

MG Chemicals (Head Office)

Version No: 3.3

Safety Data Sheet (Conforms to Regulations (EC) No 2015/830)

Chemwatch Hazard Alert Code: 2

Issue Date: 27/09/2015 Print Date: 27/09/2015 Initial Date: 01/01/0001 L.REACH.GBR.EN

SECTION 1 IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

1.1.Product Identifier

Product name	832C-Part A Translucent Epoxy
Synonyms	SDS Code: 832C-Part A; Part # 832C-375ML, 832C-450ML, 832C-3L, 832C-60L
Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (contains bisphenol a/ diglycidyl ether resin, liquid)
Other means of identification	Not Available

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

Relevant identified uses	Epoxy resin for use with hardeners to pot devices or encapsulate components
Uses advised against	Not Applicable

1.3.Details of the supplier of the safety data sheet

Registered company name	MG Chemicals (Head Office)	MG Chemicals UK Limited
Address	9347-193 Street, Surrey V4N 4E7 British Columbia Canada	Heame House, 23 Bilston Street, Sedgely Dudley DY3 1JA United Kingdom
Telephone	+1-604-888-3084	+44 1663 362888
Fax	+1-604-888-7754	Not Available
Website	www.mgchemicals.com	Not Available
Email	info@mgchemicals.com	sales@mgchemicals.com

1.4. Emergency telephone number

Association / Organisation	Not Available	CHEMTREC
Emergency telephone numbers	Not Available	+(44)-870-8200418
Other emergency telephone numbers	Not Available	+(1) 703-527-3887

SECTION 2 HAZARDS IDENTIFICATION

2.1.Classification of the substance or mixture

Classification according to regulation (EC) No 1272/2008 [CLP] ^[1]	Skin Corrosion/Irritation Category 2, Eye Irritation Category 2, Skin Sensitizer Category 1, Chronic Aquatic Hazard Category 2
Legend:	1. Classified by Chernwatch; 2. Classification drawn from EC Directive 67/548/EEC - Annex I ; 3. Classification drawn from EC Directive 1272/2008 - Annex VI
2.2. Label elements	
CLP label elements	
SIGNAL WORD	WARNING

Hazard statement(s)

H315	Causes skin irritation
H319	Causes serious eye irritation
H317	May cause an allergic skin reaction
H411	Toxic to aquatic life with long lasting effects

Supplementary statement(s)

Not Applicable

Precautionary statement(s) Prevention

P280	Wear protective gloves/protective clothing/eye protection/face protection.
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P273	Avoid release to the environment.
P272	Contaminated work clothing should not be allowed out of the workplace.

Precautionary statement(s) Response

P362+P364	Take off contaminated clothing and wash it before reuse.
P337+P313	If eye irritation persists: Get medical advice/attention.
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P302+P352	IF ON SKIN: Wash with plenty of water and soap

Precautionary statement(s) Storage

Precautionary statement(s) Disposal

P501 Dispose of contents/container in accordance with local regulations.

2.3. Other hazards

REACh - Art.57-59: The mixture does not contain Substances of Very High Concern (SVHC) at the SDS print date.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

3.1.Substances

See 'Composition on ingredients' in Section 3.2

3.2.Mixtures

1.CAS No 2.EC No 3.Index No 4.REACH No	%[weight]	Name	Classification according to regulation (EC) No 1272/2008 [CLP]
1.25068-38-6 2.500-033-5 3.603-074-00-8 4.01-2119456619-26-XXXX	80-95	bisphenol A/ diglycidyl ether resin, liquid	Eye Irrit. 2, Skin Irrit. 2, Skin Sens. 1, Aquatic Chronic 2; H319, H315, H317, H411 ^[3]
1.68609-97-2 2.271-846-8 3.603-103-00-4 4.01-2119485289-22-XXXX	7-13	(C12-14)alkylglycidyl ether	Skin Irrit. 2, Skin Sens. 1; H315, H317 ^[3]
Legend:	1. Classified by	y Chemwatch; 2. Classification drawn from EC D	rrective 67/548/EEC - Annex I; 3. Classification drawn from EC Directive 1272/2008 - Annex VI

SECTION 4 FIRST AID MEASURES

4.1. Description of first aid measures

	► Immediately give a glass of water.
	First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.
	If fumes, aerosols or combustion products are inhaled remove from contaminated area.
	Other measures are usually unnecessary.
	If this product comes in contact with the eyes:
	Wash out immediately with fresh running water.
General	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.
	Seek medical attention without delay; if pain persists or recurs seek medical attention.
	Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
	If skin contact occurs:
	Immediately remove all contaminated clothing, including footwear.
	 Flush skin and hair with running water (and soap if available).
	Seek medical attention in event of irritation.

