

1. Product and company identification

Product identifier

Trade name: Toolfusion® 1A

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

General use: Epoxy resin.
Reserved for industrial and professional use.

Details of the supplier of the safety data sheet

Company name:	Airtech International, Inc. 5700 Skylab Road Huntington Beach, CA 92647 E-mail: airtech@airtechintl.com Website: www.airtechonline.com Telephone: +1 714.899.8100 Dept. responsible for information: Telephone: +1 714.899.8100 E-mail: airtech@airtechintl.com	Airtech Europe Sarl Zone industrielle Haneboesch L-4562 Differdange Luxembourg Website: www.airtech.lu Telephone: +352 582.282 Dept. responsible for information: Telephone: +352 582.282 E-mail: sales@airtech.lu
	Tygavac Advanced Materials Ltd. The Causeway Broadway Business Park Chadderton, Oldham OL9 9XD United Kingdom Website: www.tygavac.co.uk Telephone: +44 161.947.1610 Dept. responsible for information: Telephone: +44 161.947.1610 E-mail: sales@tygavac.co.uk	Airtech Asia Ltd. No. 161 of Anyuan Rd Chagugang County Wuqing District 301721, Tianjin, P.R. China Website: www.airtech.asia Telephone: +86 22 8862 9800 Telefax: +86 22 8862 9900 Dept. responsible for information: Telephone: +86 22 8862 9800 E-mail: airtech.asia@airtechasia.com.cn

Emergency phone number

CHEMTREC EMERGENCY PHONE:
Within USA/Canada: 1-(800)424-9300
International: +1 703-741-5970

2. Hazards identification

Emergency overview

Appearance: Form: liquid
Color: black
Odor: weak
Classification: Skin Irritation - Category 2; Eye Irritation - Category 2A; Sensitization - skin - Category 1; Aquatic toxicity - chronic - Category 2;

Hazard symbols:

Signal word: **Warning**

SAFETY DATA SHEET

in accordance with 29 CFR 1910.1200 and ANSI standard
Z400.1-2010

Toolfusion® 1A

Material number 1068

Revision date: 9/4/2018
Version: 14
Language: en-US
Date of first version: 10/15/2008

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Hazard statements: Causes skin irritation.
May cause an allergic skin reaction.
Causes serious eye irritation.
Toxic to aquatic life with long lasting effects.

Precautionary statements: Avoid breathing vapors.
Wash hands and face thoroughly after handling.
Contaminated work clothing should not be allowed out of the workplace.
Avoid release to the environment.
Wear protective gloves/protective clothing/eye protection.
IF ON SKIN: Wash with plenty of water/soap.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Specific treatment (see 'First aid' on this label).
If skin irritation or rash occurs: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.
Take off contaminated clothing and wash it before reuse.
Collect spillage.
Dispose of contents/container to hazardous or special waste collection point.

Regulatory status

This material is considered hazardous by the U.S. OSHA Hazard Communication Standard (29 CFR 1910.1200) and SIMDUT in Canada.

Hazards not otherwise classified

Thermal decomposition can lead to the escape of irritating gases and vapors. May cause respiratory irritation. May be harmful if swallowed. Special danger of slipping by leaking/spilling product.

Contains materials regulated as dust hazards, dispersed in a non-hazardous form. If dust is recreated, appropriate respiratory and/or explosion precautions must still be used.
see section 11: Toxicological information

3. Composition / Information on ingredients

Relevant ingredients:

CAS No.	Designation	Content	Classification
CAS 25068-38-6	Reaction product: Bisphenol-A- (epichlorhydrin) epoxy resin (number average molecular weight <=700)	< 95 %	Skin Irritation - Category 2. Eye Irritation - Category 2A. Sensitization - skin - Category 1. Aquatic toxicity - chronic - Category 2.
CAS 28064-14-4	Bisphenol-F- epichlorhydrine resin	< 20 %	Skin Irritation - Category 2. Eye Irritation - Category 2A. Sensitization - skin - Category 1. Aquatic toxicity - chronic - Category 2.
CAS 2425-79-8	1,4-bis(2,3-Epoxypropoxy) butane	< 10 %	Acute Toxicity - dermal - Category 4. Acute Toxicity - inhalative - Category 4. Skin Irritation - Category 2. Eye Irritation - Category 2A. Sensitization - skin - Category 1. Aquatic toxicity - chronic - Category 3.
CAS 68609-97-2	Oxirane, mono[(C12-14-alkyloxy) methyl] derivs	< 10 %	Skin Irritation - Category 2. Sensitization - skin - Category 1.

