

SAFETY DATA SHEET

ISOPROPYLAMINE SOLUTION

| | |
|---|--|
| 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION | |
| 1.1 Product identifiers | Product chemical name: ISOPROPYLAMINE Molecular formula: (CH ₃) ₂ CHNH ₂ Type of product: mono-constituent substance REACH registration number: 01-2119463274-39 |
| 1.2.1 1 Relevant identified use of substance | For manufacturing of pesticides, pharmaceuticals industry, dyes industry, for the manufacturing of some corrosion inhibitors. |
| 1.2.2 Uses advised against | No use advised against |
| 1.3 Details of the supplier of the safety data sheet | VINYL Kft. 3524 Miskolc, Adler Károly u 19. info@vinyl.hu |
| 1.4 Emergency telephone number | Egészségügyi Toxikológiai Tájékoztató Szolgálat (ETTSZ): 36-80-201-199 |

2. HAZARDS IDENTIFICATION

2.1 Substance classification

- Classification as hazardous according to European Regulation (EC) 1272/2008 and based on chemical safety assessment of the product:

| Hazard class | Hazard category | Hazard statement |
|----------------------|-----------------|------------------|
| Flammable liquid | Flam. Liq 1 | H 224 |
| Eye Irritation | Eye Irrit. 2 | H 319 |
| STOT Single Exposure | STOS SE 3 | H 335 |
| Skin Irritation | Skin Irrit. 2 | H 315 |
| Acute Toxicity | Acute Tox. 3 | H 301 |
| Acute Toxicity | Acute Tox. 3 | H 311 |
| Acute Toxicity | Acute Tox. 3 | H 331 |

- Classification as hazardous according to European Directive 67/548/EEC, as amended:

| Hazard class / Hazard category | Risk phrases |
|--------------------------------|--------------|
| F+ -Extremely flammable | R 12 |
| Xi -Irritant | R 36/37/38 |

2.2 EC Labeling according to European Regulation (EC) 1272/2008, as amended and based on the chemical safety assessment of the product:

- Name on label: **ISOPROPYLAMINE**
- Signal word: **DANGER**
- Hazard symbols



GHS 02



GHS 06

Hazards statements: H 224: Extremely flammable liquid and vapour.
H 315: Causes skin irritation.
H 319: Causes serious eye irritation
H 335: May cause respiratory irritation.
H 301: Toxic if swallowed.
H 311: Toxic in contact with skin.
H 331: Toxic if inhaled.

SAFETY DATA SHEET ISOPROPYLAMINE SOLUTION

Precautionary statements :

Prevention: P 210: Keep away from heat / sparks / open flames / hot surfaces. — No smoking.

P 233: Keep container tightly closed.

P 280: Wear protective gloves / protective clothing / eye protection / face protection.

Response: P 301+ P 312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

P 305+ P 351+ P 338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P 304+ P 340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P 370 + P 378: In case of fire: Use "alcohol resistant foam" for extinction.

Storage: P 403 + P 235: Store in a well-ventilated place. Keep cool.

Disposal: P 501: Dispose of contents/container in accordance with international regulation.

**Specific provisions concerning marketing and usage restriction: "ONLY FOR PROFESSIONAL USAGE"
"EC Label"**

2.3 Other dangers

The product does not meet the criteria for classification as PBT (persistent, bio-accumulative and toxic) or vPvB (very persistent, very bio-accumulative)

3. COMPOSITION / INFORMATION ON INGREDIENTS

| | |
|--|-------------------------|
| - <i>The product is considered</i> | Substance |
| - <i>Classification according to Reg. 1272/2008 and Directive 67/548/EEC</i> | See section 2 |
| - <i>EINECS no.</i> | 200-860-9 |
| - <i>CAS no.</i> | 75-31-0 |
| - <i>INDEX no.</i> | 612-007-00-1 |
| - <i>% Weight</i> | ≥ 99.5 |
| - <i>Generic name</i> | Primary Aliphatic Amine |

4. FIRST AID MEASURES

4.1 Description of necessary first-aid measures

It causes rhinitis, conjunctivitis, bronchitis, dermatitis, chemical burns.

It is mandatory to request medical assistance, in case of accidental contact with this product.

