SAFETY DATA SHEET
KOVACS REAGENT

According to Regulation (EU) No 453/2010

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Product name KOVACS REAGENT
Product No. PL.375

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses Laboratory reagent.
Uses advised against No specific uses advised against are identified.

1.3. Details of the supplier of the safety data sheet

Supplier Pro-Lab Diagnostics
3 Bassendale Road
Wirral
Merseyside
CH62 3QL
Tel: 0151 353 1613
Fax: 0151 353 1614
mowen@pro-lab.com

1.4. Emergency telephone number

+44 (0)151 353 1613 Monday to Friday 9.00 to 17.00
+44 (0)7714 429 646 outside the above hours

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture


Human health
Harmful by inhalation. Irritating to eyes, respiratory system and skin.

Physical and Chemical Hazards
Flammable. Vapours may be ignited by a spark, a hot surface or an ember.

2.2. Label elements

Contains 1-PENTANOL
Labelling

Harmful

Risk Phrases
R10 Flammable.
R20 Harmful by inhalation.
R36/37/38 Irritating to eyes, respiratory system and skin.

Safety Phrases
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S37 Wear suitable gloves.
S51 Use only in well-ventilated areas.
S24/25 Avoid contact with skin and eyes.
S60 This material and its container must be disposed of as hazardous waste.

2.3. Other hazards

This product does not contain any PBT or vPvB substances.
### 3.2. Mixtures

<table>
<thead>
<tr>
<th>1-PENTANOL</th>
<th>60-100%</th>
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<tbody>
<tr>
<td>CAS-No.: 71-41-0</td>
<td>EC No.: 200-752-1</td>
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</tbody>
</table>

**Classification (EC 1272/2008)**
- Flam. Liq. 3 - H226
- Acute Tox. 4 - H332
- Skin Irrit. 2 - H315
- STOT SE 3 - H335

**Classification (67/548/EEC)**
- R10
- Xn;R20
- Xi;R37/38

<table>
<thead>
<tr>
<th>HYDROCHLORIC ACID ...%</th>
<th>10-30%</th>
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<tbody>
<tr>
<td>CAS-No.: 7647-01-0</td>
<td>EC No.: 231-595-7</td>
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</tbody>
</table>

**Classification (EC 1272/2008)**
- Skin Corr. 1B - H314
- STOT SE 3 - H335

**Classification (67/548/EEC)**
- C;R34
- Xi;R37

<table>
<thead>
<tr>
<th>4-(DIMETHYLAMINO)BENZALDEHYDE</th>
<th>5-10%</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS-No.: 100-10-7</td>
<td>EC No.: 202-819-0</td>
</tr>
</tbody>
</table>

**Classification (EC 1272/2008)**
- Acute Tox. 4 - H302
- Skin Irrit. 2 - H315
- Eye Irrit. 2 - H319
- STOT SE 3 - H335

**Classification (67/548/EEC)**
- Xn;R22.
- Xi;R36/37/38.

The Full Text for all R-Phrases and Hazard Statements are Displayed in Section 16.

### 4.1. Description of first aid measures

**Inhalation**
Move into fresh air and keep at rest. Get medical attention.

**Ingestion**
NEVER MAKE AN UNCONSCIOUS PERSON VOMIT OR DRINK FLUIDS! DO NOT induce vomiting. Get medical attention immediately. Immediately rinse mouth and provide fresh air.

**Skin contact**
Promptly wash contaminated skin with soap or mild detergent and water. Promptly remove clothing if soaked through and wash as above. Get medical attention if irritation persists after washing.

**Eye contact**
Make sure to remove any contact lenses from the eyes before rinsing. Promptly wash eyes with plenty of water while lifting the eye lids. Continue to rinse for at least 15 minutes. Contact physician if irritation persists.

### 4.2. Most important symptoms and effects, both acute and delayed

**Inhalation**
Vapours may cause headache, fatigue, dizziness and nausea.

**Ingestion**
May cause discomfort if swallowed. May cause stomach pain or vomiting.

**Skin contact**
Prolonged skin contact may cause redness and irritation.

**Eye contact**
Corneal damage.
4.3. Indication of any immediate medical attention and special treatment needed

The severity of the symptoms described will vary dependant of the concentration and the length of exposure.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

Extinguish with alcohol-resistant foam, carbon dioxide or dry powder.

Unsuitable extinguishing media

Do not use water jet as an extinguisher, as this will spread the fire.

5.2. Special hazards arising from the substance or mixture

Hazardous combustion products

During fire, toxic gases (CO, CO2) are formed.