4. First aid measures

In case of inhalation:	Move victim to fresh air, put at rest and loosen restrictive clothing. If breathing has stopped, give artificial respiration immediately. In case of breathing difficulties administer oxygen. Seek medical attention.
Following skin contact:	Contaminated/fouled clothing and shoes must be removed immediately. After contact with skin, wash immediately with soap and plenty of water. Seek medical treatment in case of troubles.
After eye contact:	Immediately flush eyes with plenty of flowing water for 10 to 15 minutes holding eyelids apart. Subsequently seek the immediate attention of an ophthalmologist.
After swallowing:	Rinse mouth with water. Immediately get medical attention. If person is clearly conscious, have them drink two glasses of water to dilute ingested material. Do not induce vomiting. Never give an unconscious person anything through the mouth.

Most important symptoms/effects, acute and delayed

In case of inhalation:
Thermal decomposition can lead to the escape of irritating gases and vapors. May cause respiratory irritation.
In case of ingestion: May be harmful if swallowed.
After contact with skin: Sensitisation, irritation, redness, pain,
After eye contact: Irritation, redness, pain.

Information to physician

Treat symptomatically.

5. Fire fighting measures

Flash point/flash point range:

> 347 °F

Auto-ignition temperature:

No data available

Suitable extinguishing media:

Water spray jet, dry chemical powder, foam, carbon dioxide.

Extinguishing media which must not be used for safety reasons:

Full water jet.

Specific hazards arising from the chemical

This material is combustible, but will not ignite readily. Emits toxic fumes under fire conditions.

In case of fire may be liberated: Aldehydes, acids, phenols, carbon monoxide and carbon dioxide. Formation of numerous unknown compounds is possible.

Protective equipment and precautions for firefighters:

Wear a self-contained breathing apparatus and chemical protective clothing.

Additional information:

Seal off endangered area. Heating causes rise in pressure with risk of bursting. Cool endangered containers with water spray and, if possible, remove from danger zone. Fight fire from a safe distance. Stay upwind/keep distance from source. Use a water fog to control vapors. Do not allow fire water to penetrate into surface or ground water.

6. Accidental release measures

Personal precautions:

Avoid the formation of aerosol/vapors. Avoid inhalation and contact with skin and eyes. Respiratory protection in case of aerosol or vapor formation. Wear appropriate protective equipment. Keep unprotected people away. Ensure adequate ventilation, especially in confined areas.

Environmental precautions:

Do not allow to penetrate into soil, waterbodies or drains. If necessary notify appropriate authorities.

Methods for clean-up:

Dam spills. Soak up with absorbent materials such as sand, siliceous earth, acid- or universal binder. Store in special closed containers and dispose of according to ordinance. Dispose of waste according to applicable legislation.

Additional information:

Special danger of slipping by leaking/spilling product.

7. Handling and storage

Handling

Advices on safe handling: Provide adequate ventilation, and local exhaust as needed. Avoid contact with skin, eyes, and clothing. Do not breathe vapor or spray. Use suitable personal protective equipment to protect skin and eyes. Take care when re-opening already used containers. Handle and open container with care. When using do not eat, drink or smoke. Wash hands before breaks and after work.

Precautions against fire and explosion:

Take standard precautions to prevent fire.

Storage

Requirements for storerooms and containers:

Keep container tightly closed in a cool, well-ventilated place. Keep away from sources of ignition. Store in a dry place. Do not drop, drag or bang the container.

Hints on joint storage: Do not store together with strong bases, oxidizing agents, strong acids or amines. Keep away from food and drinks.

8. Exposure controls / personal protection

Exposure guidelines

Additional information: Contains materials regulated as dust hazards, dispersed in a non-hazardous form. If dust is recreated, appropriate respiratory and/or explosion precautions must still be used.

Engineering controls

Provide adequate ventilation.
See also information in chapter 7, section storage.

Personal protection equipment (PPE)

Eye/face protection: Tightly sealed goggles according to OSHA Standard - 29 CFR: 1910.133 or ANSI Z87.1-2010

Skin protection: Wear suitable protective clothing.
Protective gloves.
Glove material: Nitrile rubber or neoprene.
Layer thickness (recommended): >0.5 mm.
Breakthrough time: not tested.
Observe glove manufacturer's instructions concerning penetrability and breakthrough time.

Respiratory protection: When vapors form, use respiratory protection.
Recommended: Use filter type A (= against vapors of organic substances) according to OSHA Standard - 29 CFR: 1910.134 or ANSI Z88.2.
The filter class must be suitable for the maximum contaminant concentration (gas/vapor/aerosol/particulates) that may arise when handling the product.

General hygiene considerations:
Avoid contact with skin, eyes, and clothing. Take off contaminated clothing and wash it before reuse. Do not breathe vapor or spray. Have eye wash bottle or eye rinse ready at work place. When using do not eat, drink or smoke. Wash hands before breaks and after work.

9. Physical and chemical properties

Information on basic physical and chemical properties

Appearance: Form: liquid
Color: black

Odor: weak

Odor threshold: No data available

pH value: No data available

Melting point/freezing point: No data available

Initial boiling point and boiling range: No data available

Flash point/flash point range: > 347 °F

Evaporation rate: No data available

Flammability: This material is combustible, but will not ignite readily.

