**SECTION 1: Identification of the substance/mixture and of the company/undertaking**

- **1.1 Product identifier**
  - Trade name: Diethyl Ether
  - Article number: 8106
  - CAS Number: 60-29-7
  - EC number: 200-467-2
  - Index number: 603-022-00-4
  - Registration number: 01-2119535785-29-XXXX

- **1.2 Relevant identified uses of the substance or mixture and uses advised against**
  - Sector of Use
    - SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites
    - SU8 Manufacture of bulk, large scale chemicals (including petroleum products)
    - SU9 Manufacture of fine chemicals
    - SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
  - Process category
    - PROC1 Use in closed process, no likelihood of exposure
    - PROC2 Use in closed, continuous process with occasional controlled exposure
    - PROC3 Use in closed batch process (synthesis or formulation)
    - PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises
    - PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
    - PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
    - PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
    - PROC9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
    - PROC10 Roller application or brushing
    - PROC15 Use as laboratory reagent
  - Environmental release category
    - ERC1 Manufacture of substances
    - ERC2 Formulation of preparations
    - ERC4 Industrial use of processing aids in processes and products, not becoming part of articles
    - ERC8a Wide dispersive indoor use of processing aids in open systems
    - ERC8e Wide dispersive outdoor use of reactive substances in open systems
  - Application of the substance / the mixture: For Laboratory, Research or Manufacturing use.

- **1.3 Details of the supplier of the safety data sheet**
  - Manufacturer/Supplier:
    - Avantor Performance Materials B.V.
    - P.O.Box 1
    - 7400 AA Deventer
    - The Netherlands
  - Informing department:
    - E-mail: pawel.skiba@avantormaterials.com
  - Avantor Performance Materials Sales Office
    - Tel.: (+31) (0)570 - 687500
    - Fax: (+31) (0)570 - 687574
  - E-mail: jtbaker.nl@avantormaterials.com

- **1.4 Emergency telephone number:**
  - Environment Health & Safety department
    - during normal opening times (8 am till 5.30 pm) tel: (+31)(0) 570 687500

**SECTION 2: Hazards identification**

- **2.1 Classification of the substance or mixture**
  - Classification according to Regulation (EC) No 1272/2008
    - Flam. Liq. 1 H224 Extremely flammable liquid and vapour.
    - Acute Tox. 4 H302 Harmful if swallowed.
STOT SE 3  H336  May cause drowsiness or dizziness.

- Classification according to Directive 67/548/EEC or Directive 1999/45/EC
  Xn: Harmful
  R22: Harmful if swallowed.
  F+: Extremely flammable
  R12: Extremely flammable.
  R19-66-67: May form explosive peroxides. Repeated exposure may cause skin dryness or cracking.
  Vapours may cause drowsiness and dizziness.

- Information concerning particular hazards for human and environment:
  At long or repeated contact with skin it may cause dermatitis due to the degreasing effect of the solvent.
  Has a narcotising effect.

2.2 Label elements

- Labelling according to Regulation (EC) No 1272/2008
  The substance is classified and labelled according to the CLP regulation.

- Hazard pictograms

GHS02  GHS07

- Signal word Danger

- Hazard statements
  H224 Extremely flammable liquid and vapour.
  H302 Harmful if swallowed.
  H336 May cause drowsiness or dizziness.

- Precautionary statements
  P210  Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
  P241  Use explosion-proof electrical/ventilating/lighting/equipment.
  P261  Avoid breathing dust/fume/gas/mist/vapours/spray.
  P303+P361+P353  IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
  P405  Store locked up.
  P501  Dispose of contents/container in accordance with local/regional/national/international regulations.

- Additional information:
  EUH019 May form explosive peroxides.
  EUH066 Repeated exposure may cause skin dryness or cracking.

2.3 Other hazards

- Results of PBT and vPvB assessment
  - PBT: Not applicable.
  - vPvB: Not applicable.

*SECTION 3: Composition/information on ingredients*

- 3.1 Chemical characterisation: Substances
  - CAS No. Designation:
    60-29-7 Diethyl Ether
  - Identification number(s):
    - EC number: 200-467-2
    - Index number: 603-022-00-4

(Contd. on page 3)
SECTION 4: First aid measures

4.1 Description of first aid measures

General information
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

After inhalation Supply fresh air; consult doctor in case of symptoms.

After skin contact The product is not skin irritating.

After eye contact Rinse opened eye for several minutes under running water.

After swallowing Seek medical treatment.

Instantly call for doctor.

4.2 Most important symptoms and effects, both acute and delayed No further relevant information available.

4.3 Indication of any immediate medical attention and special treatment needed

No further relevant information available.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing agents
Fire-extinguishing powder
Alcohol-resistant foam
Carbon dioxide

For safety reasons unsuitable extinguishing agents Water with a full water jet.

