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

1.1 Product identifiers
Product name: Karl Fischer Reagent

1.2 Relevant identified uses of the substance or mixture and uses advised against
Identified uses: Laboratory chemicals, Industrial & for professional use only.

1.3 Details of the supplier of the safety data sheet
Company: Central Drug House (P) Ltd
7/28 Vardaan House
New Delhi-10002
INDIA
Telephone: +91 11 49404040
Email: care@cdhfinechemical.com

1.4 Emergency telephone number
Emergency Phone #: +91 11 49404040 (9:00am - 6:00 pm) [Office hours]

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008
Flammable liquids (Category 3), H226
Acute toxicity, Oral (Category 4), H302
Acute toxicity, Inhalation (Category 3), H331
Acute toxicity, Dermal (Category 4), H312
Skin irritation (Category 2), H315
Eye irritation (Category 2), H319
Reproductive toxicity (Category 1B), H360FD

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 Label elements
Labelling according Regulation (EC) No 1272/2008
Pictogram

Signal word: Danger
Hazard statement(s)
H226 Flammable liquid and vapour.
H302 Harmful if swallowed.
H312 Harmful in contact with skin.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H331 Toxic if inhaled.
H360FD May damage fertility. May damage the unborn child.

Precautionary statement(s)
P201 Obtain special instructions before use.
P261 Avoid breathing vapours.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER or doctor/ physician.

Supplemental Hazard Statements
Restricted to professional users.

2.3 Other hazards
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.2 Mixtures
Hazardous ingredients according to Regulation (EC) No 1272/2008

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Methoxyethanol</td>
<td>Included in the Candidate List of Substances of Very High Concern (SVHC) according to Regulation (EC) No. 1907/2006 (REACH)</td>
<td></td>
</tr>
<tr>
<td>CAS-No.</td>
<td>109-86-4</td>
<td>Flam. Liq.; Acute Tox. 4:</td>
</tr>
<tr>
<td>EC-No.</td>
<td>203-713-7</td>
<td>Repr. 1B; STOT SE 1; STOT</td>
</tr>
<tr>
<td>Index-No.</td>
<td>603-011-00-4</td>
<td>RE 2; H226, H302, H332,</td>
</tr>
<tr>
<td>Registration number</td>
<td>01-2119494721-33-XXXX</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>H312, H360FD, H370, H373</td>
</tr>
<tr>
<td>Pyridine</td>
<td>CAS-No. 110-86-1</td>
<td>Flam. Liq. 2; Acute Tox. 4:</td>
</tr>
<tr>
<td></td>
<td>EC-No. 203-809-9</td>
<td>Skin Irrit. 2; Eye Irrit. 2; H225,</td>
</tr>
<tr>
<td></td>
<td>Index-No. 613-002-00-7</td>
<td>H302, H332, H312, H315,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>H319</td>
</tr>
<tr>
<td>Iodine</td>
<td>CAS-No. 7553-56-2</td>
<td>Acute Tox. 4; Skin Irrit. 2; Eye Irrit. 2; STOT SE 3; STOT RE 1; Aquatic Acute 1; H332, H312, H315, H335, H372, H400</td>
</tr>
<tr>
<td></td>
<td>EC-No. 231-442-4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Index-No. 053-001-00-3</td>
<td></td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>CAS-No. 7446-09-5</td>
<td>Press. Gas; Acute Tox. 3:</td>
</tr>
<tr>
<td></td>
<td>EC-No. 231-195-2</td>
<td>Skin Corr. 1B; H331, H314</td>
</tr>
<tr>
<td></td>
<td>Index-No. 016-011-00-9</td>
<td></td>
</tr>
</tbody>
</table>

For the full text of the H-Statements mentioned in this Section, see Section 16.
SECTION 4: First aid measures

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media
Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxides, Nitrogen oxides (NOx), Sulphur oxides, Hydrogen iodide

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
Use water spray to cool unopened containers.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Wear respiratory protection. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas. For personal protection see section 8.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up
Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

