyes. Based on test data for structurally similar materials.</td>
</tr>
</tbody>
</table>

CHRONIC/OTHER EFFECTS

Contains:

Synthetic base oils: Not expected to cause significant health effects under conditions of normal use, based on laboratory studies with the same or similar materials. Not mutagenic or genotoxic. Not sensitizing in test animals and humans.

Additional information is available by request.

The following ingredients are cited on the lists below: None.

--REGULATORY LISTS SEARCHED--

1 = NTP CARC
2 = NTP SUS
3 = IARC 1
4 = IARC 2A
5 = IARC 2B
6 = OSHA CARC

SECTION 12

ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

ECOTOXICITY

Material -- Not expected to be harmful to aquatic organisms.
Material -- Not expected to demonstrate chronic toxicity to aquatic organisms.

MOBILITY

Base oil component -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

SECTION 13

DISPOSAL CONSIDERATIONS
Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

**DISPOSAL RECOMMENDATIONS**

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products. Protect the environment. Dispose of used oil at designated sites. Minimize skin contact. Do not mix used oils with solvents, brake fluids or coolants.

**REGULATORY DISPOSAL INFORMATION**

RCRA Information: The unused product, in our opinion, is not specifically listed by the EPA as a hazardous waste (40 CFR, Part 261D), nor is it formulated to contain materials which are listed as hazardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrositivity or reactivity and is not formulated with contaminants as determined by the Toxicity Characteristic Leaching Procedure (TCLP). However, used product may be regulated.

**Empty Container Warning** Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

**SECTION 14 TRANSPORT INFORMATION**

**LAND (DOT):** Not Regulated for Land Transport  
**LAND (TDG):** Not Regulated for Land Transport  
**SEA (IMDG):** Not Regulated for Sea Transport according to IMDG-Code  
**AIR (IATA):** Not Regulated for Air Transport

**SECTION 15 REGULATORY INFORMATION**

**OSHA HAZARD COMMUNICATION STANDARD:** When used for its intended purposes, this material is not classified as hazardous in accordance with OSHA 29 CFR 1910.1200.

**Complies with the following national/regional chemical inventory requirements::** TSCA  
**Special Cases:**

<table>
<thead>
<tr>
<th>Inventory</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>AICS</td>
<td>Restrictions Apply</td>
</tr>
<tr>
<td>ELINCS</td>
<td>Restrictions Apply</td>
</tr>
<tr>
<td>KECI</td>
<td>Restrictions Apply</td>
</tr>
</tbody>
</table>
EPCRA: This material contains no extremely hazardous substances.

SARA (311/312) REPORTABLE HAZARD CATEGORIES: None.

SARA (313) TOXIC RELEASE INVENTORY: This material contains no chemicals subject to the supplier notification requirements of the SARA 313 Toxic Release Program.

The following ingredients are cited on the lists below:

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS Number</th>
<th>List Citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHENOL, 4,4'-METHYLENEDIIS(2,6-BIS(1,1-DIMETHYLETHYL)-)</td>
<td>118-82-1</td>
<td>5</td>
</tr>
</tbody>
</table>

--REGULATORY LISTS SEARCHED--
1 = ACGIH ALL                      6 = TSCA 5a2                      11 = CA P65 REPRO  16 = MN RTK
2 = ACGIH A1                       7 = TSCA 5e                       12 = CA RTK       17 = NJ RTK
3 = ACGIH A2                       8 = TSCA 6                       13 = IL RTK       18 = PA RTK
4 = OSHA Z                         9 = TSCA 12b                     14 = LA RTK       19 = RI RTK
5 = TSCA 4                         10 = CA P65 CARC                  15 = MI 293

Code key: CARC=Carcinogen; REPRO=Reproductive

SECTION 16 OTHER INFORMATION

N/D = Not determined, N/A = Not applicable

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:

Revision Changes:
Section 09: Boiling Point (C) was modified.
Section 09: Flash Point (C) was modified.
Section 09: n-Octanol/Water Partition Coefficient was modified.
Section 08: Comply with applicable regulations phrase was modified.
Section 01: Product Intended Use was modified.
Section 09: Vapor Pressure was modified.
Section 09: Flash Point (C) was modified.
Section 09: Viscosity was modified.
Section 15: National Chemical Inventory Listing was modified.
Section 15: Special Cases Table was modified.
Section 09: Vapor Pressure was deleted.

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