Explosion limits: No data available

Vapor pressure: No data available

Vapor density: No data available

Density:	No data available
Solubility:	No data available
Partition coefficient: n-octanol/water:	No data available
Auto-ignition temperature:	No data available
Thermal decomposition:	No data available
Additional information:	No data available

10. Stability and reactivity

Reactivity:	refer to 10.3
Chemical stability:	Stable under recommended storage conditions.
Possibility of hazardous reactions	Exothermic reactions with incompatible materials.
Conditions to avoid:	Keep away from heat. Avoid open flames. Avoid the formation of aerosol/vapors.
Incompatible materials:	Strong oxidizing agents, strong Lewis acids or mineral acids and strong bases (organic and inorganic).
Hazardous decomposition products:	In case of fire may be liberated: aldehyde, acids, phenols, silicon dioxide, carbon monoxide and carbon dioxide. Formation of numerous unknown compounds is possible.
Thermal decomposition:	No data available

11. Toxicological information

Toxicological tests

Toxicological effects:	Acute toxicity (oral): Lack of data. Acute toxicity (dermal): Lack of data. Acute toxicity (inhalative): Lack of data. Skin corrosion/irritation: Skin Irritation - Category 2 = Causes skin irritation. Serious eye damage/irritation: Eye Irritation - Category 2A = Causes serious eye irritation. Sensitisation to the respiratory tract: Lack of data. Skin sensitisation: Sensitization - skin - Category 1 = May cause an allergic skin reaction. Germ cell mutagenicity/Genotoxicity: Lack of data. Carcinogenicity: Lack of data. Reproductive toxicity: Lack of data. Effects on or via lactation: Lack of data. Specific target organ toxicity (single exposure): Lack of data. Specific target organ toxicity (repeated exposure): Lack of data. Aspiration hazard: Lack of data.
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Other information: Pre-existing skin and respiratory conditions including dermatitis, asthma and chronic lung disease might be aggravated by exposure.
IARC rating:
Contains materials assigned to Group 3 and Group 2B.
Under HCS 2012, §1910.1200(i) the precise composition of the product is withheld as trade secret. A more complete disclosure can be provided to a health, or safety professional when necessary.

Symptoms

In case of inhalation:
Thermal decomposition can lead to the escape of irritating gases and vapors. May cause respiratory irritation.
In case of ingestion: May be harmful if swallowed.
After contact with skin: Sensitisation, irritation, redness, pain,
After eye contact: Irritation, redness, pain.

12. Ecological information

Ecotoxicity

Aquatic toxicity: Toxic to aquatic life with long lasting effects.

Mobility in soil

No data available

Persistence and degradability

Further details: No data available

Additional ecological information

General information: Do not allow to penetrate into soil, waterbodies or drains.

13. Disposal considerations

Product

Recommendation: Incinerate according to applicable local, state and federal regulations.

Contaminated packaging

Recommendation: Dispose of waste according to applicable legislation. Handle contaminated packages in the same way as the substance itself. Non-contaminated packages may be recycled. Do not remove label until container is thoroughly cleaned.

14. Transport information

USA: Department of Transportation (DOT)

Identification number: UN3082
Proper shipping name: UN 3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE,
LIQUID, N.O.S. (Bisphenol epoxy resins)
Hazard class or Division: 9
Packing Group: III
Labels: 9
Symbols: G
Special provisions: 8, 146, 173, 335, IB3, T4, TP1, TP29
Packaging – Exceptions: 155
Packaging – Non-bulk: 203
Packaging – Bulk: 241
Quantity limitations – Passenger aircraft / rail: No limit
Quantity limitations – Cargo only: No limit
Vessel stowage – Location: A



Sea transport (IMDG)

UN number: UN 3082
Proper shipping name: UN 3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,
N.O.S. (Bisphenol epoxy resins)
Class or division, Subsidiary risk: Class 9, Subrisk -
Packing Group: III
EmS: F-A, S-F
Special provisions: 274, 335, 969
Limited quantities: 5 L
Excepted quantities: E1
Contaminated packaging - Instructions: P001, LP01
Contaminated packaging - Provisions: PP1
IBC - Instructions: IBC03
IBC - Provisions: -
Tank instructions - IMO: -
Tank instructions - UN: T4
Tank instructions - Provisions: TP2, TP29
Stowage and handling: Category A.
Properties and observations: -
Marine pollutant: yes
Segregation group: none

Air transport (IATA)

UN/ID number: UN 3082
Proper shipping name: UN 3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,
N.O.S. (Bisphenol epoxy resins)
Class or division, Subsidiary risk: Class 9
Packing Group: III
Hazard label: Miscellaneous
Excepted Quantity Code: E1
Passenger and Cargo Aircraft: Ltd.Qty.: Pack.Instr. Y964 - Max. Net Qty/Pkg. 30 kg G
Passenger and Cargo Aircraft: Pack.Instr. 964 - Max. Net Qty/Pkg. 450 L
Cargo Aircraft only: Pack.Instr. 964 - Max. Net Qty/Pkg. 450 L
Special provisions: A97 A158 A197
Emergency Response Guide-Code (ERG): 9L

15. Regulatory information

National regulations - U.S. Federal Regulations

Product: All ingredients of this product are listed on the TSCA inventory.

