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

1.1 Product identifier
Trade name  Pyridine

Stock number:  19378
CAS Number:  110-86-1
EC number:  203-809-9
Index number:  613-002-00-7

1.2 Relevant identified uses of the substance or mixture and uses advised against.
Identified use:  SU24 Scientific research and development

1.3 Details of the supplier of the safety data sheet
Manufacturer/Supplier:  Thermo Fisher (Kandel) GmbH
Zeppelinstr. 7b
76185 Karlsruhe / Germany
Tel:  +49 (0) 721 84007 280
Fax:  +49 (0) 721 84007 300
Email: tech@alfa.com
www.alfa.com
Informing department:  Product safety Tel + +049 (0) 7275 988687-0

1.4 Emergency telephone number:
Carechem 24: +44 (0) 1235 239 670 (Multi-language emergency number)
Poison Information Center Mainz
tel: +49(0)6131/19240

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008

GHS02 flame
Flam. Liq. 2 H225: Highly flammable liquid and vapour.

GHS07
Acute Tox. 4 H302 Harmful if swallowed.
Acute Tox. 4 H312 Harmful in contact with skin.
Acute Tox. 4 H332 Harmful if inhaled.

Other hazards that do not result in classification
May cause cancer.

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
H225 Highly flammable liquid and vapour.
H302+H312+H332 Harmful if swallowed, in contact with skin or if inhaled.
Precautionary statements
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P262 Wear protective gloves/protective clothing/eye protection/face protection.
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P361 Dispose of contents/container in accordance with local/regional/national/international regulations.

2.3 Other hazards
Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

SECTION 3: Composition/information on ingredients

3.1 Substances
CAS# Designation:  110-86-1 Pyridine
Concentration:  ≤100%
Identification number(s):
EC number:  203-809-9
Index number:  613-002-00-7

SECTION 4: First aid measures

4.1 Description of first aid measures
After inhalation
Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.
Seek immediate medical advice.

After skin contact
Instantly wash with water and soap and rinse thoroughly.
Seek immediate medical advice.

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

After swallowing
Seek medical treatment.

4.2 Most important symptoms and effects, both acute and delayed
Harmful if swallowed.
Harmful if inhaled.
Harmful in contact with skin.
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: CO2, extinguishing powder or water jet. Fight larger fires with water jet or alcohol-resistant foam.

5.2 Special hazards arising from the substance or mixture

If this product is involved in a fire, the following can be released:
Carbon monoxide and carbon dioxide
Nitrogen oxides (NOx)

5.3 Advice for firefighters

Protective equipment:
- Wear self-contained breathing apparatus.
- 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.
Ensure adequate ventilation.
Keep away from ignition sources.

6.2 Environmental precautions

Do not allow product to reach sewage system or water bodies.
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Dispose of contaminated material as waste according to section 13.

6.3 Methods and material for containment and cleaning up

If this product is involved in a fire, the following can be released:
Carbon monoxide and carbon dioxide
Nitrogen oxides (NOx)

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

Keep containers tightly sealed.
Store in cool, dry place in tightly closed containers.
Ensure good ventilation/exhaustion at the workplace.

Information about protection against explosions and fires:
- Protect against electrostatic charges.
- Fumes can combine with air to form an explosive mixture.
- Keep ignition sources away - Do not smoke.

7.2 Conditions for safe storage, including any incompatibilities

Requirements to be met by storerooms and containers:
Store in cool location.

Information about storage in one common storage facility:
- Do not store together with acids.
- Store away from oxidising agents.

Further information about storage conditions:
- Keep container tightly sealed.
- Keep in cool, dry conditions in well sealed containers.

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>Component</th>
<th>Critical Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>110-86-1 Pyridine (100,0%)</td>
<td></td>
</tr>
<tr>
<td>PEL (USA) Long-term value: 15 mg/m³, 5 ppm</td>
<td></td>
</tr>
<tr>
<td>REL (USA) Long-term value: 15 mg/m³, 5 ppm</td>
<td></td>
</tr>
<tr>
<td>TLV (USA) Long-term value: 3,1 mg/m³, 1 ppm</td>
<td></td>
</tr>
</tbody>
</table>

Additional information: No data

8.2 Exposure controls

Personal protective equipment

General protective and hygienic measures:
The usual precautionary measures should be adhered to in handling the chemicals.
Keep away from foodstuffs, beverages and food.
Instantly remove any soiled and impregnated garments.
Wash hands during breaks and at the end of the work.
Avoid contact with the eyes and skin.
Maintain an ergonomically appropriate working environment.

