



Low Temp Epoxy Part B

ICP Construction Inc

Version No: 6.7

Safety Data Sheet according to OSHA HazCom Standard (2012) requirements

Issue Date: 05/20/2024

Print Date: 05/20/2024

S.GHS.USA.EN

SECTION 1 Identification

Product Identifier

Product name	Low Temp Epoxy Part B
Synonyms	Not Available
Proper shipping name	Amines, liquid, corrosive, n.o.s (contains 1,3-cyclohexanebis(methylamine))
Other means of identification	Not Available

Recommended use of the chemical and restrictions on use

Relevant identified uses	Specialty Flooring Curative
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Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party

Registered company name	ICP Construction Inc
Address	150 Dascomb Road Andover MA 01810 United States
Telephone	1-866-667-5119 1-978-623-9987
Fax	Not Available
Website	www.icpgroup.com
Email	sds@icpgroup.com

Emergency phone number

Association / Organisation	ChemTel
Emergency telephone numbers	1-800-255-3924
Other emergency telephone numbers	1-813-248-0585

SECTION 2 Hazard(s) identification

Classification of the substance or mixture

NFPA 704 diamond

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Note: The hazard category numbers found in GHS classification in section 2 of this SDSs are NOT to be used to fill in the NFPA 704 diamond. Blue = Health Red = Fire Yellow = Reactivity White = Special (Oxidizer or water reactive substances)

Classification	Corrosive to Metals Category 1, Acute Toxicity (Oral) Category 4, Acute Toxicity (Dermal) Category 4, Skin Corrosion/Irritation Category 1B, Sensitisation (Skin) Category 1, Acute Toxicity (Inhalation) Category 4, Sensitisation (Respiratory) Category 1, Germ Cell Mutagenicity Category 2, Carcinogenicity Category 2, Reproductive Toxicity Category 2, Specific Target Organ Toxicity - Repeated Exposure Category 2, Hazardous to the Aquatic Environment Long-Term Hazard Category 4
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Label elements

Hazard pictogram(s)	
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Signal word	Danger
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Hazard statement(s)

H290	May be corrosive to metals.
H302	Harmful if swallowed.
H312	Harmful in contact with skin.
H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H332	Harmful if inhaled.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H341	Suspected of causing genetic defects.
H351	Suspected of causing cancer.
H361	Suspected of damaging fertility or the unborn child.
H373	May cause damage to organs through prolonged or repeated exposure.
H413	May cause long lasting harmful effects to aquatic life.

Hazard(s) not otherwise classified

Not Applicable

Precautionary statement(s) General

P101	If medical advice is needed, have product container or label at hand.
P102	Keep out of reach of children.
P103	Read label before use.

Precautionary statement(s) Prevention

P202	Do not handle until all safety precautions have been read and understood.
P264	Do not breath dust/fumes/gas/mist/vapors/spray.
P270	Do not eat, drink, or smoke when using this product.
P280	Wear protection gloves/protective clothing/eye protection/face protection.

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Precautionary statement(s) Response

P303+P313	If exposed or concerned, get medical advice/attention.
P301+P330+P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P337+P313	If eye irritation persists, get medical advice/attention.
P362+P364	Take off contaminated clothing and wash before reuse.

Precautionary statement(s) Storage

P405	Store locked up.
P406	Store in corrosive resistant/ container with a resistant inner liner.

Precautionary statement(s) Disposal

P501	Dispose of contents/container to authorised hazardous or special waste collection point in accordance with any local regulation.
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SECTION 3 Composition / information on ingredients

Substances

See section below for composition of Mixtures

Mixtures

CAS No	%[weight]	Name
1761-71-3	1-10	<u>4,4'-methylenebis(cyclohexylamine)</u>
2579-20-6	1-10	<u>1,3-cyclohexanebis(methylamine)</u>
100-51-6	10-30	<u>benzyl alcohol</u>
128-37-0	1-5	<u>2,6-di-tert-butyl-4-methylphenol</u>
108-95-2	10-30	<u>phenol</u>
1477-55-0	7-13	<u>m-xylenediamine</u>

The specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

SECTION 4 First-aid measures

Description of first aid measures

Eye Contact	<p>If this product comes in contact with the eyes:</p> <ul style="list-style-type: none"> ▸ Immediately hold eyelids apart and flush the eye continuously with running water. ▸ Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids. ▸ Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes. ▸ Transport to hospital or doctor without delay. ▸ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel. <p>For amines:</p>
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	<ul style="list-style-type: none"> ▶ If liquid amines come in contact with the eyes, irrigate immediately and continuously with low pressure flowing water, preferably from an eye wash fountain, for 15 to 30 minutes. ▶ For more effective flushing of the eyes, use the fingers to spread apart and hold open the eyelids. The eyes should then be “rolled” or moved in all directions. ▶ Seek immediate medical attention, preferably from an ophthalmologist.
Skin Contact	<p>If skin or hair contact occurs:</p> <ul style="list-style-type: none"> ▶ Immediately flush body and clothes with large amounts of water, using safety shower if available. ▶ Quickly remove all contaminated clothing, including footwear. ▶ Wash skin and hair with running water. Continue flushing with water until advised to stop by the Poisons Information Centre. ▶ Transport to hospital, or doctor. <p>For amines:</p> <ul style="list-style-type: none"> ▶ In case of major exposure to liquid amine, promptly remove any contaminated clothing, including rings, watches, and shoe, preferably under a safety shower. ▶ Wash skin for 15 to 30 minutes with plenty of water and soap. Call a physician immediately. ▶ Remove and dry-clean or launder clothing soaked or soiled with this material before reuse. Dry cleaning of contaminated clothing may be more effective than normal laundering. ▶ Inform individuals responsible for cleaning of potential hazards associated with handling contaminated clothing. ▶ Discard contaminated leather articles such as shoes, belts, and watchbands. ▶ Note to Physician: Treat any skin burns as thermal burns. After decontamination, consider the use of cold packs and topical antibiotics.
Inhalation	<ul style="list-style-type: none"> ▶ If fumes or combustion products are inhaled remove from contaminated area. ▶ Lay patient down. Keep warm and rested. ▶ Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures. ▶ Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary. ▶ Transport to hospital, or doctor, without delay. <p>For amines:</p> <ul style="list-style-type: none"> ▶ All employees working in areas where contact with amine catalysts is possible should be thoroughly trained in the administration of appropriate first aid procedures. ▶ Experience has demonstrated that prompt administration of such aid can minimize the effects of accidental exposure. ▶ Promptly move the affected person away from the contaminated area to an area of fresh air. ▶ Keep the affected person calm and warm, but not hot. ▶ If breathing is difficult, oxygen may be administered by a qualified person. ▶ If breathing stops, give artificial respiration. Call a physician at once.
Ingestion	<ul style="list-style-type: none"> ▶ IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY. ▶ For advice, contact a Poisons Information Centre or a doctor. ▶ Urgent hospital treatment is likely to be needed. ▶ In the mean time, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indicated by the patient's condition. ▶ If the services of a medical officer or medical doctor are readily available, the patient should be placed in his/her care and a copy of the SDS should be provided. Further action will be the responsibility of the medical specialist. ▶ If medical attention is not available on the worksite or surroundings send the patient to a hospital together with a copy of the SDS. <p>Where medical attention is not immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise:</p> <ul style="list-style-type: none"> ▶ INDUCE vomiting with fingers down the back of the throat, ONLY IF CONSCIOUS. Lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.

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NOTE: Wear a protective glove when inducing vomiting by mechanical means.

For amines:

- If liquid amine are ingested, have the affected person drink several glasses of water or milk.
- Do not induce vomiting.
- Immediately transport to a medical facility and inform medical personnel about the nature of the exposure. The decision of whether to induce vomiting should be made by an attending physician.