1,4-bis(2,3-Epoxypropoxy)butane: TSCA: listed

National regulations - Great Britain

Hazchem-Code: •3Z

16. Other information

Text for labeling: Contains < 95 % Reaction product: Bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight <=700), < 20 % Bisphenol-F-epichlorhydrine resin, < 10 % 1,4-bis(2,3-Epoxypropoxy)butane, < 10 % Oxirane, mono[(C12-14-alkyloxy)methyl] derivs. Safety data sheet available on request.

Hazard rating systems:



NFPA Hazard Rating:

Health: 2 (Moderate)
Fire: 1 (Slight)
Reactivity: 0 (Minimal)

HMIS Version III Rating:

Health: 2 (Moderate)
Flammability: 1 (Slight)
Physical Hazard: 0 (Minimal)
Personal Protection: X = Consult your supervisor

HEALTH	2
FLAMMABILITY	1
PHYSICAL HAZARD	0
	X

Reason of change: Changes in section 1: Company/undertaking identification

Department issuing data sheet

Contact person: see section 1: Dept. responsible for information

This data sheet cannot cover all possible situations which the user may experience during processing. Each aspect of your operation should be examined to determine if, and which additional precautions may be necessary. All health and safety information contained in this data sheet should be provided to your employees and customers. It is your responsibility to develop appropriate workplace instructions and training programs for employees.

As the conditions and methods of use are beyond our control, we do not assume any responsibility and expressly disclaim any liability for any use of this product. The information supplied on this safety data sheet complies with our current level of knowledge as well as with national and EU regulations. All statements or suggestions are made without warranty, expressed or implied, regarding accuracy of information, the hazards connected with the use of the product or the results to be obtained from the use thereof.

1. Product and company identification

Product identifier

Trade name: Toolfusion® 1B

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

General use: Curing agent.
Reserved for industrial and professional use.

Details of the supplier of the safety data sheet

Company name:	Airtech International, Inc. 5700 Skylab Road Huntington Beach, CA 92647 E-mail: airtech@airtechintl.com Website: www.airtechonline.com Telephone: +1 714.899.8100 Department responsible for information: Telephone: +1 714.899.8100 E-mail: airtech@airtechintl.com	Airtech Europe Sarl Zone industrielle Haneboesch L-4562 Differdange Luxembourg Website: www.airtech.lu Telephone: +352 582.282 Department responsible for information: Telephone: +352 582.282 E-mail: sales@airtech.lu
	Tygavac Advanced Materials Ltd. The Causeway Broadway Business Park Chadderton, Oldham OL9 9XD United Kingdom Website: www.tygavac.co.uk Telephone: +44 161.947.1610 Department responsible for information: Telephone: +44 161.947.1610 E-mail: sales@tygavac.co.uk	Airtech Asia Ltd. No. 161 of Anyuan Rd Chagugang County Wuqing District 301721, Tianjin, P.R. China Website: www.airtech.asia Telephone: +86 22 8862 9800 Telefax: +86 22 8862 9900 Department responsible for information: Telephone: +86 22 8862 9800 E-mail: airtech.asia@airtechasia.com.cn

Emergency phone number

CHEMTREC EMERGENCY PHONE:
Within USA/Canada: 1-(800)424-9300
International: +1 703-741-5970

2. Hazards identification

Emergency overview

Appearance: Physical state at 68 °F and 101.3 kPa: liquid
Color: amber

Odor: amine odor

Classification: Acute Toxicity - oral - Category 4; Acute Toxicity - dermal - Category 4; Skin Corrosion - Category 1A; Eye Damage - Category 1; Sensitization - skin - Category 1; Reproductive toxicant - Category 2; Specific Target Organ Toxicity (Repeated Exposure) - Category 2; Aquatic toxicity - chronic - Category 3;

Hazard symbols:



Signal word:

Danger

Hazard statements:

Harmful if swallowed.
Harmful in contact with skin.
Causes severe skin burns and eye damage.
May cause an allergic skin reaction.
Suspected of damaging the unborn child.
May cause damage to organs through prolonged or repeated exposure.
Harmful to aquatic life with long lasting effects.

Precautionary statements:

Obtain special instructions before use.
Do not breathe vapors.
Wash hands and face thoroughly after handling.
Do not eat, drink or smoke when using this product.
Contaminated work clothing should not be allowed out of the workplace.
Avoid release to the environment.
Wear protective gloves/protective clothing/eye protection/face protection.
IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
IF ON SKIN: Wash with plenty of water/soap.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/or shower.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Get medical advice/attention.
Immediately call a POISON CENTER/doctor.
Specific treatment (see 'First aid' on this label).
Specific measures (see 'First aid' on this label).
If skin irritation or rash occurs: Get medical advice/attention.
Wash contaminated clothing before reuse.
Store locked up.
Dispose of contents/container to hazardous or special waste collection point.

