1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Valvoline® Palladium® #2 WITH MOLY™ Trademark, Valvoline or its subsidiaries, registered in various countries

Product code : VV70112

Company : Valvoline LLC
3499 Blazer Parkway
Lexington, KY 40509

United States of America

E-mail address : SDS@valvoline.com
Telephone : 1-800-TEAMVAL
Telefax :

Emergency telephone number : 1-800-VALVOLINE

2. HAZARDS IDENTIFICATION

GHS Classification
Aspiration hazard : Category 1

GHS-Labelling
Hazard pictograms :

Signal word : Danger

Hazard statements : H304 May be fatal if swallowed and enters airways.

Precautionary statements : Response:
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P331 Do NOT induce vomiting.
Storage:
P405 Store locked up.
Disposal:
P501 Dispose of contents/container to an approved waste disposal plant.
3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS-No.</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISTILLATES (PETROLEUM), SOLVENT-DEWAXED HEAVY PARAFFINIC</td>
<td>64742-65-0</td>
<td>&gt;=30 - &lt;60 %</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

General advice : First aid is not normally required. If symptoms develop, seek medical attention.

First aid measures for different exposure routes

In case of eye contact : Flush eyes with water at least 15 minutes. Get medical attention if eye irritation develops or persists. Remove contact lenses.

In case of skin contact : Take off contaminated clothing and shoes immediately. Wash off immediately with plenty of water.

If inhaled : Move to fresh air.
If symptoms persist, call a physician.
In case of shortness of breath, give oxygen.

If swallowed : Do not induce vomiting without medical advice.
Never give anything by mouth to an unconscious person.
Consult a physician if necessary.

Most important symptoms and effects, both acute and delayed (new) : Signs and symptoms of exposure to this material through breathing, swallowing, and/or passage of the material through the skin may include:
- stomach or intestinal upset (nausea, vomiting, diarrhea)
- irritation (nose, throat, airways)

Acute aspiration of large amounts of oil-laden material may produce a serious aspiration pneumonia. Patients who aspirate these oils should be followed for the development of long-term sequelae. Repeated aspiration of small quantities of mineral oil can produce chronic inflammation of the lungs (i.e. lipoid pneumonia) that may progress to pulmonary fibrosis. Symptoms are often subtle and radiological changes appear worse than clinical abnormalities. Occasionally, persistent cough, irritation of the upper respiratory tract, shortness of breath with exertion, fever, and bloody sputum occur. Inhalation exposure to oil mists below current...
workplace exposure limits is unlikely to cause pulmonary abnormalities.

Notes to physician (new) :

No hazards which require special first aid measures.

5. FIREFIGHTING MEASURES

Suitable extinguishing media : ABC powder
Carbon dioxide (CO2)
Dry chemical
Water mist

Unsuitable extinguishing media : Halons

Specific hazards during firefighting : Do not allow run-off from fire fighting to enter drains or water courses.

Hazardous combustion products : Aldehydes
carbon dioxide and carbon monoxide
Ketones

Specific extinguishing methods : Keep containers and surroundings cool with water spray.
Prevent fire extinguishing water from contaminating surface water or the ground water system.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.
Use personal protective equipment.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed.

Environmental precautions : Prevent further leakage or spillage if safe to do so.

Methods and materials for containment and cleaning up : Large spills should be collected mechanically (remove by pumping) for disposal.
Keep in suitable, closed containers for disposal.

Additional advice : Comply with all applicable federal, state, and local regulations.
7. HANDLING AND STORAGE

Handling
Technical measures : Normal measures for preventive fire protection.
Advice on safe handling : Do not breathe vapours or spray mist. For personal protection see section 8.
Avoid exceeding of the given occupational exposure limits (see section 8).
Smoking, eating and drinking should be prohibited in the application area.
Avoidance of contact : Strong oxidizing agents