Most important symptoms and effects, both acute and delayed

See Section 11

Indication of any immediate medical attention and special treatment needed

Clinical experience of benzyl alcohol poisoning is generally confined to premature neonates in receipt of preserved intravenous salines.

- Metabolic acidosis, bradycardia, skin breakdown, hypotonia, hepatorenal failure, hypotension and cardiovascular collapse are characteristic.
- High urine benzoate and hippuric acid as well as elevated serum benzoic acid levels are found.
- The so-called 'gaspings syndrome' describes the progressive neurological deterioration of poisoned neonates.
- Management is essentially supportive.

For acute or short-term repeated exposures to highly alkaline materials:

- Respiratory stress is uncommon but present occasionally because of soft tissue edema.
- Unless endotracheal intubation can be accomplished under direct vision, cricothyroidotomy or tracheotomy may be necessary.
- Oxygen is given as indicated.
- The presence of shock suggests perforation and mandates an intravenous line and fluid administration.
- Damage due to alkaline corrosives occurs by liquefaction necrosis whereby the saponification of fats and solubilisation of proteins allow deep penetration into the tissue.

Alkalis continue to cause damage after exposure.

INGESTION:

- Milk and water are the preferred diluents

No more than 2 glasses of water should be given to an adult.

- Neutralising agents should never be given since exothermic heat reaction may compound injury.

* Catharsis and emesis are absolutely contra-indicated.

* Activated charcoal does not absorb alkali.

* Gastric lavage should not be used.

Supportive care involves the following:

- Withhold oral feedings initially.
- If endoscopy confirms transmucosal injury start steroids only within the first 48 hours.
- Carefully evaluate the amount of tissue necrosis before assessing the need for surgical intervention.
- Patients should be instructed to seek medical attention whenever they develop difficulty in swallowing (dysphagia).

SKIN AND EYE:

- Injury should be irrigated for 20-30 minutes.

Eye injuries require saline. [Ellenhorn & Barceloux: Medical Toxicology]

For amines:

- Certain amines may cause injury to the respiratory tract and lungs if aspirated. Also, such products may cause tissue destruction leading to stricture. If lavage is performed, endotracheal and/or esophagosopic control is suggested.
- No specific antidote is known.
- Care should be supportive and treatment based on the judgment of the physician in response to the reaction of the patient.

Laboratory animal studies have shown that a few amines are suspected of causing depletion of certain white blood cells and their precursors in lymphoid tissue. These effects may be due to an immunosuppressive mechanism.

Some persons with hyperreactive airways (e.g., asthmatic persons) may experience wheezing attacks (bronchospasm) when exposed to airway irritants.

Lung injury may result following a single massive overexposure to high vapour concentrations or multiple exposures to lower concentrations of any pulmonary irritant material.

Health effects of amines, such as skin irritation and transient corneal edema ("blue haze," "halo effect," "glauropsia"), are best prevented by means of formal worker education, industrial hygiene monitoring, and exposure control methods. Persons who are highly sensitive to the

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triggering effect of non-specific irritants should not be assigned to jobs in which such agents are used, handled, or manufactured.

Medical surveillance programs should consist of a pre-placement evaluation to determine if workers or applicants have any impairments (e.g., hyperreactive airways or bronchial asthma) that would limit their fitness for work in jobs with potential for exposure to amines. A clinical baseline can be established at the time of this evaluation.

Periodic medical evaluations can have significant value in the early detection of disease and in providing an opportunity for health counseling.

Medical personnel conducting medical surveillance of individuals potentially exposed to polyurethane amine catalysts should consider the following:

- Health history, with emphasis on the respiratory system and history of infections
- Physical examination, with emphasis on the respiratory system and the lymphoreticular organs (lymph nodes, spleen, etc.)
- Lung function tests, pre- and post-bronchodilator if indicated
- Total and differential white blood cell count
- Serum protein electrophoresis

Persons who are concurrently exposed to isocyanates also should be kept under medical surveillance.

Pre-existing medical conditions generally aggravated by exposure include skin disorders and allergies, chronic respiratory disease (e.g. bronchitis, asthma, emphysema), liver disorders, kidney disease, and eye disease.

Broadly speaking, exposure to amines, as characterised by amine catalysts, may cause effects similar to those caused by exposure to ammonia. As such, amines should be considered potentially injurious to any tissue that is directly contacted.

Inhalation of aerosol mists or vapors, especially of heated product, can result in chemical pneumonitis, pulmonary edema, laryngeal edema, and delayed scarring of the airway or other affected organs. There is no specific treatment.

Clinical management is based upon supportive treatment, similar to that for thermal burns.

Persons with major skin contact should be maintained under medical observation for at least 24 hours due to the possibility of delayed reactions.

Polyurethane Amine Catalysts: Guidelines for Safe Handling and Disposal Technical Bulletin June 2000
Alliance for Polyurethanes Industry

SECTION 5 Fire-fighting measures

Extinguishing media

- Foam.
- Dry chemical powder.

Special hazards arising from the substrate or mixture

Fire Incompatibility	<ul style="list-style-type: none"> ▸ Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result
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Special protective equipment and precautions for fire-fighters

Fire Fighting	<ul style="list-style-type: none"> ▸ Alert Fire Brigade and tell them location and nature of hazard. ▸ Wear full body protective clothing with breathing apparatus. <p>For amines:</p> <ul style="list-style-type: none"> ▸ For firefighting, cleaning up large spills, and other emergency operations, workers must wear a self-contained breathing apparatus with full face-piece, operated in a pressure-demand mode. ▸ Airline and air purifying respirators should not be worn for firefighting or other emergency or upset conditions.
Fire/Explosion Hazard	<ul style="list-style-type: none"> ▸ Combustible. ▸ Slight fire hazard when exposed to heat or flame. <p>Combustion products include: carbon dioxide (CO₂) aldehydes nitrogen oxides (NO_x) other pyrolysis products typical of burning organic material. May emit poisonous fumes.</p>

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WARNING: Long standing in contact with air and light may result in the formation of potentially explosive peroxides.

SECTION 6 Accidental release measures

Personal precautions, protective equipment and emergency procedures

See section 8

Environmental precautions

See section 12

Methods and material for containment and cleaning up

Minor Spills	<ul style="list-style-type: none"> ▸ Remove all ignition sources. ▸ Clean up all spills immediately. <p>for amines:</p> <ul style="list-style-type: none"> ▸ If possible (i.e., without risk of contact or exposure), stop the leak. ▸ Contain the spilled material by diking, then neutralize.
Major Spills	<ul style="list-style-type: none"> ▸ Clear area of personnel and move upwind. ▸ Alert Fire Brigade and tell them location and nature of hazard. <p>For amines:</p> <ul style="list-style-type: none"> ▸ First remove all ignition sources from the spill area. ▸ Have firefighting equipment nearby, and have firefighting personnel fully trained in the proper use of the equipment and in the procedures used in fighting a chemical fire.

Personal Protective Equipment advice is contained in Section 8 of the SDS.

SECTION 7 Handling and storage

Precautions for safe handling

Safe handling	<ul style="list-style-type: none"> ▸ Avoid all personal contact, including inhalation. ▸ Wear protective clothing when risk of exposure occurs. ▸ DO NOT allow clothing wet with material to stay in contact with skin
Other information	<ul style="list-style-type: none"> ▸ Store in original containers. ▸ Keep containers securely sealed.