Regulatory status

This material is considered hazardous by the U.S. OSHA Hazard Communication Standard (29 CFR 1910.1200).

Hazards not otherwise classified

Special danger of slipping by leaking/spilling product.
see section 11: Toxicological information

3. Composition / Information on ingredients

Chemical characterization: A mixture of amines.

Relevant ingredients:

CAS No.	Designation	Concentration	Classification
CAS 2855-13-2	3-Aminomethyl-3,5,5-trimethylcyclohexylamine	< 80 %	Acute Toxicity - oral - Category 4. Acute Toxicity - dermal - Category 4. Skin Corrosion - Category 1B. Eye Damage - Category 1. Sensitization - skin - Category 1. Aquatic toxicity - chronic - Category 3.
CAS 1761-71-3	4,4'-Methylenebis(cyclohexylamine)	< 15 %	Acute Toxicity - oral - Category 4. Skin Corrosion - Category 1A. Sensitization - skin - Category 1. Specific Target Organ Toxicity (Repeated Exposure) - Category 2. Aquatic toxicity - chronic - Category 2.
CAS 1477-55-0	m-Phenylenebis(methylamine)	< 15 %	Acute Toxicity - oral - Category 4. Acute Toxicity - inhalative - Category 4. Skin Corrosion - Category 1B. Sensitization - skin - Category 1. Aquatic toxicity - chronic - Category 3.
CAS 90640-67-8	Amines, polyethylenepoly-, triethylenetetramine fraction	< 10 %	Acute Toxicity - dermal - Category 4. Skin Corrosion - Category 1B. Sensitization - skin - Category 1. Aquatic toxicity - chronic - Category 3.
CAS 616-47-7	1-Methylimidazole	< 5 %	Acute Toxicity - oral - Category 4. Acute Toxicity - dermal - Category 4. Skin Corrosion - Category 1B.
CAS 140-31-8	2-Piperazin-1-ylethylamine	< 5 %	Acute Toxicity - oral - Category 4. Acute Toxicity - dermal - Category 4. Skin Corrosion - Category 1B. Sensitization - skin - Category 1. Aquatic toxicity - chronic - Category 3.
CAS 69-72-7	Salicylic acid	< 5 %	Acute Toxicity - oral - Category 4. Eye Damage - Category 1. Reproductive toxicant - Category 2.

4. First aid measures

General information:	First aider: Pay attention to self-protection!
In case of inhalation:	Move victim to fresh air, put at rest and loosen restrictive clothing. If breathing has stopped, give artificial respiration immediately. In case of breathing difficulties administer oxygen. Seek medical attention.
Following skin contact:	After contact with skin, wash immediately with soap and plenty of water. Take off immediately all contaminated clothing and wash it before reuse. Immediately get medical attention.
After eye contact:	Immediately flush eyes with plenty of flowing water for 10 to 15 minutes holding eyelids apart. Remove contact lenses, if present and easy to do. Continue rinsing. Seek the attention of an ophthalmologist immediately.
After swallowing:	Immediately get medical attention. Never give anything by mouth to an unconscious person. Rinse mouth immediately and drink plenty of water. Do not induce vomiting without medical assistance.

Most important symptoms/effects, acute and delayed

Harmful if swallowed or in contact with skin. Causes severe skin burns and eye damage. May cause an allergic skin reaction. May cause damage to organs through prolonged or repeated exposure.

Information to physician

Treat symptomatically.

5. Fire fighting measures

Flash point/flash point range:

> 199.4 °F

Auto-ignition temperature: No data available

Suitable extinguishing media:

Water spray jet, dry chemical powder, foam, carbon dioxide.

Extinguishing media which must not be used for safety reasons:

Full water jet.

Specific hazards arising from the chemical

This material is combustible, but will not ignite readily. Harmful and/or toxic vapors may be produced in the event of thermal decomposition.

In case of fire may be liberated: aldehydes, acids, nitrogen oxides (NO_x), phenols, carbon monoxide and carbon dioxide. Formation of numerous unknown compounds is possible.

Protective equipment and precautions for firefighters:

Wear a self-contained breathing apparatus and chemical protective clothing.

Additional information:

Seal off endangered area. Heating causes rise in pressure with risk of bursting. Cool endangered containers with water spray and, if possible, remove from danger zone. Fight fire from a safe distance. Stay upwind/keep distance from source. Use a water fog to control vapors. Do not allow fire water to penetrate into surface or ground water.

6. Accidental release measures

Personal precautions:

Avoid exposure. Avoid the formation of aerosol/vapors. Avoid inhalation and contact with skin and eyes. Respiratory protection in case of aerosol or vapor formation. Wear appropriate protective equipment. Keep unprotected people away. Ensure adequate ventilation, especially in confined areas. Take off immediately all contaminated clothing and wash it before reuse.