Immediately remove the contaminated clothing; clothing must be washed before to be used again.

Inhalation

Evacuate the victim from the contaminated area to a very well ventilated place.

Get medical attention immediately.

Skin contact

Wash immediately with plenty of water. See a dermatologist. Wash contaminated clothing.

Eye contact

Immediately flush the eyes with plenty of water for at least 15 minutes. Hold the eyelids open. See an ophthalmologist.

Swallowing

Rinse mouth, give large amounts of water to drink. Do not induce vomiting. Request medical attention.

Other information

There is necessary to have corresponding ventilation; provide showers and eyewash station in the working area.

4.2 Most important symptoms and effects, acute and delayed

Inhalation

Causes severe irritation to eyes and respiratory system, causes itching, coughing, choking sensation, congestion of the lungs.

Skin contact

SAFETY DATA SHEET ISOPROPYLAMINE SOLUTION

| |
|---|
| Causes severe skin irritation. May appear redness, swelling of tissue, rash and oedema. |
| Eye contact |
| Causes severe eye irritation. Signs of irritation were observed in the cornea, iris and or conjunctiva. |
| Ingestion |
| If ingested, the substance causes severe burns of the mouth, throat, esophagus and the stomach. |
| 4.3 Indication of immediate medical attention and special treatment needed - Treatment |
| Remove/Take off immediately all contaminated clothing. Rinse skin/eyes with water/shower. Move out of dangerous area. |

| | |
|--|--|
| 5. FIRE FIGHTING MEASURES | |
| 5.1 Extinguishing media : | |
| - recommended | Extinguishing powder, water spray, special foam, carbon dioxide |
| - not recommended | Aeromechanical foam, chemical foam, compact water jet |
| 5.2 Special exposure hazards arising from the substance | It is an extremely flammable product. Its vapors form explosive mixtures with air. It violently reacts with mercury. |
| 5.3 Recommendation for fire-fighters | Use breathing apparatus and individual protective clothing for interventions. Waste resulting from fire extinguishing must be treated as dangerous waste according to legislation in force. |
| 5.4 Other information | Cool cylinders/tanks with water spray. For large fires use large quantities of water spray. Do not discard water used for fire extinguishing without previously neutralizing it. |

| | |
|---|--|
| 6. ACCIDENTAL RELEASE MEASURES | |
| 6.1 Personnel protection | |
| Advice for non-emergency personnel: Try to limit leaks of the product if possible. Keep away from incompatible products. | |
| Advice for emergency personnel: Evacuate all uninvolved persons from the danger area. Ventilate area. Use individual protection equipment and adequate gloves (see chapter 8). Remove ignition sources. | |
| 6.2 Environmental protection measures | |
| Waste or residues must not be discarded in running waters, sewages or soil without previous neutralization. Use large water jets to divert vapor drift. Inform local authorities in case of accidental spillages. | |
| 6.3 Cleaning methods and materials used | |
| Contaminated waters can be absorbed into an inert material (sand, soil) or can be collected in special tanks; their disposal must be made according to the legislation concerning waste disposal. If possible (and necessary) carefully wash contaminated area and collect waste waters into special recipients, with airtight covers. | |
| Other information | |
| Neutralization is made with slightly acid solutions or sodium bisulphite solution. | |
| Waste disposal is made according to local legal regulations in force (see chapter 13). Do not allow the product to penetrate the environment. | |

| | |
|--|--|
| 7. HANDLING AND STORAGE | |
| Provide water sources in the working area proximity as well as local ventilation. | |
| 7.1 Precaution for safe handling | |
| Product handling must be done away from sources of ignition and open flame. Use only explosion-proof equipments. Do not use air or oxygen for transfer. Use only inert gases. Sampling and product evacuation must be done only from the bottom side of the tank car/tank. For handling during winter time, in the pressure tank must be created a pressure of about 1 at, with the help of dry nitrogen. Smoking or eating during working with this product is forbidden. | |