Continued...

832C–Part A Translucent Epoxy

Eye Contact	 If this product comes in contact with the eyes: Wash out immediately with fresh 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. Seek medical attention without delay; if pain persists or recurs seek medical attention. Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Skin Contact	 If skin contact occurs: Immediately remove all contaminated clothing, including footwear. Flush skin and hair with running water (and soap if available). Seek medical attention in event of irritation.
Inhalation	 If fumes, aerosols or combustion products are inhaled remove from contaminated area. Other measures are usually unnecessary.
Ingestion	 Immediately give a glass of water. First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

4.2 Most important symptoms and effects, both acute and delayed

See Section 11

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5 FIREFIGHTING MEASURES

5.1. Extinguishing media

 Foam. Dry chemical powder. BCF (where regulations permit). Carbon dioxide. Water spray or fog - Large fires only.

5.2. Special hazards arising from the substrate or mixture

Fire Incompatibility	Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result
5.3. Advice for firefighters	
	 Alert Fire Brigade and tell them location and nature of hazard. Wear full body protective clothing with breathing apparatus.
	 Prevent, by any means available, spillage from entering drains or water course.

Fire Fighting	 Use water delivered as a fine spray to control fire and cool adjacent area. Avoid spraying water onto liquid pools. DO NOT approach containers suspected to be hot. Cool fire exposed containers with water spray from a protected location. If safe to do so, remove containers from path of fire.
Fire/Explosion Hazard	 Combustible. Slight fire hazard when exposed to heat or flame. Heating may cause expansion or decomposition leading to violent rupture of containers. On combustion, may emit toxic fumes of carbon monoxide (CO). May emit acrid smoke. Mists containing combustible materials may be explosive. Combustion products include; carbon dioxide (CO2) other pyrolysis products typical of burning organic material

SECTION 6 ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

See section 8

6.2. Environmental precautions

See section 12

6.3. Methods and material for containment and cleaning up

Minor Spills	 Environmental hazard - contain spillage. Clean up all spills immediately. Avoid breathing vapours and contact with skin and eyes. Control personal contact with the substance, by using protective equipment. Contain and absorb spill with sand, earth, inert material or vermiculite. Wipe up. Place in a suitable, labelled container for waste disposal.
Major Spills	 Environmental hazard - contain spillage. Moderate hazard. Clear area of personnel and move upwind. Alert Fire Brigade and tell them location and nature of hazard. Wear breathing apparatus plus protective gloves. Prevent, by any means available, spillage from entering drains or water course.

► No smoking, naked lights or ignition sources.
► Increase ventilation.
Stop leak if safe to do so.
 Contain spill with sand, earth or vermiculite.
 Collect recoverable product into labelled containers for recycling.
Absorb remaining product with sand, earth or vermiculite.
 Collect solid residues and seal in labelled drums for disposal.
 Wash area and prevent runoff into drains.

If contamination of drains or waterways occurs, advise emergency services.

6.4. Reference to other sections

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

SECTION 7 HANDLING AND STORAGE

7.1. Precautions for safe handling

Safe handling	 DO NOT allow clothing wet with material to stay in contact with skin Avoid all personal contact, including inhalation. Wear protective clothing when risk of exposure occurs. Use in a well-ventilated area. Prevent concentration in hollows and sumps. DO NOT enter confined spaces until atmosphere has been checked. Avoid smoking, naked lights or ignition sources. Avoid contact with incompatible materials. When handling, DO NOT eat, drink or smoke. Keep containers securely sealed when not in use. Avoid physical damage to containers. Always wash hands with soap and water after handling. Work clothes should be laundered separately. Use good occupational work practice. Observe manufacturer's storage and handling recommendations contained within this MSDS. Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions.
Fire and explosion protection	See section 5
Other information	 Store in original containers. Keep containers securely sealed. Store in a cool, dry, well-ventilated area. Store away from incompatible materials and foodstuff containers. Protect containers against physical damage and check regularly for leaks. Observe manufacturer's storage and handling recommendations contained within this MSDS.