Conditions for safe storage, including any incompatibilities

Suitable container	<ul style="list-style-type: none"> ▸ Glass container is suitable for laboratory quantities ▸ Lined metal can, lined metal pail/ can. ▸ Plastic pail. <p>For low viscosity materials</p> <ul style="list-style-type: none"> ▸ Drums and jerricans must be of the non-removable head type. ▸ Where a can is to be used as an inner package, the can must have a screwed enclosure. <p>All inner and sole packagings for substances that have been assigned to Packaging Groups I or II on the basis of inhalation toxicity criteria, must be hermetically sealed.</p>
Storage incompatibility	<p>Benzyl alcohol:</p> <ul style="list-style-type: none"> ▸ may froth in contact with water ▸ slowly oxidises in air, oxygen forming benzaldehyde ▸ is incompatible with mineral acids, caustics, aliphatic amines, isocyanates ▸ reacts violently with strong oxidisers, and explosively with sulfuric acid at elevated temperatures

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- corrodes aluminium at high temperatures
 - is incompatible with aluminum, iron, steel
 - attacks some nonfluorinated plastics; may attack, extract and dissolve polypropylene
- Benzyl alcohol contaminated with 1.4% hydrogen bromide and 1.2% of dissolved iron(II) polymerises exothermically above 100 deg. C.
- Amines are incompatible with:
- isocyanates, halogenated organics, peroxides, phenols (acidic), epoxides, anhydrides, and acid halides.
 - strong reducing agents such as hydrides, due to the liberation of flammable gas.
 - Avoid oxidising agents, acids, acid chlorides, acid anhydrides, chloroformates.
 - Avoid contact with copper, aluminium and their alloys.
 - Segregate phenol from halogens, calcium hypochlorite, and metals such as aluminium, lead, zinc, magnesium.
 - Reaction of phenol with calcium hypochlorite is exothermic and produces toxic fumes which may ignite
 - Hot phenol is corrosive to many metals, including aluminium, lead, magnesium and zinc.

SECTION 8 Exposure controls / personal protection

Control parameters

Occupational Exposure Limits (OEL)

INGREDIENT DATA

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
US OSHA Permissible Exposure Limits (PELs) Table Z-1	2,6-di-tert-butyl-4-methylphenol	Particulates Not Otherwise Regulated (PNOR)- Total dust	15 mg/m ³	Not Available	Not Available	Not Available
US OSHA Permissible Exposure Limits (PELs) Table Z-1	2,6-di-tert-butyl-4-methylphenol	Particulates Not Otherwise Regulated (PNOR)- Respirable fraction	5 mg/m ³	Not Available	Not Available	Not Available
US OSHA Permissible Exposure Limits (PELs) Table Z-3	2,6-di-tert-butyl-4-methylphenol	Inert or Nuisance Dust: Total Dust	15 mg/m ³ / 50 mppcf	Not Available	Not Available	Not Available
US OSHA Permissible Exposure Limits (PELs) Table Z-3	2,6-di-tert-butyl-4-methylphenol	Inert or Nuisance Dust: Respirable fraction	5 mg/m ³ / 15 mppcf	Not Available	Not Available	Not Available
US NIOSH Recommended Exposure Limits (RELs)	2,6-di-tert-butyl-4-methylphenol	2,6-Di-tert-butyl-p-cresol	10 mg/m ³	Not Available	Not Available	Not Available
US OSHA Permissible Exposure Limits (PELs) Table Z-1	phenol	Phenol	5 ppm / 19 mg/m ³	Not Available	Not Available	Skin designation
US NIOSH Recommended Exposure Limits (RELs)	phenol	Phenol	5 ppm / 19 mg/m ³	Not Available	15.6 (15-minute) ppm / 60 (15-minute) mg/m ³	[skin]
US NIOSH Recommended Exposure Limits (RELs)	m-xylenediamine	m-Xylene-alpha,alpha'-diamine	Not Available	Not Available	0.1 mg/m ³	[skin]

Emergency Limits

Ingredient	TEEL-1	TEEL-2	TEEL-3
benzyl alcohol	30 ppm	52 ppm	740 ppm

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Ingredient	NEPA-1 Available	NEPA-2 Available	NEPA-3 Available
Ingredient	Original IDLH	Revised IDLH	
4,4'-methylenebis(cyclohexylamine)	Not Available	Not Available	
1,3-cyclohexanebis(methylamine)	Not Available	Not Available	
benzyl alcohol	Not Available	Not Available	
2,6-di-tert-butyl-4-methylphenol	Not Available	Not Available	
phenol	250 ppm	Not Available	
m-xylenediamine	Not Available	Not Available	

Occupational Exposure Banding

Ingredient	Occupational Exposure Band Rating	Occupational Exposure Band Limit
4,4'-methylenebis(cyclohexylamine)	E	≤ 0.1 ppm
1,3-cyclohexanebis(methylamine)	D	> 0.1 to ≤ 1 ppm
benzyl alcohol	E	≤ 0.1 ppm
Notes:	<i>Occupational exposure banding is a process of assigning chemicals into specific categories or bands based on a chemical's potency and the adverse health outcomes associated with exposure. The output of this process is an occupational exposure band (OEB), which corresponds to a range of exposure concentrations that are expected to protect worker health.</i>	

Exposure controls

Appropriate engineering controls	<p>Unless written procedures, specific to the workplace are available, the following is intended as a guide:</p> <ul style="list-style-type: none"> ▶ For Laboratory-scale handling of Substances assessed to be toxic by inhalation. Quantities of up to 25 grams may be handled in Class II biological safety cabinets*; Quantities of 25 grams to 1 kilogram may be handled in Class II biological safety cabinets* or equivalent containment systems; Quantities exceeding 1 kg may be handled either using specific containment, a hood or Class II biological safety cabinet*. ▶ HEPA terminated local exhaust ventilation should be considered at point of generation of dust, fumes or vapours.
Individual protection measures, such as personal protective equipment	
Eye and face protection	<ul style="list-style-type: none"> ▶ Chemical protective goggles with full seal. [AS/NZS 1337.1, EN166 or national equivalent] ▶ Shielded mask (gas-type). <p>For amines: SPECIAL PRECAUTION:</p> <ul style="list-style-type: none"> ▶ Because amines are alkaline materials that can cause rapid and severe tissue damage, wearing of contact lenses while working with amines is strongly discouraged. Wearing such lenses can prolong contact of the eye tissue with the amine, thereby causing more severe damage.
Skin protection	See Hand protection below
Hands/feet protection	<ul style="list-style-type: none"> ▶ When handling corrosive liquids, wear trousers or overalls outside of boots, to avoid spills entering boots. <p>NOTE:</p>

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	<ul style="list-style-type: none"> ▸ The material may produce skin sensitisation in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact. <p>The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.</p> <ul style="list-style-type: none"> ▸ Rubber gloves (nitrile or low-protein, powder-free latex, latex/ nitrile). Employees allergic to latex gloves should use nitrile gloves in preference. <p>For amines:</p> <ul style="list-style-type: none"> ▸ Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly.
Body protection	See Other protection below
Other protection	<ul style="list-style-type: none"> ▸ For quantities up to 500 grams a laboratory coat may be suitable. ▸ For quantities up to 1 kilogram a disposable laboratory coat or coverall of low permeability is recommended.

Respiratory protection

Type AK-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

- Cartridge respirators should never be used for emergency ingress or in areas of unknown vapour concentrations or oxygen content.
- The wearer must be warned to leave the contaminated area immediately on detecting any odours through the respirator. The odour may indicate that the mask is not functioning properly, that the vapour concentration is too high, or that the mask is not properly fitted. Because of these limitations, only restricted use of cartridge respirators is considered appropriate.
- Cartridge performance is affected by humidity. Cartridges should be changed after 2 hr of continuous use unless it is determined that the humidity is less than 75%, in which case, cartridges can be used for 4 hr. Used cartridges should be discarded daily, regardless of the length of time used

Where engineering controls are not feasible and work practices do not reduce airborne amine concentrations below recommended exposure limits, appropriate respiratory protection should be used. In such cases, air-purifying respirators equipped with cartridges designed to protect against amines are recommended.

