SAFETY DATA SHEET

Monoisopropylamine 70%

SECTION 1. IDENTIFICATION

Product name : Monoisopropylamine 70%

Product code : 51172-00, P5117210, N5117210, N5117211, P5117212, P5117201, P5117204, N5117212

Manufacturer or supplier's details

Company name of supplier : Eastman Chemical Company

Address : 200 South Wilcox Drive
          Kingsport TN 37660-5280

Telephone : (423) 229-2000

Emergency telephone : CHEMTREC: +1-800-424-9300, +1-703-527-3887 CCN7321

Recommended use of the chemical and restrictions on use

Recommended use : Chemical intermediate

Restrictions on use : None known.

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with 29 CFR 1910.1200

Flammable liquids : Category 2

Acute toxicity (Oral) : Category 3

Acute toxicity (Inhalation) : Category 4

Acute toxicity (Dermal) : Category 3

Skin corrosion : Category 1A

Serious eye damage : Category 1

Specific target organ systemic toxicity - single exposure : Category 3 (Respiratory system)

GHS label elements

Hazard pictograms : ![Flammability](image), ![Toxicity](image), ![Dangerous goods](image)

Signal Word : Danger
Hazard Statements:

H225 Highly flammable liquid and vapor.
H301 Toxic if swallowed.
H311 Toxic in contact with skin.
H332 Harmful if inhaled.
H314 Causes severe skin burns and eye damage.
H335 May cause respiratory irritation.

Precautionary Statements:

Prevention:
- P210 Keep away from heat/sparks/open flames/hot surfaces.
- No smoking.
- P240 Ground/bond container and receiving equipment.
- P241 Use explosion-proof electrical/ventilating/lighting/equipment.
- P242 Use only non-sparking tools.
- P243 Take precautionary measures against static discharge.
- P261 Avoid breathing dust/fume/gas/mist/vapors/spray.
- P264 Wash skin thoroughly after handling.
- P270 Do not eat, drink or smoke when using this product.
- P271 Use only outdoors or in a well-ventilated area.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.

Response:
- P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
- P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
- P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.
- P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.
- P362 Take off contaminated clothing and wash before reuse.
- P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

Storage:
- P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
- P405 Store locked up.

Disposal:
- P501 Dispose of contents/container to an approved waste disposal plant.

Other hazards:
None known.
SAFETY DATA SHEET

Monoisopropylamine 70%

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Components

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>isopropylamine</td>
<td>75-31-0</td>
<td>70</td>
</tr>
</tbody>
</table>

SECTION 4. FIRST AID MEASURES

General advice:
Show this material safety data sheet to the doctor in attendance.
Call a physician immediately.

If inhaled:
Move to fresh air.
If symptoms persist, call a physician.

In case of skin contact:
Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes.
Wash off immediately with plenty of water for at least 15 minutes.
Wash contaminated clothing before re-use.

In case of eye contact:
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Remove contact lenses, if present and easy to do. Continue rinsing.

If swallowed:
Clean mouth with water and drink afterwards plenty of water.
Do not induce vomiting without medical advice.
Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed:
Causes severe skin burns and eye damage.
Lung edema
Pneumonia
corrosive effects
Health injuries may be delayed.
Causes serious eye damage.
May cause respiratory irritation.
Causes severe burns.
Toxic if swallowed or if inhaled.
Harmful if inhaled.

Notes to physician:
Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media:
Alcohol-resistant foam
Carbon dioxide (CO2)
Dry chemical
Water spray

Unsuitable extinguishing:
Water spray jet
Specific hazards during fire fighting: Flash back possible over considerable distance.

Hazardous combustion products: Carbon monoxide, Nitrogen oxides (NOx), Ammonia.

Further information: Prevent fire extinguishing water from contaminating surface water or the ground water system. Do not allow run-off from fire fighting to enter drains or water courses.

Special protective equipment for fire-fighters: Wear an approved positive pressure self-contained breathing apparatus in addition to standard fire fighting gear.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Use personal protective equipment. Local authorities should be advised if significant spills cannot be contained.

Environmental precautions: Avoid release to the environment.

Methods and materials for containment and cleaning up: Eliminate all ignition sources if safe to do so. Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13). Prevent runoff from entering drains, sewers, or streams.

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion: Take precautionary measures against static discharges. Vapors may form explosive mixtures with air.

Advice on safe handling: Do not get in eyes or mouth or on skin. Do not taste or swallow. Use only with adequate ventilation. Wash thoroughly after handling.