SAFETY DATA SHEET ISOPROPYLAMINE SOLUTION

| | |
|--|--|
| 7.2. Condition for storage, including incompatibilities | |
| Store and keep small quantities in tight closed recipients, in cool, well-ventilated rooms. Store large quantities in pressure-resistant tanks, located in open air, away from direct heat action, placed on foundations, equipped with grounded connections. Recipients will be compulsory checked with an established periodicity, according to working regulations for under pressure recipients. Tanks will be placed inside a dam that can take over (in case of accident), the whole quantity of product and avoid product spillage. The retention tank will be provided with anti-spark floor and adequate drainage to avoid accumulation of precipitation. Do not use mercury thermometer for control of temperature into recipients. Store product away from heat, direct sources of ignition, segregated of oxidizers. Provide only explosion-proof electrical and working equipments. | |
| 7.3 Specific end uses | |
| Specific use(s): Due to the extremely flammable properties of the substance, always wear suitable protective clothing, eye and skin protection. | |
| Packaging Used | Steel railway tanks; isocontainers; special barrels |
| Materials recommended | Plastics – type teflon (max 48 °C) Metals type 304 steel, 316, plain steel Metalloids – type graphite carbon Gaskets: teflon, klingherit |
| Materials not recommended | Metals – type aluminium, magnesium, copper, zinc and their alloys. Plastics – type acetal; nylon, PVC, polycarbonate Elastomers – type nitrile, hypalon, viton |

| | |
|--|---|
| 8. EXPOSURE CONTROL/PERSONAL PROTECTION | |
| 8.1 Control parameters | OELV = 10 mg/m ³ ; exposure period = 15 minutes (short-term) OELV = 7 mg/m ³ ; exposure period = 8 hours. (according Directive 2006/15/CE, concerning establishing a second list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC and amending Directives 91/322/EEC and 2000/39/EEC) |
| 8.2 Exposure control | Provide local and general ventilation systems in the working area. |
| Occupational exposure control | |
| Appropriate engineering controls | Provide local and general ventilation systems in the working area and storage spaces. Provide water sources and eyewash station in the proximity of the working area. |
| - Respiratory protection | In case of insufficient ventilation, wear respirator with filtering cartridge for organic vapors. |
| - Hand protection | Gloves resistant against acids and alkalis. Wash face and hands with water and soap. |
| - Eye protection | Safety goggles |
| - Skin protection | Protection suit, rubber boots. After working with this product, change protection equipment. |
| - Specific hygiene measures | Contact with skin, eyes as well as vapor inhaling is forbidden. |
| Environmental exposure control | Waters contaminated with this product will not be discarded in watercourses, on the ground or in sewages without previous neutralization. |

| | |
|---|---------------------------------|
| 9. PHYSICAL AND CHEMICAL PROPERTIES | |
| 9.1.1 General Information | |
| - physical state (20 °C) | Liquid |
| - Color | Colorless to slightly yellowish |
| - Odor | Pungent, ammonia-like |
| 9.1.2 Important information for security, health and environment | |
| - pH of solution | Strongly alkaline |
| - Isopropylamine content | min. 70 |
| - Boiling point | 53 °C |
| - Melting /freezing point | <-80°C |
| - Flash point | <-30°C |

SAFETY DATA SHEET ISOPROPYLAMINE SOLUTION

| | |
|--|---|
| - <i>Flammability</i> | < 0°C |
| - <i>Explosive properties</i> | Non-explosive |
| - <i>Oxidant properties</i> | No oxidizing properties |
| - <i>Stability in organic solvents and identity of relevant degradation products</i> | Not applicable |
| - <i>Granulometry</i> | Not applicable |
| - <i>Disociation constant</i> | pKa = 10.8 at 23.2°C |
| - <i>Vapor pressure at 20°C</i> | 36.8 kPa |
| - <i>Vapour density (air = 1)</i> | 1.6 kg/m ³ |
| - <i>Relative density</i> | 0.810 g/cm ³ |
| - <i>Solubility</i> | Unlimited in water, alcohol and ethyl ether |
| - <i>Partition coefficient (n-octanol /water)</i> | log pow = -0.5 |
| <i>Source</i> | REACH -Chemical Safety Report |

10. STABILITY AND REACTIVITY

10.1 Reactivity: This product is stable under normal handling and storing conditions.

10.2 Chemical stability

Store and transport the product separate from incompatible substances.

10.3 Possibility of hazardous reactions

Vapors form explosive mixtures with air and oxygen.