SECTION 9 Physical and chemical properties**Information on basic physical and chemical properties**

Appearance	Not Available		
Physical state	Liquid	Relative density (Water = 1)	8.79
Odour	Not Available	Partition coefficient n-octanol / water	Not Available
Odour threshold	Not Available	Auto-ignition temperature (°C)	Not Available
pH (as supplied)	Not Available	Decomposition temperature (°C)	Not Available
Melting point / freezing point (°C)	Not Available	Viscosity (cSt)	Not Available
Initial boiling point and boiling range (°C)	Not Available	Molecular weight (g/mol)	Not Available
Flash point (°C)	>99	Taste	Not Available
Evaporation rate	Not Available	Explosive properties	Not Available
Flammability	Not Applicable	Oxidising properties	Not Available

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Upper Explosive Limit (%)	Not Available	Surface Tension (dyn/cm or mN/m)	Not Available
Lower Explosive Limit (%)	Not Available	Volatile Component (%vol)	Not Available
Vapour pressure (kPa)	Not Available	Gas group	Not Available
Solubility in water	Not Available	pH as a solution (1%)	Not Available
Vapour density (Air = 1)	Not Available	VOC g/L	5

SECTION 10 Stability and reactivity

Reactivity	See section 7
Chemical stability	<ul style="list-style-type: none"> ▸ Unstable in the presence of incompatible materials. ▸ Product is considered stable.
Possibility of hazardous reactions	See section 7
Conditions to avoid	See section 7
Incompatible materials	See section 7
Hazardous decomposition products	See section 5

SECTION 11 Toxicological information

Information on toxicological effects

Inhaled	<p>The material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage.</p> <p>There is strong evidence to suggest that this material can cause, if inhaled once, serious, irreversible damage of organs.</p> <p>Inhalation of vapours or aerosols (mists, fumes), generated by the material during the course of normal handling, may produce severe damage to the health of the individual. Relatively small amounts absorbed through the lungs may prove fatal.</p> <p>Inhalation of amine vapours may cause irritation of the mucous membrane of the nose and throat, and lung irritation with respiratory distress and cough. Swelling and inflammation of the respiratory tract is seen in serious cases; with headache, nausea, faintness and anxiety.</p> <p>Inhalation of epoxy resin amine hardeners (including polyamines and amine adducts) may produce bronchospasm and coughing episodes lasting several days after cessation of the exposure. Even faint traces of these vapours may trigger an intense reaction in individuals showing 'amine asthma'.</p> <p>The compound causes intestinal irritation due to its caustic nature. Lower doses may cause impaired appetite, sluggish reaction to stimuli and reduced alertness.</p> <p>Inhalation of the phenol vapour produced sore throat, coughing, laboured breathing and systemic effects including paleness, weakness, headache, sweating, ringing sound in the ears, low blood oxygen, and even shock. It can also produce a damaging effect on the lungs, heart muscles, liver, kidney and hind-limb paralysis based on studies done with guinea-pig.</p> <p>Inhalation of benzyl alcohol may affect breathing (causing depression and paralysis of breathing and lower blood pressure).</p>
Ingestion	The material can produce chemical burns within the oral cavity and gastrointestinal tract following ingestion.

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	<p>Strong evidence exists that exposure to the material may cause irreversible damage (other than cancer, mutations and birth defects) following a single exposure by swallowing.</p> <p>The material is not thought to produce adverse health effects following ingestion (as classified by EC Directives using animal models). Nevertheless, adverse systemic effects have been produced following exposure of animals by at least one other route and good hygiene practice requires that exposure be kept to a minimum.</p> <p>Amines without benzene rings when swallowed are absorbed throughout the gut. Corrosive action may cause damage throughout the gastrointestinal tract.</p> <p>Ingestion of amine epoxy-curing agents (hardeners) may cause severe abdominal pain, nausea, vomiting or diarrhoea. The vomitus may contain blood and mucous.</p> <p>For phenol, solid:</p> <p>Ingestion causes blotches on the lips and in the mouth.</p> <p>Swallowing large doses of benzyl alcohol may cause abdominal pain, nausea, vomiting and diarrhea. It may affect behaviour and/or the central nervous system, and cause headache, sleepiness, excitement, dizziness, inco-ordination, coma, convulsions and other symptoms of central nervous system depression.</p> <p>Ingestion of alkaline corrosives may produce burns around the mouth, ulcerations and swellings of the mucous membranes, profuse saliva production, with an inability to speak or swallow. Both the oesophagus and stomach may experience burning pain; vomiting and diarrhoea may follow.</p>
<p style="text-align: center;">Skin Contact</p>	<p>Skin contact with the material may be harmful; systemic effects may result following absorption.</p> <p>The material can produce chemical burns following direct contact with the skin.</p> <p>There is strong evidence to suggest that this material, on a single contact with skin, can cause serious, irreversible damage of organs.</p> <p>Amine epoxy-curing agents (hardeners) may produce primary skin irritation and sensitisation dermatitis in predisposed individuals. Cutaneous reactions include erythema, intolerable itching and severe facial swelling.</p> <p>Undiluted benzene-1,3-dimethanamine may be corrosive to the skin. Concentrated solution of the material produces severe reddening and irritation.</p> <p>Volatile amine vapours produce irritation and inflammation of the skin. Direct contact can cause burns.</p> <p>Open cuts, abraded or irritated skin should not be exposed to this material</p> <p>Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.</p> <p>For phenol, solid:</p> <p>Contact with the skin causes a white, wrinkled discolouration, followed by a severe burn or whole-body poisoning if not promptly and properly removed.</p> <p>Intense burning and pain from skin contact may be delayed.</p>
<p style="text-align: center;">Eye</p>	<p>The material can produce chemical burns to the eye following direct contact. Vapours or mists may be extremely irritating.</p> <p>Vapours of volatile amines irritate the eyes, causing excessive secretion of tears, inflammation of the conjunctiva and slight swelling of the cornea, resulting in 'halos' around lights. This effect is temporary, lasting only for a few hours.</p> <p>Direct eye contact with corrosive bases can cause pain and burns. There may be swelling, epithelium destruction, clouding of the cornea and inflammation of the iris.</p>
<p style="text-align: center;">Chronic</p>	<p>There has been concern that this material can cause cancer or mutations, but there is not enough data to make an assessment.</p> <p>Repeated or long-term occupational exposure is likely to produce cumulative health effects involving organs or biochemical systems.</p> <p>Long-term exposure to respiratory irritants may result in airways disease, involving difficulty breathing and related whole-body problems.</p> <p>Inhaling this product is more likely to cause a sensitisation reaction in some persons compared to the general population.</p> <p>Skin contact with the material is more likely to cause a sensitisation reaction in some persons compared to the general population.</p>

Low Temp Epoxy Part B

Based on experiments and other information, there is ample evidence to presume that exposure to this material can cause genetic defects that can be inherited.

Ample evidence exists from experimentation that reduced human fertility is directly caused by exposure to the material.

Solid phenol is highly toxic if swallowed, inhaled or on skin contact. Chronic phenol poisoning is very rarely reported, but symptoms include vomiting, difficulty in swallowing, diarrhoea, lack of appetite, headache, fainting, dizziness, dark urine, mental disturbances, possibly skin rash and death due to liver and kidney damage may occur.

Prolonged or repeated exposure to benzyl alcohol may cause allergic contact dermatitis (skin inflammation). Prolonged or repeated swallowing may affect behaviour and the central nervous system with symptoms similar to acute swallowing.

Sensitisation may give severe responses to very low levels of exposure, i.e. hypersensitivity.

Inhalation of epoxy resin amine hardeners (including polyamines and amine adducts) may produce bronchospasm and coughing episodes lasting several days after cessation of the exposure. Even faint traces of these vapours may trigger an intense reaction in individuals showing 'amine asthma'.