7.2. Conditions for safe storage, including any incompatibilities

Suitable container	 Metal can or drum Packaging as recommended by manufacturer. Check all containers are clearly labelled and free from leaks.
Storage incompatibility	 Avoid cross contamination between the two liquid parts of product (kit). If two part products are mixed or allowed to mix in proportions other than manufacturer's recommendation, polymerisation with gelation and evolution of heat (exotherm) may occur. This excess heat may generate toxic vapour Avoid reaction with amines, mercaptans, strong acids and oxidising agents Glycidyl ethers: may form unstable peroxides on storage in air ,light, sunlight, UV light or other ionising radiation, trace metals - inhibitor should be maintained at adequate levels may polymerise in contact with heat, organic and inorganic free radical producing initiators may polymerise with evolution of heat in contact with oxidisers, strong acids, bases and amines react violently with strong oxidisers, permanganates, peroxides, acyl halides, alkalis, ammonium persulfate, bromine dioxide attack some forms of plastics, coatings, and rubber

7.3. Specific end use(s)

See section 1.2

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. Control parameters

DERIVED NO EFFECT LEVEL (DNEL)

Not Available

PREDICTED NO EFFECT LEVEL (PNEC)

Not Available

OCCUPATIONAL EXPOSURE LIMITS (OEL)

INGREDIENT DATA

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
Not Available						

EMERGENCY LIMITS

Ingredient	Material name	TEEL-1		TEEL-2	TEEL-3	
bisphenol A/ diglycidyl ether resin, liquid	Epoxy resin (EPON 1001)	90 mg/m3		990 mg/m3	5900 mg/m3	
bisphenol A/ diglycidyl ether resin, liquid	Epoxy resin (EPON 1007)	90 mg/m3		990 mg/m3	5900 mg/m3	
bisphenol A/ diglycidyl ether resin, liquid	Epoxy resin (EPON 820)	41 mg/m3		450 mg/m3	2700 mg/m3	
bisphenol A/ diglycidyl ether resin, liquid	Epoxy resin ERL-2795	32 mg/m3		350 mg/m3	2100 mg/m3	
Ingredient	Original IDLH		Revised IDLH			
bisphenol A/ diglycidyl ether resin, liquid	Not Available		Not Available			
(C12-14)alkylglycidyl ether	Not Available			Not Available		

MATERIAL DATA

Sensory irritants are chemicals that produce temporary and undesirable side-effects on the eyes, nose or throat. Historically occupational exposure standards for these irritants have been based on observation of workers' responses to various airborne concentrations. Present day expectations require that nearly every individual should be protected against even minor sensory irritation and exposure standards are established using uncertainty factors or safety factors of 5 to 10 or more. On occasion animal no-observable-effect-levels (NOEL) are used to determine these limits where human results are unavailable. An additional approach, typically used by the TLV committee (USA) in determining respiratory standards for this group of chemicals, has been to assign ceiling values (TLV C) to rapidly acting irritatins and to assign short-term exposure limits (TLV STELs) when the weight of evidence from irritation, bioaccumulation and other endpoints combine to warrant such a limit. In contrast the MAK Commission (Germany) uses a five-category system based on intensive odour, local irritation, and elimination half-life. However this system is being replaced to be consistent with the European Union (EU) Scientific Committee for Occupational Exposure Limits (SCOEL); this is more closely allied to that of the USA. OSHA (USA) concluded that exposure to sensory irritatis can:

cause inflammation

+ cause increased susceptibility to other irritants and infectious agents

lead to permanent injury or dysfunction

- permit greater absorption of hazardous substances and
- + acclimate the worker to the irritant warning properties of these substances thus increasing the risk of overexposure.