Storage
Conditions for safe storage : Store in original container.
Keep containers tightly closed in a dry, cool and well-ventilated place.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Materials to avoid : Strong oxidizing agents
Advice on common storage : No special restrictions on storage with other products.
Other data : Stable under recommended storage conditions.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value (Form of exposure)</th>
<th>Control parameters / Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISTILLATES (PETROLEUM), SOLVENT-DEWAXED HEAVY</td>
<td>64742-65-0</td>
<td>TWA (Inhalable fraction.)</td>
<td>5 mg/m3</td>
<td>PY OEL</td>
</tr>
<tr>
<td>PARAFFINIC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MOLYBDENUM DISULFIDE</td>
<td>1317-33-5</td>
<td>TWA (Inhalable fraction.)</td>
<td>10 mg/m3</td>
<td>UY OEL</td>
</tr>
<tr>
<td>MOLYBDENUM DISULFIDE</td>
<td>1317-33-5</td>
<td>TWA (Respirable fraction.)</td>
<td>3 mg/m3</td>
<td>UY OEL</td>
</tr>
<tr>
<td>MOLYBDENUM DISULFIDE</td>
<td>1317-33-5</td>
<td>TWA (Respirable fraction.)</td>
<td>3 mg/m3</td>
<td>EC OEL</td>
</tr>
<tr>
<td>MOLYBDENUM DISULFIDE</td>
<td>1317-33-5</td>
<td>TWA</td>
<td>10 mg/m3</td>
<td>EC OEL</td>
</tr>
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<tr>
<td>MOLYBDENUM DISULFIDE</td>
<td>1317-33-5</td>
<td>TWA (Inhalable fraction.)</td>
<td>10 mg/m³</td>
<td>CR OEL</td>
</tr>
<tr>
<td>MOLYBDENUM DISULFIDE</td>
<td>1317-33-5</td>
<td>TWA (Respirable fraction.)</td>
<td>3 mg/m³</td>
<td>CR OEL</td>
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<tr>
<td>MOLYBDENUM DISULFIDE</td>
<td>1317-33-5</td>
<td>(Respirable fraction.)</td>
<td>CR OEL</td>
<td></td>
</tr>
<tr>
<td>MOLYBDENUM DISULFIDE</td>
<td>1317-33-5</td>
<td>(Inhalable fraction.)</td>
<td>CR OEL</td>
<td></td>
</tr>
</tbody>
</table>

### US. ACGIH Threshold Limit Values

<table>
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<tr>
<th>Components</th>
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<th>Value (Form of exposure)</th>
<th>Control parameters / Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOLYBDENUM DISULFIDE</td>
<td>1317-33-5</td>
<td>TWA (Respirable fraction.)</td>
<td>3 mg/m³</td>
<td>ACGIH</td>
</tr>
<tr>
<td>MOLYBDENUM DISULFIDE</td>
<td>1317-33-5</td>
<td>TWA (Inhalable fraction.)</td>
<td>10 mg/m³</td>
<td>ACGIH</td>
</tr>
</tbody>
</table>

### Engineering measures

Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below level of overexposure (from known, suspected or apparent adverse effects).

### Personal protective equipment

**Respiratory protection**: No personal respiratory protective equipment normally required.

**Eye protection**: Safety glasses with side-shields

**Hand protection**: Wear resistant gloves such as:

**Material**: polyvinyl alcohol

**Skin and body protection**: Wear as appropriate:

Safety shoes

**Hygiene measures**: Ensure that eyewash stations and safety showers are close to the workstation location.
9. PHYSICAL AND CHEMICAL PROPERTIES

- **Appearance**: paste
- **Colour**: grey
- **Odour**: mild
- **pH**: No data available
- **Freezing point**: No data available
- **Boiling point**: > 371 °C
- **Flash point**: not applicable
- **Upper explosion limit**: No data available
- **Lower explosion limit**: No data available
- **Vapour pressure**: < 1 mmHg (37.78 °C)
- **Density**: 0.8918 g/cm³ (25 °C)

**Solubility(ies)**
- **Water solubility**: No data available
- **Solubility in other solvents**: No data available
- **Partition coefficient: n-octanol/water**: No data available
- **Auto-ignition temperature**: No data available
- **Thermal decomposition**: No data available

10. STABILITY AND REACTIVITY

- **Possibility of hazardous reactions**: No hazards to be specially mentioned.
  
  Hazardous polymerisation does not occur.

- **Incompatible materials**: Strong oxidizing agents

11. TOXICOLOGICAL INFORMATION

- **Product**
  - **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

Components:

DISTILLATES (PETROLEUM), SOLVENT-DEWAXED HEAVY PARAFFINIC:

Acute oral toxicity : LD 50 Rat: > 5,000 mg/kg
Acute dermal toxicity : LD 50 Rabbit: > 5,000 mg/kg
Aspiration toxicity : May be fatal if swallowed and enters airways.

12. ECOLOGICAL INFORMATION

Ecotoxicity
Product:
No data available

Components:
No data available

Persistence and degradability
Product:
No data available

Components:
No data available

Bioaccumulative potential
Product:
No data available
Components:
No data available

Mobility in soil
Product:
No data available

Components:
No data available

Other adverse effects
Product:
Ozone-Depletion Potential : No data available

Components:
No data available

13. DISPOSAL CONSIDERATIONS

Disposal methods
Waste from residues : Dispose of in accordance with the European Directives on waste and hazardous waste.