Low Temp Epoxy Part B	TOXICITY	IRRITATION
	Not Available	Not Available
4,4'-methylenebis(cyclohexylamine)	TOXICITY	IRRITATION
	Dermal (rabbit) LD50: >1000 mg/kg ^[1]	Eye (rabbit): 10uL./24h SEVERE
	Inhalation(Mouse) LC50; 0.4 mg/l4h ^[2]	Eye: adverse effect observed (irreversible damage) ^[1]
	Oral (Rat) LD50: 350 mg/kg ^[1]	Eye: adverse effect observed (irritating) ^[1]
		Skin (rabbit): SEVERE Corrosive *** [Air Products and Chemicals] ** [BASF CCINFO 1882394]
	Skin: adverse effect observed (corrosive) ^[1]	
1,3-cyclohexanebis(methylamine)	TOXICITY	IRRITATION
	Dermal (rabbit) LD50: 1700 mg/kg ^[1]	Eye: adverse effect observed (irritating) ^[1]
	Oral (Rat) LD50: >200<2000 mg/kg ^[1]	Skin: adverse effect observed (corrosive) ^[1]
benzyl alcohol	TOXICITY	IRRITATION
	Dermal (rabbit) LD50: 2000 mg/kg ^[2]	Eye (rabbit): 0.75 mg open SEVERE
	Inhalation (Rat) LC50: >4.178 mg/L4h ^[2]	Eye: adverse effect observed (irritating) ^[1]
	Oral (Rat) LD50: 1230 mg/kg ^[2]	Skin (man): 16 mg/48h-mild
		Skin (rabbit): 10 mg/24h open-mild
	Skin: no adverse effect observed (not irritating) ^[1]	
2,6-di-tert-butyl-4-methylphenol	TOXICITY	IRRITATION
	Dermal (rabbit) LD50: >2000 mg/kg ^[2]	Eye (rabbit): 100 mg/24h-moderate
	Oral (Rat) LD50: 890 mg/kg ^[2]	Eye: no adverse effect observed (not irritating) ^[1]
		Skin (human): 500 mg/48h - mild
		Skin (rabbit): 500 mg/48h-moderate

Low Temp Epoxy Part B

		Skin: no adverse effect observed (not irritating) ^[1]
phenol	TOXICITY	IRRITATION
	Dermal (rabbit) LD50: 850 mg/kg ^[2]	Eye(rabbit): 100 mg rinse - mild
	Inhalation(Mouse) LC50; 0.177 mg/L4h ^[2]	Eye(rabbit): 5 mg - SEVERE
	Oral (Rat) LD50: 317 mg/kg ^[2]	Skin(rabbit): 500 mg open -SEVERE
		Skin(rabbit): 500 mg/24hr - SEVERE
m-xylenediamine	TOXICITY	IRRITATION
	Dermal (rabbit) LD50: 2000 mg/kg ^[2]	Eye (rabbit): 0.05 mg/24h SEVERE
	Inhalation (Rat) LC50: 0.8 mg/l4h ^[1]	Skin (rabbit): 0.75 mg/24h SEVERE
	Oral (Rat) LD50: >200 mg/kg ^[1]	
Legend:	1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2. Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances	

4,4'-METHYLENEBIS(CYCLOHEXYLAMINE)	The material may produce moderate eye irritation leading to inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.
1,3-CYCLOHEXANE BIS(METHYLAMINE)	Gastrointestinal changes recorded. For 1,3-cyclohexanebis(methylamine) (CHBM): Animal testing shows that CHBM has low to moderate acute toxicity by swallowing and moderate acute toxicity by skin contact. It is corrosive to the eyes and skin.
BENZYL ALCOHOL	Unlike benzylic alcohols, the beta-hydroxyl group of the members of benzyl alkyl alcohols contributes to break down reactions but do not undergo phase II metabolic activation. Though structurally similar to cancer causing ethyl benzene, phenethyl alcohol is only of negligible concern due to limited similarity in their pattern of activity. For benzoates: Benzyl alcohol, benzoic acid and its sodium and potassium salt have a common metabolic and excretion pathway. All but benzyl alcohol are considered to be unharmed and of low acute toxicity. This is a member or analogue of a group of benzyl derivatives generally regarded as safe (GRAS), based partly on their self-limiting properties as flavouring substances in food. In humans and other animals, they are rapidly absorbed, broken down and excreted, with a wide safety margin. The aryl alkyl alcohol (AAA) fragrance ingredients have diverse chemical structures, with similar metabolic and toxicity profiles. The AAA fragrances demonstrate low acute and subchronic toxicity by skin contact and swallowing.
2,6-DI-TERT-BUTYL-4-METHYLPHENOL	* Degussa SDS Effects such as behavioral changes, reduction in body weight gain, and decrement in body weight have been observed after long-term administration of BHT to mice and rats. Toxic effects may be attributed more to BHT metabolites than to their parent compound, only a few studies have focused on their carcinogenicity and toxicity, and not only on that of BHT. The metabolite BHT-QM (syn: 2,6-di-tert-butyl-1,4-methylene-2,5-cyclohexadien-1-one, CAS RN: 2607-52-5) is a very reactive compound which is considered to play a significant role in hepatotoxicity, pneumotoxicity, and skin tumor promotion in mice. BHT has been reported to exert prooxidant effects under certain conditions. Thus, when BHT was added in excess to a wheat seedling medium in aerobic conditions, an enhancement of the generation rate of superoxide anion was observed. Some authors have reported that at high aeration rate, BHT can react with molecular oxygen rather than with the reactive oxygen

Low Temp Epoxy Part B

species present, yielding BHT-phenoxy radical and superoxide anion. In addition, the phenolic radical itself may undergo redox recycling which can be a critical factor depending on the reductant involved. However, it has to be noted that BHT-phenoxy radical has been reported to be relatively stable. Furthermore, the potential reactivity of BHT-derived metabolites should be taken into account; some studies reported that not only BHT but also its metabolites, such as BHT-Q and BHT-QM, can act as prooxidant. As BHT undergoes several reactions during biotransformation, a large number of intermediate metabolites have been identified. However, their nature and concentration depend on the environmental conditions and on the animal species. Although the changes undergone by BHT during *in vivo* digestion processes have not been studied, after submission of a fluid deep-frying fat containing BHT and BHT-QM to an *in vitro* gastrointestinal digestion model, both these were detected in the digested samples. These results indicate that BHT and its toxic metabolite could remain bioaccessible for intestinal absorption. Studies concerning BHT metabolism have shown that, unlike other synthetic antioxidants, BHT is a potent inducer of the microsomal monooxygenase system and its major route of degradation is oxidation catalyzed by cytochrome P450. Studies have reported potential toxicity derived from the ingestion or administration of BHT. As for acute oral toxicity, although this is considered low in animals, it must be noted that 2 clinical cases were reported in patients who suffered acute neurotoxicity and gastritis after ingesting a high dose of BHT (4 and 80 g without medical prescription) to cure recurrent genital herpes. Regarding short-term subchronic toxicity studies, it has been reported that BHT causes dose-related increase in the incidence and severity of toxic nephrosis in mice, nephrotoxicity and pneumotoxicity in rats, and in chicken a marked congestion of the liver and kidney, as well as diffuse enlargement of the liver with rounded borders and rupture with hemorrhaging. It has to be noted that the EFSA Panel (2012) pointed out certain inconsistencies in the findings obtained from the short-term and subchronic toxicity studies. Several genotoxicity studies on BHT concluded that BHT does not represent a genotoxic risk, because most of the studies carried out to that date had shown BHT was not able to induce mutations or to damage deoxyribonucleic acid (DNA).