8.2. Exposure controls

	Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection. The basic types of engineering controls are: Process controls which involve changing the way a job activity or process is done to reduce the risk. Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment. Ventilation can remove or dilute an air contaminant if designed properly. The design of a ventilation system must match the particular process and chemical or contaminant in use. Employers may need to use multiple types of controls to prevent employee overexposure. General exhaust is adequate under normal operating conditions. Local exhaust ventilation may be required in specific circumstances. If risk of overexposure exists, wear approved respirator. Correct fit is essential to obtain adequate protection. Provide adequate ventilation in warehouse or closed storage areas. Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant.					
	Type of Contaminant:		Air Speed:			
	solvent, vapours, degreasing etc., evaporating from tank (in still air).					
8.2.1. Appropriate	aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation)					
engineering controls	direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)					
	grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion).					
	Within each range the appropriate value depends on:					
	Lower end of the range	Upper end of the range				
	1: Room air currents minimal or favourable to capture	1: Disturbing room air currents				
	2: Contaminants of low toxicity or of nuisance value only.	2: Contaminants of high toxicity				
	3: Intermittent, low production.	tion. 3: High production, heavy use				
	4: Large hood or large air mass in motion	d or large air mass in motion 4: Small hood-local control only				
	Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple ext of distance from the overaction point (in simple acces). Therefore the six poord at the overaction point	raction pipe. Velocity generally dec	reases with the square			

Simple theory shows that all velocity has rapidly with distance away from the optimity of a simple extraction pipe. Velocity generative decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 1-2 m/s (200-400 f/min) for extraction of solvents generated in a tank 2 meters distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.

8.2.2. Personal protection



Eye and face protection	 Safety glasses with side shields. Chemical goggles. Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59], [AS/NZS 1336 or national equivalent]
Skin protection	See Hand protection below
Hands/feet protection	 NOTE: • 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. • Contaminated leather items, such as shoes, belts and watch-bands should be removed and destroyed. 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. The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice. Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include: • frequency and duration of contact, • chemical resistance of glove material, • glove thickness and • dexterity Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739, AS/NZS 2161.1 or national equivalent). • When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent). • When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 240 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended. • When only beir dontact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 240 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent). • When only beir dontact is expected by movement and this should be taken into account when considering glove
Body protection	See Other protection below
Other protection	 Overalls. P.V.C. apron. Barrier cream. Skin cleansing cream. Eye wash unit.
Thermal hazards	Not Available

Recommended material(s)

GLOVE SELECTION INDEX

Glove selection is based on a modified presentation of the:

"Forsberg Clothing Performance Index".

The effect(s) of the following substance(s) are taken into account in the *computer-generated* selection:

832C-Part A Translucent Epoxy Not Available

Material CPI

* CPI - Chemwatch Performance Index

A: Best Selection

B: Satisfactory; may degrade after 4 hours continuous immersion

C: Poor to Dangerous Choice for other than short term immersion **NOTE**: As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. -

* Where the glove is to be used on a short term, casual or infrequent basis, factors such as "feel" or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

Respiratory protection

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

Where the concentration of gas/particulates in the breathing zone, approaches or exceeds the "Exposure Standard" (or ES), respiratory protection is required.

Degree of protection varies with both face-piece and Class of filter; the nature of protection varies with Type of filter.

Required Minimum Protection Factor	Half-Face Respirator	Full-Face Respirator	Powered Air Respirator
up to 10 x ES	A-AUS P2	-	A-PAPR-AUS / Class 1 P2
up to 50 x ES	-	A-AUS / Class 1 P2	-
up to 100 x ES	-	A-2 P2	A-PAPR-2 P2 ^

^ - Full-face

 $\begin{array}{l} \mathsf{A}(\mathsf{All}\ \mathsf{classes}) = \mathsf{Organic}\ \mathsf{vapours}, \mathsf{B}\ \mathsf{AUS}\ \mathsf{or}\ \mathsf{B1} = \mathsf{Acid}\ \mathsf{gasses}, \mathsf{B2} = \mathsf{Acid}\ \mathsf{gas}\ \mathsf{or}\ \mathsf{hydrogen}\ \mathsf{cyanide}(\mathsf{HCN}), \mathsf{B3} = \mathsf{Acid}\ \mathsf{gas}\ \mathsf{or}\ \mathsf{hydrogen}\ \mathsf{cyanide}(\mathsf{HCN}), \mathsf{E} = \mathsf{Sulfur}\ \mathsf{dioxide}(\mathsf{SO2}), \mathsf{G} = \mathsf{Agricultural}\ \mathsf{chemicals}, \mathsf{K} = \mathsf{Ammonia}(\mathsf{NH3}), \mathsf{Hg} = \mathsf{Mercury}, \mathsf{NO} = \mathsf{Oxides}\ \mathsf{of}\ \mathsf{nitrogen}, \mathsf{MB} = \mathsf{Methyl}\ \mathsf{bromide}, \mathsf{AX} = \mathsf{Low}\ \mathsf{boiling}\ \mathsf{point}\ \mathsf{organic}\ \mathsf{compounds}(\mathsf{below}\ \mathsf{65}\ \mathsf{degC}) \end{array}$