Unusual Fire & Explosion Hazards

May travel considerable distance to source of ignition and flash back.

5.3. Advice for firefighters

Special Fire Fighting Procedures

Move container from fire area if it can be done without risk. Water spray should be used to cool containers. Be aware of danger for fire to re-start.

Protective equipment for fire-fighters

Self contained breathing apparatus and full protective clothing must be worn in case of fire.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Wear protective clothing as described in Section 8 of this safety data sheet.

6.2. Environmental precautions

Do not discharge into drains, water courses or onto the ground.

6.3. Methods and material for containment and cleaning up

Wear necessary protective equipment. Stop leak if possible without risk. DO NOT touch spilled material! Remove sources of ignition. Ventilate well. Absorb in vermiculite, dry sand or earth and place into containers. Flush with plenty of water to clean spillage area.

6.4. Reference to other sections

Wear protective clothing as described in Section 8 of this safety data sheet. See section 11 for additional information on health hazards. For waste disposal, see section 13.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Read and follow manufacturer's recommendations. Keep away from heat, sparks and open flame. Avoid spilling, skin and eye contact. Static electricity and formation of sparks must be prevented. Avoid eating, drinking and smoking when using the product. Wash hands after handling.

7.2. Conditions for safe storage, including any incompatibilities

Keep away from heat, sparks and open flame. Store in a cool and well-ventilated place. Keep in original container. Ground container and transfer equipment to eliminate static electric sparks.

Storage Class

Flammable liquid storage.

7.3. Specific end use(s)

The identified uses for this product are detailed in Section 1.2.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters
### KOVACS REAGENT

<table>
<thead>
<tr>
<th>Name</th>
<th>STD</th>
<th>TWA - 8 Hrs</th>
<th>STEL - 15 Min</th>
<th>Notes</th>
</tr>
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<tbody>
<tr>
<td>HYDROCHLORIC ACID ... %</td>
<td>WEL</td>
<td>1 ppm</td>
<td>5 ppm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 mg/m³</td>
<td>8 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

WEL = Workplace Exposure Limit.

#### HYDROCHLORIC ACID ... % (CAS: 7647-01-0)

- **DNEL**
  - Workers Inhalation. Short Term Local Effects 15 mg/m³
  - Workers Inhalation. Long Term Local Effects 8 mg/m³

- **PNEC**
  - Freshwater 0.036 mg/l
  - Marine water 0.036 mg/l
  - Intermittent release 0.045 mg/l
  - STP 0.036 mg/l

### 8.2. Exposure controls

**Protective equipment**

- **Respiratory equipment**
  - In case of inadequate ventilation and work of brief duration, use suitable respiratory equipment. Seek advice from supervisor on the companies’ respiratory protection standards.
- **Hand protection**
  - Use protective gloves. The most suitable glove must be chosen in consultation with the gloves supplier, who can inform about the breakthrough time of the glove material.
- **Eye protection**
  - Wear approved safety goggles.
- **Other Protection**
  - Provide eyewash station.
- **Hygiene measures**
  - DO NOT SMOKE IN WORK AREA! Promptly remove any clothing that becomes contaminated. Wash promptly with soap & water if skin becomes contaminated. When using do not eat, drink or smoke.

### SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

#### 9.1. Information on basic physical and chemical properties

- **Appearance**
  - Liquid
- **Colour**
  - Light (or pale). Green.
- **Odour**
  - Characteristic.
- **Solubility**
  - Soluble in water.
- **Initial boiling point and boiling range (°C)**
  - Not determined.
- **Melting point (°C)**
  - Not determined.
- **Relative density**
  - Not determined.
- **Bulk Density**
  - Not determined.
- **Vapour density (air=1)**
  - Not determined.
- **Vapour pressure**
  - Not determined.
- **Evaporation rate**
  - Not determined.
- **Evaporation Factor**
  - Not determined.
- **pH-Value, Conc. Solution**
  - Not determined.
**KOVACS REAGENT**

**pH-Value, Diluted Solution**
Not determined.

**Viscosity**
Not determined.

**Solubility Value (G/100G H2O@20°C)**
Not determined.

**Decomposition temperature (°C)**
Not determined.

**Odour Threshold, Lower**
Not determined.

**Odour Threshold, Upper**
Not determined.

**Flash point (°C)**
~ 40°C CC (Closed cup).

**Auto Ignition Temperature (°C)**
Not determined.

**Flammability Limit - Lower(%)**
Not determined.

**Flammability Limit - Upper(%)**
Not determined.

**Partition Coefficient (N-Octanol/Water)**
Not determined.

**Explosive properties**
Not determined.

**Oxidising properties**
Not determined.

**9.2. Other information**
Not determined.

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**SECTION 10: STABILITY AND REACTIVITY**