Nevertheless, it must be mentioned that other studies reported contrary results. The effect of BHT and 7 of its metabolites on *in vitro* DNA cleavage was studied and the metabolites BHT-Q (syn: 2,6-di-tert-butyl-2,5-cyclohexadiene-1,4-dione, CAS RN: 719-22-2), BHT-CHO (syn: 3,5-di-tert-butyl-4-hydroxybenzaldehyde, CAS RN: 1620-98-0 and BHT-OOH (syn: 2,6-di-tert-butyl-4-methyl-4-hydroperoxy-2,5-cyclohexadien-1-one, CAS RN: 6485-57-0) were able to cleave DNA. The Panel on Food Additives and Nutrient Sources Added to Food of the European Food Safety Authority (EFSA) recognized that these positive genotoxicity results may be due to the prooxidative chemistry of BHT, which gives rise to reactive metabolites. Some studies addressed the carcinogenicity and chronic toxicity of BHT and its metabolites in rodents with contradictory results. Thus, mice-fed dietary BHT for a year developed marked hyperplasia of the hepatic bile ducts with an associated subacute cholangitis. Moreover, after 104 wk of administration of BHT, the formation of hepatocellular tumors in male mice was observed. Several studies have demonstrated the potential of BHT to act either as a tumor promoter or as a tumor suppressor, modulating the carcinogenicity of some well-known carcinogens. Barbara Nieva-Echevarria et al: Comprehensive reviews in Food Science and Food Safety, Vol 14, Dec 2014 <https://onlinelibrary.wiley.com/doi/10.1111/1541-4337.12121/pdf>

Laboratory (*in vitro*) and animal studies show, exposure to the material may result in a possible risk of irreversible effects, with the possibility of producing mutation.

for bridged alkyl phenols:

Acute toxicity: Acute oral and dermal toxicity data are available for all but two of the substances in the group. The data show that acute toxicity of these substances is low. ferroptosis inhibitors are currently being treated systemically rather than specifically, which may have multiple side effects. For example, Desferoxamin (DFO), an iron chelating agent, is known to have a short half-life, need long-term subcutaneous infusions, and provoke ototoxicity and neurotoxicity.

Data show that acute toxicity following oral and topical use of hindered phenols is low. They are not proven to cause mutations.

Continued...

Low Temp Epoxy Part B

M-XYLENEDIAMINE	For benzene-1,3-dimethanamine (m-xylene-alpha,alpha -diamine): Animal testing showed that benzene-1,3-methanamine caused tissue damage to the digestive and respiratory organs, if given by mouth or inhaled, respectively. The chemical is corrosive to animal skin, and may cause sensitization.
Low Temp Epoxy Part B & 4,4'-METHYLENEBIS(CYCLOHEXYLAMINE) & 1,3-CYCLOHEXANE BIS(METHYLAMINE) & 2,6-DI-TERT-BUTYL-4-METHYLPHENOL & PHENOL & M-XYLENEDIAMINE	Asthma-like symptoms may continue for months or even years after exposure to the material ends. This may be due to a non-allergic condition known as reactive airways dysfunction syndrome (RADS) which can occur after exposure to high levels of highly irritating compound.
Low Temp Epoxy Part B & M-XYLENEDIAMINE	Allergic reactions involving the respiratory tract are usually due to interactions between IgE antibodies and allergens and occur rapidly. Allergic potential of the allergen and period of exposure often determine the severity of symptoms. Attention should be paid to atopic diathesis, characterised by increased susceptibility to nasal inflammation, asthma and eczema. Exogenous allergic alveolitis is induced essentially by allergen specific immune-complexes of the IgG type; cell-mediated reactions (T lymphocytes) may be involved. Such allergy is of the delayed type with onset up to four hours following exposure.
Low Temp Epoxy Part B & 4,4'-METHYLENEBIS(CYCLOHEXYLAMINE) & 1,3-CYCLOHEXANE BIS(METHYLAMINE) & BENZYL ALCOHOL & 2,6-DI-TERT-BUTYL-4-METHYLPHENOL & M-XYLENEDIAMINE	The following information refers to contact allergens as a group and may not be specific to this product. Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's oedema.
Low Temp Epoxy Part B & BENZYL ALCOHOL	Adverse reactions to fragrances in perfumes and fragranced cosmetic products include allergic contact dermatitis, irritant contact dermatitis, sensitivity to light, immediate contact reactions, and pigmented contact dermatitis. Airborne and connubial contact dermatitis occurs. Fragrance allergens act as haptens, low molecular weight chemicals that cause an immune response only when attached to a carrier protein. However, not all sensitizing fragrance chemicals are directly reactive, but require previous activation.
Low Temp Epoxy Part B & 4,4'-METHYLENEBIS(CYCLOHEXYLAMINE) & M-XYLENEDIAMINE	Overexposure to most of these materials may cause adverse health effects. Many amine-based compounds can cause release of histamines, which, in turn, can trigger allergic and other physiological effects, including constriction of the bronchi or asthma and inflammation of the cavity of the nose. Whole-body symptoms include headache, nausea, faintness, anxiety, a decrease in blood pressure, rapid heartbeat, itching, reddening of the skin, urticaria (hives) and swelling of the face, which are usually transient. There are generally four routes of possible or potential exposure: inhalation, skin contact, eye contact, and swallowing. Inhalation: Inhaling vapours may result in moderate to severe irritation of the tissues of the nose and throat and can irritate the lungs.
4,4'-METHYLENEBIS(CYCLOHEXYLAMINE) & 1,3-CYCLOHEXANE BIS(METHYLAMINE)	The material may produce respiratory tract irritation, and result in damage to the lung including reduced lung function.
4,4'-METHYLENEBIS(CYCLOHEXYLAMINE) & BENZYL ALCOHOL & 2,6-DI-TERT-BUTYL-4-METHYLPHENOL	The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.
1,3-CYCLOHEXANE BIS(METHYLAMINE) &	The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

Continued...

Low Temp Epoxy Part B

PHENOL & M-XYLENEDIAMINE		The material may cause severe skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin. Repeated exposures may produce severe ulceration.	
2,6-DI-TERT-BUTYL-4-METHYLPHENOL & PHENOL		The substance is classified by IARC as Group 3: NOT classifiable as to its carcinogenicity to humans. Evidence of carcinogenicity may be inadequate or limited in animal testing.	
Acute Toxicity	✓	Carcinogenicity	✓
Skin Irritation/Corrosion	✓	Reproductivity	✓
Serious Eye Damage/Irritation	✗	STOT - Single Exposure	✗
Respiratory or Skin sensitisation	✓	STOT - Repeated Exposure	✓
Mutagenicity	✓	Aspiration Hazard	✗

Legend: ✗ – Data either not available or does not fill the criteria for classification
 ✓ – Data available to make classification

SECTION 12 Ecological information

Toxicity

Low Temp Epoxy Part B	Endpoint	Test Duration (hr)	Species	Value	Source
	Not Available	Not Available	Not Available	Not Available	Not Available
4,4'-methylenebis(cyclohexylamine)	Endpoint	Test Duration (hr)	Species	Value	Source
	LC50	96h	Fish	68mg/l	2
	EC50	72h	Algae or other aquatic plants	>=141.42<=200mg/l	2
	EC50	48h	Crustacea	6.84mg/l	2
	NOEC(ECx)	336h	Fish	>1mg/l	2
1,3-cyclohexanebis(methylamine)	Endpoint	Test Duration (hr)	Species	Value	Source
	EC50	72h	Algae or other aquatic plants	29.7mg/l	2
	LC50	96h	Fish	130mg/l	2
	NOEC(ECx)	72h	Algae or other aquatic plants	13.7mg/l	2
	EC50	48h	Crustacea	33.1mg/l	2
benzyl alcohol	Endpoint	Test Duration (hr)	Species	Value	Source
	EC50	72h	Algae or other aquatic plants	500mg/l	2
	LC50	96h	Fish	10mg/l	2
	EC50	48h	Crustacea	230mg/l	2
	NOEC(ECx)	336h	Fish	5.1mg/l	2
	EC50	96h	Algae or other aquatic plants	76.828mg/l	2
2,6-di-tert-butyl-4-methylphenol	Endpoint	Test Duration (hr)	Species	Value	Source
	ErC50	72h	Algae or other aquatic plants	>0.42mg/l	1

Continued...