6.4 Reference to other sections
For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Avoid exposure - obtain special instructions before use. Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge. For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Recommended storage temperature 2 - 8 °C
Storage class (TRGS 510): Flammable liquids

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters
Components with workplace control parameters

8.2 Exposure controls

Appropriate engineering controls
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Personal protective equipment

Eye/face protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove’s outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Body Protection
Complete suit protecting against chemicals, Flame retardant antistatic protective clothing., The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Component</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Appearance</td>
<td>Form: liquid</td>
</tr>
<tr>
<td>b) Odour</td>
<td>No data available</td>
</tr>
<tr>
<td>c) Odour Threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>d) pH</td>
<td>No data available</td>
</tr>
<tr>
<td>e) Melting point/freezing point</td>
<td>No data available</td>
</tr>
<tr>
<td>f) Initial boiling point and boiling range</td>
<td>No data available</td>
</tr>
<tr>
<td>g) Flash point</td>
<td>33 °C - closed cup</td>
</tr>
</tbody>
</table>
h) Evaporation rate   No data available
i) Flammability (solid, gas)  No data available
j) Upper/lower flammability or explosive limits   No data available
k) Vapour pressure   No data available
l) Vapour density   No data available
m) Relative density   1,200 g/cm³
n) Water solubility   No data available
o) Partition coefficient: n-octanol/water   No data available
p) Auto-ignition temperature   No data available
q) Decomposition temperature   No data available
r) Viscosity   No data available
s) Explosive properties   No data available
t) Oxidizing properties   No data available

9.2 Other safety information
No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
Heat, flames and sparks.

10.5 Incompatible materials
No data available

10.6 Hazardous decomposition products
Other decomposition products - No data available
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - male - 2.257 mg/kg (2-Methoxyethanol)
(OECD Test Guideline 401)
LC50 Inhalation - Rat - 4 h - 12.4 - 17.8 mg/l (2-Methoxyethanol)
LD50 Dermal - Rabbit - 1.280 mg/kg (2-Methoxyethanol)
LD50 Intraperitoneal - Rat - 2.500 mg/kg (2-Methoxyethanol)

Skin corrosion/irritation
Skin - Rabbit (2-Methoxyethanol)
Result: No skin irritation
Serious eye damage/eye irritation
Eyes - Rabbit (2-Methoxyethanol)
Result: Mild eye irritation - 24 h
(OECD Test Guideline 405)

Respiratory or skin sensitisation
Maximisation Test (GPMT) - Guinea pig (2-Methoxyethanol)
Result: Does not cause skin sensitisation.

Germ cell mutagenicity
In vitro mammalian cell gene mutation test (2-Methoxyethanol)
Chinese hamster ovary cells
Result: negative
OECD Test Guideline 475 (2-Methoxyethanol)
Mouse - male
Result: negative

Carcinogenicity
(2-Methoxyethanol)
No data available (2-Methoxyethanol)
IARC: 3 - Group 3: Not classifiable as to its carcinogenicity to humans (Pyridine)
IARC: 3 - Group 3: Not classifiable as to its carcinogenicity to humans (Sulphur dioxide)

Reproductive toxicity
May cause congenital malformation in the fetus. (2-Methoxyethanol)
Presumed human reproductive toxicant (2-Methoxyethanol)
May cause reproductive disorders. (2-Methoxyethanol)
Developmental Toxicity - Rat - Dermal (2-Methoxyethanol)

Specific target organ toxicity - single exposure
No data available (2-Methoxyethanol)

Specific target organ toxicity - repeated exposure
May cause damage to organs through prolonged or repeated exposure.
Oral - Testes, thymus (2-Methoxyethanol)

Aspiration hazard
No data available (2-Methoxyethanol)

Additional Information
Repeated dose Rat - male Oral - NOAEL : < 71 mg/kg (2-Methoxyethanol)
toxicity
RTECS: Not available

Headache, Dizziness, tachycardia, nervousness, insomnia, Skin disorders, loss of appetite. Prolonged
exposure to iodides may produce iodism in sensitive individuals. Symptoms of exposure include: skin rash,
running nose, headache and irritation of the mucous membrane. For severe cases the skin may show
pimples, boils, hives, blisters and black and blue spots. Iodides are readily diffused across the placenta.
Neonatal deaths from respiratory distress secondary to goiter have been reported. Iodides have been
known to cause drug-induced fevers, which are usually of short duration.