5.2 Special hazards arising from the substance or mixture No further relevant information available.

5.3 Advice for firefighters

Protective equipment: Wear full protective suit.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Wear protective equipment. Keep unprotected persons away.

6.2 Environmental precautions:
Do not allow product to reach sewage system or water bodies.
Prevent material from reaching sewage system, holes and cellars.
Inform respective authorities in case product reaches water or sewage system.

6.3 Methods and material for containment and cleaning up:
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Dispose of contaminated material as waste according to item 13.
Ensure adequate ventilation.

6.4 Reference to other sections
See Section 7 for information on safe handling
See Section 8 for information on personal protection equipment.
See Section 13 for information on disposal.

SECTION 7: Handling and storage

7.1 Precautions for safe handling Open and handle container with care.

Information about protection against explosions and fires:
Keep ignition sources away - Do not smoke.
Protect against electrostatic charges.

7.2 Conditions for safe storage, including any incompatibilities

Storage
Requirements to be met by storerooms and containers: Store in cool location.
Trade name: Diethyl Ether

- **Information about storage in one common storage facility**: Store away from oxidising agents.
- **Further information about storage conditions**:  
  + 15 °C - +25 °C  
  Keep container tightly sealed.  
  Do not seal container gastight.  
  Store in cool, dry conditions in well sealed containers.  
  Protect from heat and direct sunlight.
- **7.3 Specific end use(s)** No further relevant information available.

---

### SECTION 8: Exposure controls/personal protection

#### 8.1 Control parameters

- **Components with critical values that require monitoring at the workplace**:  

<table>
<thead>
<tr>
<th>Substance</th>
<th>WEL</th>
<th>DNELs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethyl Ether</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Short-term value: 620 mg/m³, 200 ppm</td>
<td>Oral Long term/Consumer/Local 15.6 mg/kg (Human)</td>
</tr>
<tr>
<td></td>
<td>Long-term value: 310 mg/m³, 100 ppm</td>
<td>Dermal Long term/Consumer/Local 15.6 mg/kg (Human)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Inhalative Long term/Worker/Local 44 mg/kg (Human)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Acute/Workers/Systemic 616 mg/m³ (Human)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Long term/Consumer/Local 54.5 mg/m³ (Human)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Long term/Worker/Local 308 mg/m³ (Human)</td>
</tr>
</tbody>
</table>

- **Additional information**: The lists that were valid during the compilation were used as basis.

#### 8.2 Exposure controls

- **Personal protective equipment**
  - **General protective and hygienic measures**  
    - Keep away from foodstuffs, beverages and food.  
    - Wash hands during breaks and at the end of the work.
  - **Breathing equipment**:  
    - Not necessary if room is well-ventilated.  
    - Use breathing protection only when aerosol or mist is formed.  
    - Filter AX.
  - **Protection of hands**:  
    - The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.  
    - Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.  
    - Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation.
  - **Material of gloves**:  
    - PVA gloves  
    - The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
  - **Penetration time of glove material**:  
    - The exact break trough time has to be found out by the manufacturer of the protective gloves and has to be observed.
  - **Eye protection**: Tightly sealed safety glasses.
  - **Body protection**: Protective work clothing.
**SECTION 9: Physical and chemical properties**

- **9.1 Information on basic physical and chemical properties**
  - **General Information**
  - **Appearance:** Fluid
  - **Colour:** Colourless
  - **Smell:** Sweetish
  - **Odour threshold:** Not determined.
  - **pH-value:** Not determined.
- **Change in condition**
  - **Melting point/Melting range:** -116.3 °C
  - **Boiling point/Boiling range:** 35 °C
  - **Flash point:** -45 °C
- **Inflammability (solid, gaseous)**
  - **Ignition temperature:** 170 °C
- ** Decomposition temperature:** Not determined.
- ** Self-inflammability:** Not determined.
- ** Danger of explosion:** May form explosive peroxides.
- **Critical values for explosion:**
  - **Lower:** 1.7 Vol %
  - **Upper:** 48 Vol %
- **Steam pressure at 20 °C:** 587 hPa
- **Density at 20 °C:** 0.71 g/cm³
- **Relative density:** Not determined.
- **Vapour density:** Not determined.
- **Evaporation rate:** Not determined.
- **Solubility in / Miscibility with**
  - **Water at 20 °C:** 12 g/l
- **Partition coefficient (n-octanol/water):** Not determined.
- **Viscosity:**
  - **dynamic at 20 °C:** 0.233 mPas
  - **kinematic:** Not determined.

- **9.2 Other information**
  - No further relevant information available.