Low Temp Epoxy Part B

	LC50	96h	Fish	>0.5mg/l	Not Available
	BCF	1344h	Fish	220-2800	7
	EC50	72h	Algae or other aquatic plants	>0.42mg/l	1
	EC50	48h	Crustacea	>0.17mg/l	2
	EC0(ECx)	48h	Crustacea	>=0.31mg/l	1
	EC50	96h	Algae or other aquatic plants	0.758mg/l	2
phenol	Endpoint	Test Duration (hr)	Species	Value	Source
	EC50	72h	Algae or other aquatic plants	48.937-57.407mg/L	4
	LC50	96h	Fish	0.002mg/L	4
	EC50	48h	Crustacea	3.1mg/l	1
	EC50(ECx)	24h	Crustacea	<0.001mg/L	4
	EC50	96h	Algae or other aquatic plants	0.019-0.104mg/L	4
m-xylenediamine	Endpoint	Test Duration (hr)	Species	Value	Source
	EC50	72h	Algae or other aquatic plants	12mg/l	2
	EC50	48h	Crustacea	15.2mg/l	2
	NOEC(ECx)	504h	Crustacea	4.7mg/l	2
	LC50	96h	Fish	75mg/l	2
	BCF	1008h	Fish	<0.3	7
Legend:	Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data				

For benzene-1,3-dimethanamine (m-xylene-alpha,alpha'- diamine)

Environmental fate:

The chemical has a log Pow value of 0.18 at 2 a vapour pressure 5 C, of 0.04 hPa at 25 C, and a water solubility of > 100 000 mg/L.

Fugacity model Mackay level III calculations suggest that the majority of the chemical would distribute to soil if released to soil and/or air compartment(s), and water if released to aquatic compartment.

For benzyl alcohol: log Kow : 1.1Koc : <5Henry's atm m3 /mol: 3.91E-07BOD 5: 1.55-1.6,33-62%COD : 96%ThOD : 2.519BCF : 4

Bioaccumulation: Not significant

Anaerobic Effects: Significant degradation.

Effects on algae and plankton: Inhibits degradation of glucose

Degradation Biological: Significant processes

Abiotic: RxnOH*,no photochem

Ecotoxicity: Fish LC50 (48 h): fathead minnow 770 mg/l; (72 h): 480 mg/l; (96 h) 460 mg/l.

For Phenol:

Environmental Fate: In alkaline soils and water, phenol will partially exist as an anion, (negatively charged particle), which can affect its fate and transport processes.

Atmospheric Fate: Phenol may wash out of the atmosphere with precipitation, however; this may occur on a limited basis, due to the short half-life of phenol in the air.

Prevent, by any means available, spillage from entering drains or water courses.

DO NOT discharge into sewer or waterways.

Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
4,4'-	HIGH	HIGH

Continued...

Low Temp Epoxy Part B

Ingredient	Persistence: Water/Soil	Persistence: Air
methylenebis(cyclohexylamine)		
1,3-cyclohexanebis(methylamine)	LOW	LOW
benzyl alcohol	LOW	LOW
2,6-di-tert-butyl-4-methylphenol	HIGH	HIGH
phenol	LOW (Half-life = 10 days)	LOW (Half-life = 0.95 days)
m-xylenediamine	HIGH	HIGH

Bioaccumulative potential

Ingredient	Bioaccumulation
4,4'-methylenebis(cyclohexylamine)	LOW (LogKOW = 3.2649)
1,3-cyclohexanebis(methylamine)	LOW (LogKOW = 1.0688)
benzyl alcohol	LOW (LogKOW = 1.1)
2,6-di-tert-butyl-4-methylphenol	HIGH (BCF = 2500)
phenol	LOW (BCF = 17.5)
m-xylenediamine	LOW (BCF = 2.7)

Mobility in soil

Ingredient	Mobility
4,4'-methylenebis(cyclohexylamine)	LOW (Log KOC = 672.4)
1,3-cyclohexanebis(methylamine)	LOW (Log KOC = 914.6)
benzyl alcohol	LOW (Log KOC = 15.66)
2,6-di-tert-butyl-4-methylphenol	LOW (Log KOC = 23030)
phenol	LOW (Log KOC = 268)
m-xylenediamine	LOW (Log KOC = 914.6)

SECTION 13 Disposal considerations

Waste treatment methods

Product / Packaging disposal	<ul style="list-style-type: none"> ▸ Containers may still present a chemical hazard/ danger when empty. ▸ Return to supplier for reuse/ recycling if possible. <p>Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area.</p> <ul style="list-style-type: none"> ▸ DO NOT allow wash water from cleaning or process equipment to enter drains. ▸ It may be necessary to collect all wash water for treatment before disposal. ▸ Recycle wherever possible or consult manufacturer for recycling options. ▸ Consult State Land Waste Authority for disposal.
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SECTION 14 Transport information

Labels Required

Low Temp Epoxy Part B

**Marine Pollutant**

NO

Shipping container, transport vehicle placarding, and labeling may vary from the below information. This depends on the quantity shipped, the applicability of excepted quantity requirements, limited quantity requirements, and/or special provisions according to US DOT, IATA and IMDG regulations. In case of reshipment, it is the responsibility of the shipper to determine the appropriate labels and markings in accordance with applicable transport regulations.

Land transport (DOT)

14.1. UN number or ID number	2735	
14.2. UN proper shipping name	Amines, liquid, corrosive, n.o.s. (contains 1,3-cyclohexanebis(methylamine))	
14.3. Transport hazard class(es)	Class	8
	Subsidiary Hazard	Not Applicable
14.4. Packing group	III	
14.5. Environmental hazard	Not Applicable	
14.6. Special precautions for user	Hazard Label	8
	Special provisions	IB3, T7, TP1, TP28

Air transport (ICAO-IATA / DGR)

14.1. UN number	2735	
14.2. UN proper shipping name	Amines, liquid, corrosive, n.o.s. (contains 1,3-cyclohexanebis(methylamine))	
14.3. Transport hazard class(es)	ICAO/IATA Class	8
	ICAO / IATA Subsidiary Hazard	Not Applicable
	ERG Code	8L
14.4. Packing group	III	
14.5. Environmental hazard	Not Applicable	
14.6. Special precautions for user	Special provisions	A3 A803
	Cargo Only Packing Instructions	856
	Cargo Only Maximum Qty / Pack	60 L
	Passenger and Cargo Packing Instructions	852
	Passenger and Cargo Maximum Qty / Pack	5 L
	Passenger and Cargo Limited Quantity Packing Instructions	Y841
	Passenger and Cargo Limited Maximum Qty / Pack	1 L

Sea transport (IMDG-Code / GGVSee)

14.1. UN number	2735
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Continued...

Low Temp Epoxy Part B

14.2. UN proper shipping name	AMINES, LIQUID, CORROSIVE, N.O.S. (contains 1,3-cyclohexanebis(methylamine))	
14.3. Transport hazard class(es)	IMDG Class	8
	IMDG Subsidiary Hazard	Not Applicable
14.4. Packing group	III	
14.5. Environmental hazard	Not Applicable	
14.6. Special precautions for user	EMS Number	F-A , S-B
	Special provisions	223 274
	Limited Quantities	5 L

14.7.1. Transport in bulk according to Annex II of MARPOL and the IBC code

Not Applicable

14.7.2. Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code

Product name	Group
4,4'-methylenebis(cyclohexylamine)	Not Available
1,3-cyclohexanebis(methylamine)	Not Available
benzyl alcohol	Not Available
2,6-di-tert-butyl-4-methylphenol	Not Available
phenol	Not Available
m-xylenediamine	Not Available

14.7.3. Transport in bulk in accordance with the IGC Code

Product name	Ship Type
4,4'-methylenebis(cyclohexylamine)	Not Available
1,3-cyclohexanebis(methylamine)	Not Available
benzyl alcohol	Not Available
2,6-di-tert-butyl-4-methylphenol	Not Available
phenol	Not Available
m-xylenediamine	Not Available

SECTION 15 Regulatory information

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

4,4'-methylenebis(cyclohexylamine) is found on the following regulatory lists

US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory

1,3-cyclohexanebis(methylamine) is found on the following regulatory lists

US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory

Continued...