Environmental precautions:

Do not allow to enter into ground-water, surface water or drains. If necessary notify appropriate authorities.

Methods for clean-up:

Dam spills. Soak up with absorbent materials such as sand, siliceous earth, acid- or universal binder. Store in special closed containers and dispose of according to ordinance. Dispose of waste according to applicable legislation.

Additional information:

Special danger of slipping by leaking/spilling product.

7. Handling and storage

Handling

Advices on safe handling: Obtain special instructions before use. Provide adequate ventilation, and local exhaust as needed. Execute works under fume hood.

Avoid contact with skin, eyes, and clothing. Avoid the formation of aerosol. Do not breathe vapor/aerosol/fog. Do not ingest.

Take care when re-opening already used containers. Handle and open container with care. Wear appropriate protective equipment. When using do not eat, drink or smoke. Take off immediately all contaminated clothing and wash it before reuse. Work place should be equipped with a shower and an eye rinsing apparatus.

Precautions against fire and explosion:

Take standard precautions to prevent fire.

Storage

Requirements for storerooms and containers:

Keep container tightly closed in a cool, well-ventilated place. Keep away from sources of ignition. Store in a dry place. Do not drop, drag or bang the container.

Hints on joint storage:

Do not store together with strong oxidizing agents, strong Lewis acids, mineral acids or strong bases. Keep away from food and drinks.

8. Exposure controls / personal protection

Exposure guidelines

Occupational exposure limit values:

CAS No.	Designation	Type	Limit value
1477-55-0	m-Phenylenebis (methylamine)	USA: ACGIH: Ceiling	0.018 ppm (may be absorbed through the skin)
		USA: NIOSH: Ceiling	0.1 mg/m ³ (may be absorbed through the skin)

Engineering controls

Provide adequate ventilation, and local exhaust as needed.

See also information in chapter 7, section storage.

Personal protection equipment (PPE)

Eye/face protection: Tightly sealed goggles according to OSHA Standard - 29 CFR: 1910.133 or ANSI Z87.1-2010.

Skin protection: Wear suitable protective clothing.
Protective gloves according to OSHA Standard - 29 CFR: 1910.138.
Glove material: Nitrile rubber or neoprene.
Layer thickness (recommended): >0.5 mm.
Breakthrough time: not tested.
Observe glove manufacturer's instructions concerning penetrability and breakthrough time.

Respiratory protection: When vapors form, use respiratory protection.
Recommended: Use filter type A (= against vapors of organic substances) according to OSHA Standard - 29 CFR: 1910.134 or ANSI Z88.2.
The filter class must be suitable for the maximum contaminant concentration (gas/vapor/aerosol/particulates) that may arise when handling the product.

General hygiene considerations:

Avoid contact with skin, eyes, and clothing. Do not breathe vapor or spray. Work place should be equipped with a shower and an eye rinsing apparatus. When using do not eat, drink or smoke. Wash hands before breaks and after work. Take off immediately all contaminated clothing and wash it before reuse.

Environmental exposure controls

Refer to 6.: Section "Environmental precautions".

9. Physical and chemical properties

Information on basic physical and chemical properties

Appearance:	Physical state at 68 °F and 101.3 kPa: liquid Color: amber
Odor:	amine odor
Odor threshold:	No data available
pH:	alkaline
Melting point/freezing point:	No data available
Initial boiling point and boiling range:	No data available
Flash point/flash point range:	> 199.4 °F
Evaporation rate:	No data available
Flammability:	This material is combustible, but will not ignite readily.
Explosion limits:	No data available
Vapor pressure:	No data available
Vapor density:	No data available
Density:	0.82 g/mL
Solubility:	No data available
Partition coefficient: n-octanol/water:	No data available
Auto-ignition temperature:	No data available
Thermal decomposition:	No data available
Additional information:	No data available

10. Stability and reactivity

Reactivity:	May be corrosive to metals.
Chemical stability:	Stable under recommended storage conditions.
Possibility of hazardous reactions:	Exothermic reactions with incompatible materials.
Conditions to avoid:	Protect from excessive heat. Avoid open flames. Avoid the formation of aerosol/vapors.
Incompatible materials:	Nitrous acid, Sodium hypochlorite, peroxides, strong oxidizing agents, strong Lewis acids or mineral acids and strong bases (organic and inorganic).
Hazardous decomposition products:	aldehydes, acids, nitrogen oxides (NO _x), phenols, carbon monoxide and carbon dioxide.
Thermal decomposition:	No data available

11. Toxicological information

Toxicological tests

Toxicological effects: The statements are derived from the properties of the single components. No toxicological data is available for the product as such.

Acute toxicity (oral): Acute Toxicity - oral - Category 4 = Harmful if swallowed.
ATEmix (calculated): $300 < ATE < 2000$.