**10.1. Reactivity**
No specific reactivity hazards associated with this product.

**10.2. Chemical stability**
Stable under normal temperature conditions and recommended use.

**10.3. Possibility of hazardous reactions**

**Hazardous Polymerisation**
Will not polymerise.

**10.4. Conditions to avoid**
Avoid heat, flames and other sources of ignition. Avoid contact with strong oxidisers.

**10.5. Incompatible materials**

**Materials To Avoid**
Strong oxidising substances.

**10.6. Hazardous decomposition products**
During fire, toxic gases (CO, CO2) are formed.

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**SECTION 11: TOXICOLOGICAL INFORMATION**

**11.1. Information on toxicological effects**

**Acute toxicity:**
Harmful by inhalation.

**Skin Corrosion/Irritation:**
Irritating to eyes, respiratory system and skin.
Respiratory or skin sensitisation:
Based on available data the classification criteria are not met.

Germ cell mutagenicity:
Based on available data the classification criteria are not met.

Carcinogenicity:
Based on available data the classification criteria are not met.

Reproductive Toxicity:
Based on available data the classification criteria are not met.

Specific target organ toxicity - repeated exposure:
Not classified as a specific target organ toxicant after repeated exposure.

Toxicological information on ingredients.

HYDROCHLORIC ACID ...% (CAS: 7647-01-0)

Acute toxicity:

Acute Toxicity (Inhalation LC50)
8.3 mg/l (vapours) Rat 30 minutes
REACH dossier information

Skin Corrosion/Irritation:
Dose
0.5 mL 1 hr Rabbit
REACH dossier information
Corrosive

Serious eye damage/Irritation:
Risk of serious damage to eyes.

Respiratory or skin sensitisation:
Skin sensitisation
Guinea pig maximization test (GPMT): Guinea Pig
REACH dossier information
Not Sensitising. Based on available data the classification criteria are not met.

Carcinogenicity:
Carcinogenicity
NOAEL < 10 ppm Inhalation. Rat
REACH dossier information
No evidence of carcinogenicity in animal studies

Specific target organ toxicity - repeated exposure:
STOT - Repeated exposure
NOAEL 20 ppmV/6hr/day Inhalation. Mouse
REACH dossier information
Not classified as a specific target organ toxicant after repeated exposure.

1-PENTANOL (CAS: 71-41-0)

Acute toxicity:

Acute Toxicity (Oral LD50)
~ 3645 mg/kg Rat
REACH dossier information

Acute Toxicity (Dermal LD50)
2292 mg/kg Rabbit
REACH dossier information
KOVACS REAGENT
4-(DIMETHYLAMINO)BENZALDEHYDE (CAS: 100-10-7)

**Acute toxicity:**
Harmful if swallowed.

**Skin Corrosion/Irritation:**
Irritating to respiratory system and skin.

**Serious eye damage/irritation:**
Irritating to eyes.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

**Acute Fish Toxicity**
Not considered toxic to fish.

**Ecological information on ingredients.**

**HYDROCHLORIC ACID ... % (CAS: 7647-01-0)**

**Acute Toxicity - Fish**
LC50 96 hours 3.25 - 3.50 mg/l Lepomis macrochirus (Bluegill)
REACH dossier information

**Acute Toxicity - Aquatic Invertebrates**
EC50 48 hours pH 4.92 Daphnia magna
REACH dossier information
EC50 72 hours pH 4.82 Chlorella vulgaris
REACH dossier information

**Acute Toxicity - Microorganisms**
EC50 3 hours pH 5 - 5.5 Activated sludge
REACH dossier information

**1-PENTANOL (CAS: 71-41-0)**

**Acute Toxicity - Fish**
NOELR 96 hours 18 mg/l Onchorhynchus mykiss (Rainbow trout)
REACH dossier information

**Acute Toxicity - Aquatic Invertebrates**
NOELR 48 hours 3.2 mg/l Daphnia magna
REACH dossier information

**Acute Toxicity - Aquatic Plants**
NOELR 72 hours 10 mg/l Desmodesmus subspicatus
REACH dossier information

**4-(DIMETHYLAMINO)BENZALDEHYDE (CAS: 100-10-7)**

**Acute Fish Toxicity**
Not considered toxic to fish.

**Acute Toxicity - Fish**
LC50 96 hours 45.7 mg/l Pimephales promelas (Fat-head Minnow)

12.2. Persistence and degradability

**Degradability**
There are no data on the degradability of this product.
KOVACS REAGENT

Ecological information on ingredients.