Breathing protection equipment:
Use breathing protection with high concentrations.
Recommended filter device for short term use:
Use a respirator with multi-purpose combination (US) or type ABEK (EN 14387) as a backup to engineering controls. Risk assessment should be performed to determine if air-purifying respirators are appropriate. Only use equipment tested and approved under appropriate government standards such as NIOSH (USA) or CEN (EU).

Protection of hands:
Check protective gloves prior to each use for their proper condition.
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.

Material of gloves:
Butyl rubber, BR
Penetration time of glove material (in minutes) Not determined

Eye protection:
Safety glasses with side shields / NIOSH (US) or EN 166(EU)

Body protection:
Protective work clothing.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

General Information
Appearance: Liquid
Odour: Unpleasant
Odour threshold: Not determined.
Trade name Pyridine

pH-value:
Not determined.

Change in condition:
- Melting point/freezing point: -42 °C
- Initial boiling point and boiling range: 115 °C

Sublimation temperature / start:
Not determined.

Flash point:
20 °C

Inflammability (solid, gaseous):
Not determined.

Ignition temperature:
482 °C

Decomposition temperature:
Not determined.

Self-inflammability:
Not determined.

Explosive properties:
Product is not explosive. However, formation of explosive air/steam mixtures is possible.

Critical values for explosion:
- Lower: 1.8 Vol %
- Upper: 12.4 Vol %

Steam pressure at 20 °C:
20 hPa

Density at 20 °C:
0.978 g/cm³

Relative density:
Not determined.

Vapour density:
Not determined.

Evaporation rate:
Not determined.

Solubility in / Miscibility with:
- Water: Fully miscible

Partition coefficient: n-octanol/water:
Not determined.

9.2 Other information:
No further relevant information available.

SECTION 10: Stability and reactivity

10.1 Reactivity:
No information known.

10.2 Chemical stability:
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions:
Reacts with strong oxidising agents.

10.4 Conditions to avoid:
No further relevant information available.

10.5 Incompatible materials:
- Acids
- Oxidising agents

10.6 Hazardous decomposition products:
- Carbon monoxide and carbon dioxide
- Nitrogen oxides (NOx)

SECTION 11: Toxicological information

11.1 Information on toxicological effects:

Acute toxicity:
- Harmful if inhaled.
- Harmful in contact with skin.
- Harmful if swallowed.

Danger by skin resorption.

The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute toxicity data for this substance.

LD/LC50 values that are relevant for classification:
- Oral LD50: 1500 mg/kg (mouse)

Skin irritation or corrosion:
May cause irritation

Eye irritation or corrosion:
May cause irritation

Respiratory or skin sensitisation:
Based on available data, the classification criteria are not met.

Germ cell mutagenicity:
The Registry of Toxic Effects of Chemical Substances (RTECS) contains mutation data for this substance.

Carcinogenicity:
ACGIH A3: Animal carcinogen: Agent is carcinogenic in experimental animals at a relatively high dose, by route(s) of administration, at site(s), of histologic type(s), or by mechanism(s) not considered relevant to worker exposure. Available epidemiologic studies do not confirm an increased risk of cancer in exposed humans. Available evidence suggests that the agent is not likely to cause cancer in humans except under uncommon or unlikely routes or levels of exposure.
ARC-3: Not classifiable as to carcinogenicity to humans.

The Registry of Toxic Effects of Chemical Substances (RTECS) contains tumorigenic and/or carcinogenic and/or neoplastic data for this substance.

Reproductive toxicity:
No effects known.

Specific target organ system toxicity - repeated exposure:
No effects known.

Skin sensitisation:
No effects known.