Acute toxicity (dermal): Acute Toxicity - dermal - Category 4 = Harmful in contact with skin.
ATEmix (calculated): $1000 < ATE < 2000$.

Acute toxicity (inhalative): Lack of data.

Skin corrosion/irritation, serious eye damage/irritation: Skin Corrosion - Category 1A = Causes severe skin burns and eye damage.

Sensitisation to the respiratory tract: Lack of data.

Skin sensitisation: Sensitization - skin - Category 1 = May cause an allergic skin reaction.

Germ cell mutagenicity/Genotoxicity: Lack of data.

Carcinogenicity: Lack of data.

Reproductive toxicity: Reproductive toxicant - Category 2 = Suspected of damaging the unborn child.

Effects on or via lactation: Lack of data.

Specific target organ toxicity (single exposure): Lack of data.

Specific target organ toxicity (repeated exposure): Specific Target Organ Toxicity (Repeated Exposure) - Category 2 = May cause damage to organs through prolonged or repeated exposure.

Aspiration hazard: Lack of data.

Other information: Information about amines (vapors): May cause damage to liver and kidneys through prolonged or repeated exposure. Pre-existing skin and respiratory conditions including dermatitis, asthma and chronic lung disease might be aggravated by exposure.

Symptoms

In case of inhalation:
Harmful if inhaled. The following symptoms may occur: Irritation, sore throat, headache, fatigue, dizziness, cough, nausea, vomiting.

In case of ingestion:
Harmful if swallowed. Burns in the mouth, pharynx, oesophagus, and gastrointestinal tract.
Other symptoms: Danger of stomach perforation. Abdominal pain, nausea, sore throat, vomiting, thirst and coma.

After contact with skin: Harmful in contact with skin.
Burns, causes poorly healing wounds.

After eye contact: Redness, pain, Danger of loss of sight.

12. Ecological information

Ecotoxicity

Aquatic toxicity: Toxic to aquatic life with long lasting effects.

Mobility in soil

No data available

Persistence and degradability

Further details: No data available

Additional ecological information

General information: Do not allow to enter into ground-water, surface water or drains.

13. Disposal considerations**Product**

Recommendation: Incinerate as hazardous waste according to applicable local, state, and federal regulations.

Contaminated packaging

Recommendation: Dispose of waste according to applicable legislation. Handle contaminated packages in the same way as the substance itself. Non-contaminated packages may be recycled. Do not remove label until container is thoroughly cleaned.

14. Transport information**14.2 UN proper shipping name**

ADR/RID, IMDG, IATA-DGR:

UN 2735, AMINES, LIQUID, CORROSIVE, N.O.S.
(3-Aminomethyl-3,5,5-trimethylcyclohexylamine
4,4'-Methylenebis(cyclohexylamine))**Transport hazard class(es)**ADR/RID: Class 8, Code: C7
IMDG: Class 8, Subrisk -
IATA-DGR: Class 8**Packing group**

ADR/RID, IMDG, IATA-DGR:

I

Environmental hazards

Marine pollutant: no

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

No data available

USA: Department of Transportation (DOT)

Identification number: UN2735
Proper shipping name: UN 2735, AMINES, LIQUID, CORROSIVE, N.O.S.
(3-Aminomethyl-3,5,5-trimethylcyclohexylamine
4,4'-Methylenebis(cyclohexylamine))
Hazard class or Division: 8
Packing Group: I
Labels: 8
Symbols: G
Special provisions: B10, N34, T14, TP2, TP27
Packaging – Exceptions: None
Packaging – Non-bulk: 201
Packaging – Bulk: 243
Quantity limitations – Passenger aircraft / rail: 0.5 L
Quantity limitations – Cargo only: 2.5 L
Vessel stowage – Location: A
Vessel stowage – Other: 52

**Sea transport (IMDG)**

UN number: UN 2735
Proper shipping name: UN 2735, AMINES, LIQUID, CORROSIVE, N.O.S.
(3-Aminomethyl-3,5,5-trimethylcyclohexylamine
4,4'-Methylenebis(cyclohexylamine))
Class or division, Subsidiary risk: Class 8, Subrisk -
Packing Group: I
EmS: F-A, S-B
Special provisions: 274
Limited quantities: 0
Excepted quantities: E0
Contaminated packaging - Instructions: P001
Contaminated packaging - Provisions: -
IBC - Instructions: -
IBC - Provisions: -
Tank instructions - IMO: -
Tank instructions - UN: T14
Tank instructions - Provisions: TP2, TP27
Stowage and handling: Category A.
Segregation: SG35
Properties and observations: Colourless to yellowish liquids or solutions with a pungent odour. Miscible with or soluble in water. When involved in a fire, evolve toxic gases. Corrosive to most metals, especially to copper and its alloys. React violently with acids. Cause burns to skin, eyes and mucous membranes.
Marine pollutant: no
Segregation group: 18

Air transport (IATA)