8.2.3. Environmental exposure controls

See section 12

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Appearance	Clear		
Physical state	Liquid	Relative density (Water = 1)	1.12
Odour	Not Available	Partition coefficient n-octanol / water	Not Available

Odour threshold	Not Available	Auto-ignition temperature (°C)	(°C) Not Available	
pH (as supplied)	Not Available	Decomposition temperature	Not Available	
Melting point / freezing point (°C)	Not Available	Viscosity (cSt)	1700	
Initial boiling point and boiling range (°C)	>150	Molecular weight (g/mol)	Not Available	
Flash point (°C)	>142	Taste	Not Available	
Evaporation rate	Not Available	Explosive properties	Not Available	
Flammability	Not Applicable	Oxidising properties	Not Available	
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 (g/L)	Immiscible	pH as a solution (1%)	Not Available	
Vapour density (Air = 1)	>1	VOC g/L	Not Available	

9.2. Other information

Not Available

SECTION 10 STABILITY AND REACTIVITY

10.1.Reactivity	See section 7.2
10.2. Chemical stability	 Unstable in the presence of incompatible materials. Product is considered stable. Hazardous polymerisation will not occur.
10.3. Possibility of hazardous reactions	See section 7.2
10.4. Conditions to avoid	See section 7.2
10.5. Incompatible materials	See section 7.2
10.6. Hazardous decomposition products	See section 5.3

SECTION 11 TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Inhaled	The material is not thought to produce adverse health effects or irritation of the respiratory tract (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.
Ingestion	The material has NOT been classified by EC Directives or other classification systems as "harmful by ingestion". This is because of the lack of corroborating animal or human evidence. The material may still be damaging to the health of the individual, following ingestion, especially where pre-existing organ (e.g liver, kidney) damage is evident. Present definitions of harmful or toxic substances are generally based on doses producing mortality rather than those producing morbidity (disease, ill-health). Gastrointestinal tract discomfort may produce nausea and vomiting. In an occupational setting however, ingestion of insignificant quantities is not thought to be cause for concern.
Skin Contact	Evidence exists, or practical experience predicts, that the material either produces inflammation of the skin in a substantial number of individuals following direct contact, and/or produces significant inflammation when applied to the healthy intact skin of animals, for up to four hours, such inflammation being present twenty-four hours or more after the end of the exposure period. Skin irritation may also be present after prolonged or repeated exposure; this may result in a form of contact dermatitis (nonallergic). The dermatitis is often characterised by skin redness (erythema) and swelling (oedema) which may progress to bilstering (vesiculation), scaling and thickening of the epidermis. At the microscopic level there may be intercellular oedema of the spongy layer of the skin (spongiosis) and intracellular oedema of the epidermis. The material may accentuate any pre-existing dermatitis condition Skin contact is not though to have harmful health effects (as classified under EC Directives); the material may still produce health damage following entry through wounds, lesions or abrasions. Open cuts, abraded or irritated skin should not be exposed to this material Entry into the blood-stream through, for example, cuts, abrasions, puncture wounds 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.
Eye	Evidence exists, or practical experience predicts, that the material may cause eye irritation in a substantial number of individuals and/or may produce significant ocular lesions which are present twenty-four hours or more after instillation into the eye(s) of experimental animals. Repeated or prolonged eye contact may cause inflammation characterised by temporary redness (similar to windburn) of the conjunctiva (conjunctivitis); temporary impairment of vision and/or other transient eye damage/ulceration may occur.
Chronic	Practical experience shows that skin contact with the material is capable either of inducing a sensitisation reaction in a substantial number of individuals, and/or of producing a positive response in experimental animals. All glycidyl ethers show genotoxic potential due their alkylating properties. Those glycidyl ethers that have been investigated in long term studies exhibit more or less marked carcinogenic potential. Alkylating agents may damage the stem cell which acts as the precursor to components of the blood. Loss of the stem cell may result in pancytopenia (a reduction in the number of red and white blood cells and platelets) with a latency period corresponding to the lifetime of the individual blood cells. Granulocytopenia (a reduction in granular leukocytes) develops within days and thrombocytopenia (a cisorder involving platelets), within 1-2 weeks, whilst loss of erythrocytes (red blood cells) need months to become clinically manifest. Aplastic anaemia develops due to complete destruction of the stem cells. Glycidyl ethers have been shown to cause allergic contact dermatitis in humans. Glycidyl ethers generally cause skin sensitization in experimental animals. Necrosis of the mucous membranes of the nasal cavities was induced in mice exposed to allyl glycidyl ether. A study of workers with mixed exposures was inconclusive with regard to the effects of specific glycidyl ethers. Phenyl glycidyl ether, but not <i>n</i> -butyl glycidyl ether, induced micronuclei in mice <i>in vivo</i> following intraperitoneal but