Conditions for safe storage: Keep containers tightly closed in a dry, cool and well-ventilated place. To maintain product quality, do not store in heat or direct sunlight.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters
Components | CAS-No. | Value type (Form of exposure) | Control parameters / Permissible concentration | Basis |
--- | --- | --- | --- | --- |
isopropylamine | 75-31-0 | TWA | 5 ppm | ACGIH |
 | | STEL | 10 ppm | ACGIH |
 | | TWA | 5 ppm | OSHA Z-1 |
 | | | 12 mg/m3 | |
 | | STEL | 10 ppm | OSHA P0 |
 | | | 24 mg/m3 | |
 | | TWA | 5 ppm | OSHA P0 |
 | | | 12 mg/m3 | |

**Engineering measures**: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

**Personal protective equipment**

**Respiratory protection**: If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.

**Hand protection**

**Remarks**: Rubber gloves Neoprene gloves The exact break through time can be obtained from the protective glove producer and this has to be observed.

**Eye protection**: Safety glasses with side-shields Face-shield

**Skin and body protection**: Complete suit protecting against chemicals

**Protective measures**: Remove respiratory and skin/eye protection only after vapors have been cleared from the area. Ensure that eye flushing systems and safety showers are located close to the working place. Use personal protective equipment as required.

**Hygiene measures**: Handle in accordance with good industrial hygiene and safety practice.

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

**Appearance**: liquid
Color: colorless

Odor: ammoniacal

Odor Threshold: not determined

pH: 13.1
Concentration: 500 g/l

Melting point/range: not determined

Boiling point/boiling range: 118.00 °F / 47.78 °C

Flash point: < -15 °F / < -26 °C
Method: closed cup

Evaporation rate: not determined

Self-ignition: 671 °F / 355 °C

Upper explosion limit / Upper flammability limit: 10.4 % (V)

Lower explosion limit / Lower flammability limit: 2.3 % (V)

Vapor pressure: 293.1 hPa (70 °F / 21 °C)

Relative vapor density: 2.03
(Air = 1.0)

Relative density: No data available

Density: 0.78 g/cm³ (68 °F / 20 °C)

Solubility(ies)
Water solubility: completely soluble

Partition coefficient: n-octanol/water: log Pow: -0.5

Autoignition temperature: 671 °F / 355 °C

Decomposition temperature: not determined

Viscosity
Viscosity, dynamic: not determined
Viscosity, kinematic: not determined

Explosive properties: Not explosive

Oxidizing properties: Not classified
Surface tension : 68.5 mN/m, 68 °F / 20 °C
Molecular weight : 59.11 g/mol

SECTION 10. STABILITY AND REACTIVITY

Reactivity : None reasonably foreseeable.
Chemical stability : Stable under normal conditions.
Possibility of hazardous reactions : Hazardous decomposition products formed under fire conditions.
Conditions to avoid : Heat, flames and sparks.
Exposure to air or moisture over prolonged periods.
Incompatible materials : Strong oxidizing agents
Strong acids and strong bases
Hazardous decomposition products : Carbon dioxide (CO2)
Carbon monoxide
Nitrogen oxides (NOx)
Ammonia

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity
Toxic if swallowed or in contact with skin.
Harmful if inhaled.

Product:
Acute inhalation toxicity : LC50 (Rat): > 10 mg/l
Exposure time: 4 h
Test atmosphere: vapor
Remarks: Irritating to respiratory system.

Components:
isopropylamine:
Acute oral toxicity : LD50 Oral (Rat): 170 mg/kg
Acute inhalation toxicity : LC50 (Rat): 8.7 mg/l
Exposure time: 4 h
Test atmosphere: vapor
Acute dermal toxicity : LD50 Dermal (Rat): > 400 mg/kg
Skin corrosion/irritation
Causes severe burns.

Components:
isopropylamine:
Species : Rabbit
Exposure time : 4 h
Result : Corrosive

Serious eye damage/eye irritation
Causes serious eye damage.

Components:
isopropylamine:
Species : Rabbit
Result : Corrosive

Respiratory or skin sensitization
Skin sensitization
Not classified based on available information.
Respiratory sensitization
Not classified based on available information.
Germ cell mutagenicity
Not classified based on available information.
Carcinogenicity
Not classified based on available information.
Product:
Remarks : This product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.

IARC
No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA
No component of this product present at levels greater than or equal to 0.1% is on OSHA’s list of regulated carcinogens.

NTP
No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity
Not classified based on available information.
Product:
Effects on fertility : Remarks: No data available
SAFETY DATA SHEET

Monoisopropylamine 70%

STOT-single exposure
May cause respiratory irritation.

Components:
isopropylamine:
Assessment : May cause respiratory irritation.

STOT-repeated exposure
Not classified based on available information.