It corrodes metals : copper, zinc, magnesium, aluminum and their alloys

10.4 Conditions to be avoided

Avoid temperatures over 40 °C and contact with incompatible substances.

Product violently reacts with strong oxidizing agents – perchlorates, nitrates, peroxides, chlorine, hypochlorite.

Contact with chlorine or hypochlorite generates chloramines – explosive compounds.

In contact with mercury it forms explosive products.

10.5 Materials to avoid

Strong acids, strong oxidizers (like sodium hypochlorite, lime chloride), bronze, mercury, halogens, nitrates, perchlorate peroxides. Avoid usage of control and measurement equipments (manometers, barometers, etc) that contain mercury, because in contact with methylamines there might be formed explosive products.

10.6 Hazardous decomposition products :

Thermal decomposition may produce toxic gases: ammonia, nitrogen oxide, carbon oxide.

11. TOXICOLOGICAL INFORMATION

11.1 Acute toxicity: oral, inhalation, dermal

Irritant to eyes, skin and mucous. Corrosive by ingestion.

| | |
|----------------------------|--|
| - <i>Inhalation</i> | May cause rhinitis, bronchitis. |
| - <i>Eye contact</i> | May cause conjunctivitis. |
| - <i>Skin contact</i> | May cause chemical burns |
| - <i>Swallowing</i> | May cause aspiration into lungs with the risk of chemical pneumonia. |
| - <i>Long term effects</i> | Repeated and prolonged exposure causes dermatitis. |

Acute toxicity

LC50/inhalation/rat = 8.7 mg/L

LD50/dermal/ rat > 400 mg/kg body (diluted, 10 % in water)

LD50/oral /rat < 170 mg/ kg body

11.2 Skin corrosion/irritation

The product is irritating/corrosive to the skin.

11.3 Serious eye damage/eye irritation

Contact with isopropylamine cause risk of serious irritation to eyes.

11.4 Respiratory or skin sensitization

Isopropylamine gave no evidence of a skin-sensitising potential in the guinea-pig maximisation assay as well as in the mouse-ear swelling test (MEST).

SAFETY DATA SHEET ISOPROPYLAMINE SOLUTION

| |
|---|
| 11.5 Mutagenicity Isopropylamine did not show mutagenic activity either in the bacterial reverse mutation assay (Ames test) or in a mammalian cell culture assay for chromosomes aberration and gene mutation (HPRT). |
| 11.6 Carcinogenicity Not carcinogenic. |
| 11.7 Toxicity for reproduction No data available. |
| 11.8 Repeat dose toxicity Isopropylamine produced nasal inflammation in rats exposed to 500 mg/m ³ for 13 weeks, while 100 mg/m ³ showed no adverse effects. |

12. ECOLOGICAL INFORMATION

| | |
|--|--|
| 12.1 Toxicity - Information on environmental effects: | |
| - Toxicity for aquatic organisms | The product is not considered harmful to aquatic organisms; it has high solubility in water |
| - Acute/ prolonged toxicity for aquatic organisms | LC50/ fish/ 96h = 88 mg/l EC50/ daphnia magna/ 48h = 47.4 mg/l EC50/ algae/ 72h = 4.13 mg/l |
| - Toxicity for micro and macroorganisms from soil | EC50/ bacteria = 99 mg/l |
| - Toxicity for other organisms | EC 50/ insects/ 48h = 20.8 mg/l |
| - Possible inhibitory effects over micro-organisms activity | N/A |
| 12.2 Persistence and degradability | It is an easily biodegradable product : 95% after 21 days Degradation (through) OH radicals: half life t _{1/2} = 10 days |
| 12.3 Bioaccumulative potential | log pow = 0,26 ; it is not bioaccumulable into aquatic organisms |
| 12.4 Mobility | No data available |
| 12.5 Other adverse effects | No data available. |
| Source: | Iuclid Chemical Data Sheet |