**SECTION 10: Stability and reactivity**

- **10.1 Reactivity**
- **10.2 Chemical stability**
- **Thermal decomposition / conditions to be avoided:** Heat, boiling temperatures.
- **10.3 Possibility of hazardous reactions**
  - **Possible formation of peroxide**
  - **Reacts with oxidizing agents**
- **10.4 Conditions to avoid**
  - No further relevant information available.
- **10.5 Incompatible materials:**
  - No further relevant information available.
- **10.6 Hazardous decomposition products:**
  - No dangerous decomposition products known

**SECTION 11: Toxicological information**

- **11.1 Information on toxicological effects**
  - **Acute toxicity:** Harmful if swallowed.
Safety data sheet
according to 1907/2006/EC, Article 31

Printing date 11.01.2015
Revision: 11.01.2015

Trade name: Diethyl Ether

LD/LC50 values that are relevant for classification:

<table>
<thead>
<tr>
<th>Route</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>LD50 1215 mg/kg (rat)</td>
</tr>
<tr>
<td></td>
<td>LC50/72h 73000 mg/l (rat)</td>
</tr>
</tbody>
</table>

Primary irritant effect:
- on the skin: No irritant effect.
- on the eye: No irritant effect.
- Sensitisation: No sensitizing effect known.

SECTION 12: Ecological information

- 12.1 Toxicity
  - Aquatic toxicity: No further relevant information available.
- 12.2 Persistence and degradability: No further relevant information available.
- 12.3 Bioaccumulative potential: No further relevant information available.
- 12.4 Mobility in soil: No further relevant information available.
- Additional ecological information:
  - General notes:
    - Water hazard class (D) 1 (Assessment by list): slightly hazardous for water.
    - Do not allow undiluted product or large quantities of it to reach ground water, water bodies or sewage system.
- 12.5 Results of PBT and vPvB assessment
  - PBT: Not applicable.
  - vPvB: Not applicable.
- 12.6 Other adverse effects: No further relevant information available.

SECTION 13: Disposal considerations

- 13.1 Waste treatment methods
  - Recommendation:
    - Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
  - Uncleaned packagings:
    - Recommendation: Disposal must be made according to official regulations.

SECTION 14: Transport information

- 14.1 UN-Number
  - ADR, IMDG, IATA: UN1155
- 14.2 UN proper shipping name
  - ADR: 1155 DIETHYL ETHER (ETHYL ETHER)
  - IMDG, IATA: DIETHYL ETHER (ETHYL ETHER)
- 14.3 Transport hazard class(es)
  - ADR, IMDG, IATA
    - Class: 3 Flammable liquids.
    - Label: 3
Trade name: Diethyl Ether

(Contd. of page 6)

- **14.4 Packing group**
  - ADR, IMDG, IATA: 1

- **14.5 Environmental hazards:**
  - Marine pollutant: No

- **14.6 Special precautions for user**
  - Kemper Number: Warning: Flammable liquids.
  - 33

- **14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**
  - Not applicable.

- **Transport/Additional information:**
  - ADR
  - Limited quantities (LQ): 0
  - Excepted quantities (EQ): Code: E3
    - Maximum net quantity per inner packaging: 30 ml
    - Maximum net quantity per outer packaging: 300 ml
  - Tunnel restriction code: D/E

- **IMDG**
  - Limited quantities (LQ): 0
  - Excepted quantities (EQ): Code: E3
    - Maximum net quantity per inner packaging: 30 ml
    - Maximum net quantity per outer packaging: 300 ml

- **UN "Model Regulation":**
  - UN1155, DIETHYL ETHER (ETHYL ETHER), 3, I

*SECTION 15: Regulatory information*

- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **Labelling according to Regulation (EC) No 1272/2008**
  - The substance is classified and labelled according to the CLP regulation.

  - **Hazard pictograms**
    - GHS02
    - GHS07

- **Signal word** Danger

- **Hazard statements**
  - H224 Extremely flammable liquid and vapour.
  - H302 Harmful if swallowed.
  - H336 May cause drowsiness or dizziness.

- **Precautionary statements**
  - P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
  - P241 Use explosion-proof electrical/ventilating/lighting/equipment.
  - P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
  - P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
  - P405 Store locked up.
  - P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

- **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.
**SECTION 16: Other information**

These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Department issuing data specification sheet:** EHS
- **Contact:** Paweł Skiba
- **Abbreviations and acronyms:**
  - RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
  - IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)
  - ICAO: International Civil Aviation Organisation
  - ICAO-TI: Technical Instructions by the "International Civil Aviation Organisation" (ICAO)
  - ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
  - IMDG: International Maritime Code for Dangerous Goods
  - IATA: International Air Transport Association
  - GHS: Globally Harmonised System of Classification and Labelling of Chemicals
  - EINECS: European Inventory of Existing Commercial Chemical Substances
  - CAS: Chemical Abstracts Service (division of the American Chemical Society)
  - DNEL: Derived No-Effect Level (REACH)
  - LC50: Lethal concentration, 50 percent
  - LD50: Lethal dose, 50 percent
  - Flam. Liq. 1: Flammable liquids, Hazard Category 1
  - Acute Tox. 4: Acute toxicity, Hazard Category 4
  - STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3
- *Data compared to the previous version altered.*