Repeated dose toxicity

Components:
isopropylamine:
Species : Rat
NOAEL : 100 mg/m³
Application Route : Inhalation
Exposure time : 90 days
Target Organs : Respiratory system, Eyes, Skin

Aspiration toxicity
Not classified based on available information.

Product:
No aspiration toxicity classification

Information on likely routes of exposure

Product:
Inhalation : Remarks: Harmful if inhaled.
Skin contact : Remarks: Toxic in contact with skin.
              Causes severe skin burns.
Eye contact : Remarks: Causes serious eye damage.
Ingestion : Remarks: Toxic if swallowed.

Further information

Product:
Remarks : None known.
SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:
isopropylamine:
Toxicity to fish: LC50 (Oncorhynchus mykiss (rainbow trout)): 40 mg/l
Exposure time: 96 h
LC50 (Pimephales promelas (fathead minnow)): 310 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates: EC50 (Daphnia): 47.4 mg/l
Exposure time: 48 h

Toxicity to algae/aquatic plants: EC50 (Chlorella pyrenoidosa): 18.9 mg/l
Exposure time: 72 h

Persistence and degradability

Components:
isopropylamine:
Biodegradability: Result: Readily biodegradable.

Bioaccumulative potential

Components:
isopropylamine:
Partition coefficient: n-octanol/water: log Pow: -0.5

Mobility in soil

Components:
isopropylamine:
Distribution among environmental compartments: Koc: 15 - 107

Other adverse effects
No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods
Waste from residues: Dispose of in accordance with local regulations.

Contaminated packaging: Empty containers should be taken to an approved waste
SECTION 14. TRANSPORT INFORMATION

International Regulations

IATA-DGR
UN/ID No. : UN 2734
Proper shipping name : Amines, liquid, corrosive, flammable, n.o.s. (Isopropylamine)
Class : 8
Subsidiary risk : 3
Packing group : I
Labels : Corrosive, Flammable Liquids
Packing instruction (cargo aircraft) : 854
Packing instruction (passenger aircraft) : 850

IMDG-Code
UN number : UN 2734
Proper shipping name : AMINES, LIQUID, CORROSIVE, FLAMMABLE, N.O.S. (Isopropylamine)
Class : 8
Subsidiary risk : 3
Packing group : I
Labels : 8 (3)
EmS Code : F-E, S-C
Marine pollutant : no

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable for product as supplied.

Domestic regulation

49 CFR
UN/ID/NA number : UN 2734
Proper shipping name : Amines, liquid, corrosive, flammable n.o.s. (Isopropylamine)
Class : 8
Subsidiary risk : 3
Packing group : I
Labels : Class 8 - Corrosive, Class 3 - Flammable Liquid
ERG Code : 132
Marine pollutant : no

Special precautions for user
The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.
SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Component TPQ (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SARA 311/312 Hazards</td>
<td>Fire Hazard</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Acute Health Hazard</td>
<td></td>
</tr>
<tr>
<td>SARA 313</td>
<td>This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.</td>
<td></td>
</tr>
</tbody>
</table>

The ingredients of this product are reported in the following inventories:

- CH INV: On the inventory, or in compliance with the inventory
- DSL: On the inventory, or in compliance with the inventory
- AICS: On the inventory, or in compliance with the inventory
- NZIoC: On the inventory, or in compliance with the inventory
- ENCS: On the inventory, or in compliance with the inventory
- ISHL: On the inventory, or in compliance with the inventory
- KECI: On the inventory, or in compliance with the inventory
- PICCS: On the inventory, or in compliance with the inventory
- IECSC: On the inventory, or in compliance with the inventory
- TCSI: On the inventory, or in compliance with the inventory
- TSCA: On the inventory, or in compliance with the inventory

TSCA list
No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.
SECTION 16. OTHER INFORMATION

Further information

**NFPA 704:**

- Flammability: 3
- Health: 3
- Instability: 0

**HMIS® IV:**

- HEALTH: / 3
- FLAMMABILITY: 3
- PHYSICAL HAZARD: 0

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The *** represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

**Full text of other abbreviations**

- ACGIH: USA. ACGIH Threshold Limit Values (TLV)
- OSHA P0: USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
- OSHA Z-1: USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
- ACGIH / TWA: 8-hour, time-weighted average
- ACGIH / STEL: Short-term exposure limit
- OSHA P0 / TWA: 8-hour time weighted average
- OSHA P0 / STEL: Short-term exposure limit
- OSHA Z-1 / TWA: 8-hour time weighted average

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSB - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse)
SAFETY DATA SHEET

Monoisopropylamine 70%

Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Revision Date: 08/08/2019

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

US / Z8