Subacute to chronic toxicity:
The Registry of Toxic Effects of Chemical Substances (RTECS) contains multiple dose toxicity data for this substance.

Additional toxicological information:
To the best of our knowledge the acute and chronic toxicity of this substance is not fully 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:
Do not allow product to reach ground water, water bodies or sewage system.
Water hazard class 2 (Assessment by list): hazardous for water.
Danger to drinking water if even small quantities leak into soil.
Avoid transfer into the environment.

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:
Remove from contaminating material.

Recommendation:
Hand over to disposers of hazardous waste.
Safety data sheet
according to 1907/2006/EC, Article 31

Trade name Pyridine

Must be specially treated under adherence to official regulations. Consult state, local or national regulations for proper disposal.

Uncleaned packagings: Disposal must be made according to official regulations.

Recommended cleaning agent: Water, if necessary with cleaning agent.

SECTION 14: Transport information

UN Number
ADR, IMDG, IATA UN1282

14.2 UN proper shipping name
ADR 1282 PYRIDINE
IMDG, IATA PYRIDINE

14.3 Transport hazard class(es)
ADR
Class 3 (F1) Flammable liquids.
Label 3

IMDG, IATA
Class 3 Flammable liquids.
Label 3

Packing group
ADR, IMDG, IATA II

14.5 Environmental hazards:
Not applicable.

14.6 Special precautions for user Warning: Flammable liquids.

Kemler Number:
33

EMS Number:
F-E,S-D

Stowage Category
B

Stowage Code
SW2 Clear of living quarters.

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code Not applicable.

Transport/Additional information:

ADR

Exceptional quantities (EQ):
E2

Limited quantities (LQ): 1L

Exceptional quantities (EQ):
Code: E2

Maximum net quantity per inner packaging: 30 ml

Maximum net quantity per outer packaging: 500 ml

Transport category
2

Tunnel restriction code
D/E

IMDG

Limited quantities (LQ): 1L

Exceptional quantities (EQ):
Code: E2

Maximum net quantity per inner packaging: 30 ml

Maximum net quantity per outer packaging: 500 ml

UN "Model Regulation":
UN 1282 PYRIDINE, 3, II

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture Australian Inventory of Chemical Substances Substance is listed.

Standard for the Uniform Scheduling of Medicines and Poisons Substance is not listed.

Directive 2012/18/EU Named dangerous substances - ANNEX I Substance is not listed.

Seveso category P5c FLAMMABLE LIQUIDS

Qualifying quantity (tonnes) for the application of lower-tier requirements 5,000 t

Qualifying quantity (tonnes) for the application of upper-tier requirements 50,000 t

REGULATION (EC) No 1907/2006 ANNEX XVII Conditions of restriction: 3, 40

National regulations
Information about limitation of use:
Employment restrictions concerning young persons must be observed.
For use only by technically qualified individuals.

Classification according to VbF: B

Water hazard class: Water hazard class 2 (Assessment by list): hazardous for water.

Other regulations, limitations and prohibitive regulations
ELINCS [European List of Notified Chemical Substances] Substance is not listed.

Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006. Substance is not listed.

The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.

Substance is not listed.

Annex XIV of the REACH Regulations (requiring Authorisation for use) Substance is not listed.

15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Department issuing SDS: Global Marketing Department

Abbreviations and acronyms:
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)
VbF: Verordnung über brennbare Flüssigkeiten, Österreich (Ordinance on the storage of combustible liquids, Austria)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent

(Contd. on page 5)
<table>
<thead>
<tr>
<th>Trade name <strong>Pyridine</strong></th>
</tr>
</thead>
</table>

PBT: Persistent, Bioaccumulative and Toxic  
SVHC: Substances of Very High Concern  
vPvB: very Persistent and very Bioaccumulative  
NIOSH: National Institute for Occupational Safety  
OSHA: Occupational Safety and Health Administration (USA)  
TLV: Threshold Limit Value  
REL: Permissible Exposure Limit  
REL: Recommended Exposure Limit  
BEI: Biological Exposure Limit  
Flam. Liq. 2: Flammable liquids – Category 2  
Acute Tox. 4: Acute toxicity – Category 4