UN/ID number: UN 2735
Proper shipping name: UN 2735, AMINES, LIQUID, CORROSIVE, N.O.S.
(3-Aminomethyl-3,5,5-trimethylcyclohexylamine
4,4'-Methylenebis(cyclohexylamine))
Class or division, Subsidiary risk: Class 8
Packing Group: I
Hazard label: Corrosive
Excepted Quantity Code: E0
Passenger and Cargo Aircraft: Ltd.Qty.: Forbidden
Passenger and Cargo Aircraft: Pack.Instr. 850 - Max. Net Qty/Pkg. 0.5 L
Cargo Aircraft only: Pack.Instr. 854 - Max. Net Qty/Pkg. 2.5 L
Special provisions: A3 A803
Emergency Response Guide-Code (ERG): 8L

15. Regulatory information

National regulations - U.S. Federal Regulations

Product: All ingredients of this product are listed on the TSCA inventory.

3-Aminomethyl-3,5,5-trimethylcyclohexylamine: TSCA Inventory: listed
TSCA HPVC: not listed

4,4'-Methylenebis(cyclohexylamine): TSCA Inventory: listed
TSCA HPVC: not listed

m-Phenylenebis(methylamine): TSCA Inventory: listed
TSCA HPVC: not listed
NIOSH Recommendations:
Occupational Health Guideline: 0671

1-Methylimidazole: TSCA Inventory: listed
TSCA HPVC: not listed

2-Piperazin-1-ylethylamine: TSCA Inventory: listed
TSCA HPVC: not listed

Salicylic acid: TSCA Inventory: listed
TSCA HPVC: not listed
Clean Air Act:
SOCMI Chemical: yes

National regulations - U.S. State Regulations

m-Phenylenebis(methylamine): Idaho Air Pollutant List: listed
Massachusetts Haz. Substance Codes:
4
Minnesota Haz. Substance: listed
Pennsylvania Haz. Substance Code: -
Washington Air Contaminant: listed

National regulations - Great Britain

Hazchem-Code: 2X

16. Other information

Text for labeling:

Contains < 80 % 3-Aminomethyl-3,5,5-trimethylcyclohexylamine, < 15 % 4,4'-Methylenebis(cyclohexylamine), < 15 % m-Phenylenebis(methylamine), < 10 % Amines, polyethylenepoly-, triethylenetetramine fraction, < 5 % 1-Methylimidazole, < 5 % 2-Piperazin-1-ylethylamine, < 5 % Salicylic acid. Safety data sheet available on request. Contains 3-Aminomethyl-3,5,5-trimethylcyclohexylamine, 4,4'-Methylenebis(cyclohexylamine), m-Phenylenebis(methylamine) and 2-Piperazin-1-ylethylamine.

Hazard rating systems:



NFPA Hazard Rating:

Health: 3 (Serious)

Fire: 1 (Slight)

Reactivity: 0 (Minimal)

HMIS Version III Rating:

Health: 3 (Serious) - Chronic effects

Flammability: 1 (Slight)

Physical Hazard: 0 (Minimal)

Personal Protection: X = Consult your supervisor

HEALTH	*	3
FLAMMABILITY		1
PHYSICAL HAZARD		0
		X

Abbreviations and acronyms:

ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

AS/NZS: Australian Standards/New Zealand Standards

CAS: Chemical Abstracts Service

CFR: Code of Federal Regulations

CLP: Classification, Labelling and Packaging

DMEL: Derived minimal effect level

DNEL: Derived no-effect level

EC: European Community

EN: European Standard

MFSU: Manufacture, formulation, supply and use

IATA: International Air Transport Association

IBC Code: International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk

IMDG Code: International Maritime Dangerous Goods Code

MARPOL: Maritime Pollution: The International Convention for the Prevention of Pollution from Ships

OSHA: Occupational Safety and Health Administration

PBT: Persistent, bioaccumulative and toxic

PNEC: Predicted no-effect concentration

RID: Regulations Concerning the International Carriage of Dangerous Goods by Rail

STOT RE: Specific target organ toxicity - repeated exposure

TSCA: Toxic Substance Control Act

UN: United Nations

vPvB: Very persistent and very bioaccumulative

Reason of change:

Changes in section 2: Classification, labeling

Changes in section 3: Information on ingredients

General revision

Changes in section 14: Change in transport regulations

Department issuing data sheet

Contact person:

see section 1: Department responsible for information

This data sheet cannot cover all possible situations which the user may experience during processing. Each aspect of your operation should be examined to determine if, and which additional precautions may be necessary. All health and safety information contained in this data sheet should be provided to your employees and customers. It is your responsibility to develop appropriate workplace instructions and training programs for employees.

As the conditions and methods of use are beyond our control, we do not assume any responsibility and expressly disclaim any liability for any use of this product. The information supplied on this safety data sheet complies with our current level of knowledge as well as with national and EU regulations. All statements or suggestions are made without warranty, expressed or implied, regarding accuracy of information, the hazards connected with the use of the product or the results to be obtained from the use thereof.