13. DISPOSAL CONSIDERATIONS

| |
|--|
| 13.1 Waste disposal methods Waste must be neutralized or incinerated in incineration plant in accordance with local regulations in force. Residual gases must be collected into scrubbers with water. Collected solutions will not be disposed off without previous neutralization. Neutralization can be made with sodium bisulphite solution, slightly acid solutions (see Chapter 6). |
| 13.2 Contaminated packaging High capacity packing are recycled after cleaning. Packaging that cannot ensure anymore the qualitative and quantitative integrity of the product are decontaminated and sent for revaluation to authorized agents. In case of intervention into recipients, these will be blown off with nitrogen (or vacuum) until amine concentration decreases below 0,02mg/l, after that they will be filled with water, emptied and aerated accordingly. |
| 13.3 European Regulations applicable European Directive 2000/60/CE for establishing a framework for community action in the field of water policy; European Directive 91/689/CEE on hazardous waste; European Directive 94/62/CE on packaging and waste; European Directive 1999/31/CE on the landfill of waste. |

14. TRANSPORT INFORMATION

| | |
|---|--|
| International Transport Regulation | |
| ADR | |
| - UN no. /HI no. | 2733/ 338 |
| - Class / classification code | 3/ FC – flammable liquid |
| - Product name | Flammable, corrosive amine not otherwise specified |
| - Packing group | II – substance with medium degree of danger |

SAFETY DATA SHEET ISOPROPYLAMINE SOLUTION

| | | |
|-------------------------------|--|--|
| - Label |  |  |
| | 3 –flammable liquid | 8- corrosive liquid |
| RID | | |
| - UN /HI no. | 2733/ 338 | |
| - Class / classification code | 3/ FC – flammable liquid | |
| - Product name | Flammable, corrosive amine not otherwise specified | |
| - Packing group | II – substance with medium degree of danger | |
| - Label |  |  |
| | 3 –flammable liquid | 8- corrosive liquid |
| IMDG | | |
| - UN no. | 2733 | |
| - Class |  | |
| | 3- flammable liquid | |
| - Packing group | II – substance with medium degree of danger | |
| - Label | - | |
| - EmS | F-E S-C | |
| - Proper shipping name | Flammable, corrosive amine not otherwise specified | |
| - Subsidiary risk | 8 –corrosive substance | |
| ICAO/IATA | no data | |

15. REGULATORY INFORMATION

15.1 Applicable European Regulations and Laws:

Regulation (EC) No. 1907/2006 of the European Parliament concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) as amended

Regulation ((EU) No. 453/2010 amending Regulation (EC) No. 1907/2006 of European Parliament concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH), Annex I

Regulation (EC) No. 1272/2008 of the European Parliament concerning the classification, labeling and packaging of substances and mixtures, as amended

Directive 1999/45/EC of the European Parliament concerning the approximation of the laws, regulation and administrative provisions of the Member States relating to the classification, labeling and packaging of the substances and mixtures, as amended

European Directive 76/769/EEC, relating to restrictions on the marketing and use of certain dangerous substances and preparations as amended

ECB – ESIS – European chemical substances information system – IUCLID Datasheet

Council Directive 98/24/EC concerning the protection of the health and safety of workers from the risks related to chemical agents at work, as amended

Commission Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work, as amended

Council Directive 89/656/EEC on the minimum health and safety requirements for the use by workers of personal protective equipment at the workplace

Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste

SAFETY DATA SHEET ISOPROPYLAMINE SOLUTION

15.2 Chemical Exposure Assessment

A chemical safety assessment was carried out as a part of the substance registration according to the REACH Regulation.
Exposure scenarios with security measures applicable for the identified uses are described in the Annex of this safety data sheet.

16. OTHER INFORMATION

Full text of Hazard statements stated on Section 2:

H 224: Extremely flammable liquid and vapour

H 319: Causes serious eye irritation

H 335: May cause respiratory irritation

H 315: Causes skin irritation

H 301: Toxic if swallowed.

H 311: Toxic in contact with skin.

H 331: Toxic if inhaled

Full text of Risk phrase stated on Section 2:

R 12: Extremely flammable

R 36/37/38: Irritating to eyes, respiratory system and skin

Compared to February 2011 edition, the safety data sheet are alterations at the following chapters: 1, 2, 3, 9, 14, 15

The Safety Data Sheet has been elaborated according to the legislation in force.

Information contained herein was obtained from technical literature and from our own experience. These characterize the product respecting the safety requirements however without a guarantee of its particular properties.

It is the user's obligation to take all the necessary caution measures, so that the product can be safely used.