Effects due to ingestion may include: Changes in the blood count, Headache, Central nervous system
depression, Ingestion of large amounts may cause;; Damage of the;; Liver, Kidney, Central nervous
system (2-Methoxyethanol)
Bone marrow - (Pyridine)
SECTION 12: Ecological information

12.1 Toxicity
Toxicity to fish: static test LC50 - Lepomis macrochirus (Bluegill) - 10.000 mg/l  - 96 h (2-Methoxyethanol) (OECD Test Guideline 203)

Toxicity to daphnia and other aquatic invertebrates: semi-static test EC50 - Daphnia magna (Water flea) - 27.000 mg/l  - 48 h (2-Methoxyethanol)

Toxicity to algae: static test EC50 - Pseudokirchneriella subcapitata - 25.500 mg/l  - 72 h (2-Methoxyethanol)

12.2 Persistence and degradability
Biodegradability: aerobic  - Exposure time 20 d (2-Methoxyethanol)  
Result: 88 % - Readily biodegradable

12.3 Bioaccumulative potential
No bioaccumulation is to be expected (log Pow <= 4).

12.4 Mobility in soil
No data available (2-Methoxyethanol)

12.5 Results of PBT and vPvB assessment
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Other adverse effects
Toxic to aquatic life.
No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods
Product
Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose of as unused product.

SECTION 14: Transport information

14.1 UN number
ADR/RID: 1993  
IMDG: 1993  
IATA: 1993

14.2 UN proper shipping name
ADR/RID:  FLAMMABLE LIQUID, N.O.S. (2-Methoxyethanol, Pyridine)  
IMDG:  FLAMMABLE LIQUID, N.O.S. (Pyridine, 2-Methoxyethanol)  
IATA:  Flammable liquid, n.o.s. (Pyridine, 2-Methoxyethanol)

14.3 Transport hazard class(es)
ADR/RID:  3  
IMDG:  3  
IATA:  3

14.4 Packaging group
ADR/RID:  III  
IMDG:  III  
IATA:  III

14.5 Environmental hazards
ADR/RID:  no  
IMDG Marine pollutant:  no  
IATA:  no

14.6 Special precautions for user
No data available
SECTION 15: Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 453/2010.

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

Authorisations and/or restrictions on use

2-Methoxyethanol CAS-No.: 109-86-4
REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59).
Toxic for reproduction (article 57c)
ED/95/2010

2-Methoxyethanol CAS-No.: 109-86-4
REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII)
Toxic to reproduction: category 1B
Restricted to professional users.
See Annex XVII to Regulation (EC) no 1907/2006 for Conditions of restriction

15.2 Chemical Safety Assessment

For this product a chemical safety assessment was not carried out

SECTION 16: Other information

Full text of H-Statements referred to under sections 2 and 3.

H225  Highly flammable liquid and vapour.
H226  Flammable liquid and vapour.
H302  Harmful if swallowed.
H312  Harmful in contact with skin.
H314  Causes severe skin burns and eye damage.
H315  Causes skin irritation.
H317  May cause an allergic skin reaction.
H319  Causes serious eye irritation.
H331  Toxic if inhaled.
H332  Harmful if inhaled.
H335  May cause respiratory irritation.
H360FD May damage fertility. May damage the unborn child.
H370  Causes damage to organs.
H372  Causes damage to organs through prolonged or repeated exposure if swallowed.

H373  May cause damage to organs through prolonged or repeated exposure.
H400  Very toxic to aquatic life.

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Central Drug House (P) Ltd and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.cdhfinechemical.com for additional terms and conditions of sale.