Dispose of in accordance with local regulations.

Contaminated packaging : Empty remaining contents.

DISPOSAL CONSIDERATIONS
Dispose of in accordance with local regulations.

14. TRANSPORT INFORMATION

International transport regulations

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>
</tr>
</thead>
</table>

INTERNATIONAL AIR TRANSPORT ASSOCIATION - CARGO
Not dangerous goods
INTERNATIONAL AIR TRANSPORT ASSOCIATION - PASSENGER
Not dangerous goods

INTERNATIONAL MARITIME DANGEROUS GOODS
Not dangerous goods

UN_DG
Not dangerous goods

*ORM = ORM-D, CBL = COMBUSTIBLE LIQUID

| Marine pollutant | no |

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

Other international regulations

Notification status

16. OTHER INFORMATION

Further information

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 Valvoline’s Environmental Health and Safety Department.

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.
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IATA-DGR</td>
<td>Dangerous Goods Regulation by the “International Air Transport Association” (IATA).</td>
</tr>
<tr>
<td>ICAO</td>
<td>International Civil Aviation Organization</td>
</tr>
<tr>
<td>ICAO-TI (ICAO)</td>
<td>Technical Instructions by the “International Civil Aviation Organization”</td>
</tr>
<tr>
<td>IMDG</td>
<td>International Maritime Code for Dangerous Goods</td>
</tr>
<tr>
<td>ISO</td>
<td>International Organization for Standardization</td>
</tr>
<tr>
<td>logPow</td>
<td>octanol-water partition coefficient</td>
</tr>
<tr>
<td>LCxx</td>
<td>Lethal Concentration, for xx percent of test population</td>
</tr>
<tr>
<td>LDxx</td>
<td>Lethal Dose, for xx percent of test population</td>
</tr>
<tr>
<td>ICxx</td>
<td>Inhibitory Concentration for xx of a substance</td>
</tr>
<tr>
<td>Ecxx</td>
<td>Effective Concentration of xx</td>
</tr>
<tr>
<td>N.O.S.</td>
<td>Not Otherwise Specified</td>
</tr>
<tr>
<td>OECD</td>
<td>Organization for Economic Co-operation and Development</td>
</tr>
<tr>
<td>OEL</td>
<td>Occupational Exposure Limit</td>
</tr>
<tr>
<td>P-Statement</td>
<td>Precautionary Statement</td>
</tr>
<tr>
<td>PBT</td>
<td>Persistent, Bioaccumulative and Toxic</td>
</tr>
<tr>
<td>PPE</td>
<td>Personal Protective Equipment</td>
</tr>
<tr>
<td>STEL</td>
<td>Short-term exposure limit</td>
</tr>
<tr>
<td>STOT</td>
<td>Specific Target Organ Toxicity</td>
</tr>
<tr>
<td>TLV</td>
<td>Threshold Limit Value</td>
</tr>
<tr>
<td>TWA</td>
<td>Time-weighted average</td>
</tr>
<tr>
<td>vPvB</td>
<td>Very Persistent and Very Bioaccumulative</td>
</tr>
<tr>
<td>WEL</td>
<td>Workplace Exposure Level</td>
</tr>
<tr>
<td>CERCLA</td>
<td>Comprehensive Environmental Response, Compensation, and Liability Act</td>
</tr>
<tr>
<td>DOT</td>
<td>Department of Transportation</td>
</tr>
<tr>
<td>FIFRA</td>
<td>Federal Insecticide, Fungicide, and Rodenticide Act</td>
</tr>
<tr>
<td>HMIRC</td>
<td>Hazardous Materials Information Review Commission</td>
</tr>
<tr>
<td>HMIS</td>
<td>Hazardous Materials Identification System</td>
</tr>
<tr>
<td>NFPA</td>
<td>National Fire Protection Association</td>
</tr>
<tr>
<td>NIOSH</td>
<td>National Institute for Occupational Safety and Health</td>
</tr>
<tr>
<td>OSHA</td>
<td>Occupational Safety and Health Administration</td>
</tr>
<tr>
<td>PMRA</td>
<td>Health Canada Pest Management Regulatory Agency</td>
</tr>
<tr>
<td>RTK</td>
<td>Right to Know</td>
</tr>
<tr>
<td>WHMIS</td>
<td>Workplace Hazardous Materials Information System</td>
</tr>
</tbody>
</table>