Low Temp Epoxy Part B

benzyl alcohol is found on the following regulatory lists

US - Massachusetts - Right To Know Listed Chemicals

US AIHA Workplace Environmental Exposure Levels (WEELs)

US DOE Temporary Emergency Exposure Limits (TEELs)

US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory

US Toxicology Excellence for Risk Assessment (TERA) Workplace Environmental Exposure Levels (WEEL)

2,6-di-tert-butyl-4-methylphenol is found on the following regulatory lists

International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Not Classified as Carcinogenic

International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

US - Alaska Air Quality Control - Concentrations Triggering an Air Quality Episode for Air Pollutants Other Than PM-2.5

US - Massachusetts - Right To Know Listed Chemicals

US NIOSH Recommended Exposure Limits (RELs)

US OSHA Permissible Exposure Limits (PELs) Table Z-1

US OSHA Permissible Exposure Limits (PELs) Table Z-3

US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory

phenol is found on the following regulatory lists

International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Not Classified as Carcinogenic

US - California Hazardous Air Pollutants Identified as Toxic Air Contaminants

US - Massachusetts - Right To Know Listed Chemicals

US ATSDR Minimal Risk Levels for Hazardous Substances (MRLs)

US Clean Air Act - Hazardous Air Pollutants

US CWA (Clean Water Act) - List of Hazardous Substances

US CWA (Clean Water Act) - Priority Pollutants

US CWA (Clean Water Act) - Toxic Pollutants

US DOE Temporary Emergency Exposure Limits (TEELs)

US EPA Integrated Risk Information System (IRIS)

US EPCRA Section 313 Chemical List

US NIOSH Recommended Exposure Limits (RELs)

US OSHA Permissible Exposure Limits (PELs) Table Z-1

US SARA Section 302 Extremely Hazardous Substances

US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory

US TSCA Section 4/12 (b) - Sunset Dates/Status

m-xylenediamine is found on the following regulatory lists

US - Massachusetts - Right To Know Listed Chemicals

US NIOSH Recommended Exposure Limits (RELs)

US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory

Additional Regulatory Information

Not Applicable

Federal Regulations

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Section 311/312 hazard categories

Flammable (Gases, Aerosols, Liquids, or Solids)	No
Gas under pressure	No
Explosive	No
Self-heating	No

Continued...

Low Temp Epoxy Part B

Pyrophoric (Liquid or Solid)	No
Pyrophoric Gas	No
Corrosive to metal	Yes
Oxidizer (Liquid, Solid or Gas)	No
Organic Peroxide	No
Self-reactive	No
In contact with water emits flammable gas	No
Combustible Dust	No
Carcinogenicity	Yes
Acute toxicity (any route of exposure)	Yes
Reproductive toxicity	Yes
Skin Corrosion or Irritation	Yes
Respiratory or Skin Sensitization	Yes
Serious eye damage or eye irritation	No
Specific target organ toxicity (single or repeated exposure)	Yes
Aspiration Hazard	No
Germ cell mutagenicity	Yes
Simple Asphyxiant	No
Hazards Not Otherwise Classified	No

US. EPA CERCLA Hazardous Substances and Reportable Quantities (40 CFR 302.4)

Name	Reportable Quantity in Pounds (lb)	Reportable Quantity in kg
phenol	1000	454

US. EPCRA Section 313 Toxic Release Inventory (TRI) (40 CFR 372)

This product contains the following EPCRA section 313 chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know-Act of 1986 (40 CFR 372):

CAS No	%[weight]	Name
108-95-2	10-30	phenol

This information must be included in all SDSs that are copied and distributed for this material.

Additional Federal Regulatory Information

Not Applicable

State Regulations**US. California Proposition 65**

None Reported

Additional State Regulatory Information

Not Applicable

National Inventory Status

National Inventory	Status
Australia - AIIIC / Australia Non-Industrial Use	Yes

Continued...

Low Temp Epoxy Part B

National Inventory	Status
Canada - DSL	Yes
Canada - NDSL	No (4,4'-methylenebis(cyclohexylamine); 1,3-cyclohexanebis(methylamine); benzyl alcohol; phenol; m-xylenediamine)
China - IECSC	Yes
Europe - EINEC / ELINCS / NLP	Yes
Japan - ENCS	Yes
Korea - KECI	Yes
New Zealand - NZIoC	Yes
Philippines - PICCS	Yes
USA - TSCA	Yes
Taiwan - TCSI	Yes
Mexico - INSQ	No (4,4'-methylenebis(cyclohexylamine); 1,3-cyclohexanebis(methylamine))
Vietnam - NCI	Yes
Russia - FBEPH	Yes
Legend:	Yes = All CAS declared ingredients are on the inventory No = One or more of the CAS listed ingredients are not on the inventory. These ingredients may be exempt or will require registration.

SECTION 16 Other information

Revision Date	05/20/2024
Initial Date	06/09/2020

CONTACT POINT

PLEASE NOTE THAT TITANIUM DIOXIDE IS NOT PRESENT IN CLEAR OR NEUTRAL BASES

SDS Version Summary

Version	Date of Update	Sections Updated
5.7	05/20/2024	Hazards identification - Classification, Exposure controls / personal protection - Engineering Control, Exposure controls / personal protection - Exposure Standard, Composition / information on ingredients - Ingredients, Exposure controls / personal protection - Personal Protection (other), Exposure controls / personal protection - Personal Protection (eye), Exposure controls / personal protection - Personal Protection (hands/feet), Handling and storage - Storage (suitable container)

Other information

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings.

Definitions and abbreviations

- PC - TWA: Permissible Concentration-Time Weighted Average
- PC - STEL: Permissible Concentration-Short Term Exposure Limit
- IARC: International Agency for Research on Cancer
- ACGIH: American Conference of Governmental Industrial Hygienists

Continued...

Low Temp Epoxy Part B

- STEL: Short Term Exposure Limit
- TEEL: Temporary Emergency Exposure Limit,
- IDLH: Immediately Dangerous to Life or Health Concentrations
- ES: Exposure Standard
- OSF: Odour Safety Factor
- NOAEL: No Observed Adverse Effect Level
- LOAEL: Lowest Observed Adverse Effect Level
- TLV: Threshold Limit Value
- LOD: Limit Of Detection
- OTV: Odour Threshold Value
- BCF: BioConcentration Factors
- BEI: Biological Exposure Index
- DNEL: Derived No-Effect Level
- PNEC: Predicted no-effect concentration

- AIIC: Australian Inventory of Industrial Chemicals
- DSL: Domestic Substances List
- NDSL: Non-Domestic Substances List
- IECSC: Inventory of Existing Chemical Substance in China
- EINECS: European INventory of Existing Commercial chemical Substances
- ELINCS: European List of Notified Chemical Substances
- NLP: No-Longer Polymers
- ENCS: Existing and New Chemical Substances Inventory
- KECI: Korea Existing Chemicals Inventory
- NZIoC: New Zealand Inventory of Chemicals
- PICCS: Philippine Inventory of Chemicals and Chemical Substances
- TSCA: Toxic Substances Control Act
- TCSI: Taiwan Chemical Substance Inventory
- INSQ: Inventario Nacional de Sustancias Químicas
- NCI: National Chemical Inventory
- FBEPH: Russian Register of Potentially Hazardous Chemical and Biological Substances

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