HYDROCHLORIC ACID ... % (CAS: 7647-01-0)

Degradability
There are no data on the degradability of this product.

Biodegradation
Scientifically unjustified.

REACH dossier information

1-PENTANOL (CAS: 71-41-0)

Degradation (75%) 20 days
REACH dossier information
The substance is readily biodegradable.

4-(DIMETHYLAMINO)BENZALDEHYDE (CAS: 100-10-7)

Degradability
There are no data on the degradability of this product.

12.3. Bioaccumulative potential

Bioaccumulative potential
No data available on bioaccumulation.

Partition coefficient
Not determined.

12.4. Mobility in soil

Mobility:
The product is soluble in water.

12.5. Results of PBT and vPvB assessment

Not determined.

12.6. Other adverse effects

Not determined.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Dispose of waste and residues in accordance with local authority requirements. Recover and reclaim or recycle, if practical.

SECTION 14: TRANSPORT INFORMATION

14.1. UN number
KOVACS REAGENT

UN No. (ADR/RID/ADN) 2924
UN No. (IMDG) 2924
UN No. (ICAO) 2924

14.2. UN proper shipping name
Proper Shipping Name FLAMMABLE LIQUID, CORROSIVE, N.O.S. (PENTAN-1-OL, HYDROCHLORIC ACID)

14.3. Transport hazard class(es)
ADR/RID/ADN Class 3
ADR/RID/ADN Class Class 3: Flammable liquids.
ADR Label No. 3 & 8
IMDG Class 3
ICAO Class/Division 3
ICAO Subsidiary risk 8
Transport Labels

14.4. Packing group
ADR/RID/ADN Packing group III
IMDG Packing group III
ICAO Packing group III

14.5. Environmental hazards
Environmentally Hazardous Substance/Marine Pollutant No.

14.6. Special precautions for user
EMS F-E, S-C
Emergency Action Code •3W
Hazard No. (ADR) 38
Tunnel Restriction Code (D/E)

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

SECTION 15: REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture
Statutory Instruments

Approved Code Of Practice
Classification and Labelling of Substances and Preparations Dangerous for Supply.

Guidance Notes
Workplace Exposure Limits EH40.
EU Legislation


15.2. Chemical Safety Assessment

No chemical safety assessment has been carried out.

| SECTION 16: OTHER INFORMATION |

**Revision Comments**


**Revision Date**

11-2012

**Revision**

3

**Supersedes date**

11-2011

**Risk Phrases in Full**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>R34</td>
<td>Causes burns.</td>
</tr>
<tr>
<td>R10</td>
<td>Flammable.</td>
</tr>
<tr>
<td>R20</td>
<td>Harmful by inhalation.</td>
</tr>
<tr>
<td>R22</td>
<td>Harmful if swallowed.</td>
</tr>
<tr>
<td>R36/37/38</td>
<td>Irritating to eyes, respiratory system and skin.</td>
</tr>
<tr>
<td>R37/38</td>
<td>Irritating to respiratory system and skin.</td>
</tr>
<tr>
<td>R37</td>
<td>Irritating to respiratory system.</td>
</tr>
</tbody>
</table>

**Hazard Statements in Full**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>H319</td>
<td>Causes serious eye irritation.</td>
</tr>
<tr>
<td>H314</td>
<td>Causes severe skin burns and eye damage.</td>
</tr>
<tr>
<td>H315</td>
<td>Causes skin irritation.</td>
</tr>
<tr>
<td>H226</td>
<td>Flammable liquid and vapour.</td>
</tr>
<tr>
<td>H332</td>
<td>Harmful if inhaled.</td>
</tr>
<tr>
<td>H302</td>
<td>Harmful if swallowed.</td>
</tr>
<tr>
<td>H335</td>
<td>May cause respiratory irritation.</td>
</tr>
</tbody>
</table>

**Disclaimer**

The information in this safety data sheet was obtained from current and reliable sources. However, the data is provided without warranty, expressed or implied, regarding its correctness or accuracy. Since the conditions for use, handling, storage and disposal of this product are beyond Pro-Lab Diagnostics control, it is the users responsibility to perform thorough testing of this product when used in combination with any other product. It is suggested that users familiarise themselves with this safety data sheet before handling the product.