not oral administration. Phenyl glycidyl ether did not induce micronuclei or chromosomal aberrations in vivo or chromosomal aberrations in animal cells in vitro. Alkyl C12 or C14 glycidyl ether did not induce DNA damage in cultured human cells or mutation in cultured animal cells. Allyl glycidyl ether induced mutation in Drosophila. The glycidyl ethers were generally mutagenic to bacteria On the basis, primarily, of animal experiments, concern has been expressed by at least one classification body that the material may produce carcinogenic or mutagenic effects; in respect of the available information, however, there presently exists inadequate data for making a satisfactory assessment. TOXICITY IRRITATION 832C-Part A Translucent Epoxy Not Available Not Available ΤΟΧΙΟΙΤΥ IRRITATION Dermal (rabbit) LD50: 6000 mg/kg**^[2] Eve (rabbit): 100mg - Mild bisphenol A/ diglycidyl ether dermal (rat) LD50: >800 mg/kg^[1] resin. liquid Oral (rat) LD50: >2400 mg/kg*d^[2] Oral (rat) LD50: 13447 mg/kg^[1] ΤΟΧΙΟΙΤΥ IRRITATION Oral (rat) LD50: 16896 mg/kg^[1] Eye (rabbit): mild [Ciba] Skin (guinea pig): sensitiser (C12-14)alkylglycidyl ether Skin (human): Irritant Skin (human): non- sensitiser Skin (rabbit): moderate Skin : Moderate 1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2.* Value obtained from manufacturer's SDS. Unless otherwise specified data Leaend: extracted from RTECS - Register of Toxic Effect of chemical Substances 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. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibodymediated immune reactions. The significance of the contact allergen is not simply determined by its sensitisation potential: the distribution of the substance and the opportunities for contact with it are equally important. A weakly sensitising substance which is widely distributed can be a more important allergen than one with stronger sensitising potential with which few individuals come into contact. From a clinical point of view, substances are noteworthy if they produce an allergic test reaction in more than 1% of the persons tested. The chemical structure of hydroxylated diphenylalkanes or bisphenols consists of two phenolic rings joined together through a bridging carbon. This class of endocrine disruptors that mimic oestrogens is widely used in industry, particularly in plastics Bisphenol A (BPA) and some related compounds exhibit oestrogenic activity in human breast cancer cell line MCF-7, but there were remarkable differences in activity. Several derivatives of BPA exhibited significant thyroid hormonal activity towards rat pituitary cell line GH3, which releases growth hormone in a thyroid hormone-dependent manner. However, BPA and several other derivatives did not show such activity. Results suggest that the 4-hydroxyl group of the A-phenyl ring and the B-phenyl ring of BPA derivatives are required for these hormonal activities, and substituents at the 3,5-positions of the phenyl rings and the bridging alkyl moiety markedly influence the activities. Bisphenols promoted cell proliferation and increased the synthesis and secretion of cell type-specific proteins. When ranked by proliferative potency, the 832C-Part A Translucent longer the alkyl substituent at the bridging carbon, the lower the concentration needed for maximal cell yield; the most active compound contained two Epoxy propyl chains at the bridging carbon. Bisphenols with two hydroxyl groups in the para position and an angular configuration are suitable for appropriate hydrogen bonding to the acceptor site of the oestrogen receptor. Oxiranes (including glycidyl ethers and alkyl oxides, and epoxides) exhibit many common characteristics with respect to animal toxicology. One such oxirane is ethyloxirane; data presented here may be taken as representative. for 1,2-butylene oxide (ethyloxirane): Ethyloxirane increased the incidence of tumours of the respiratory system in male and female rats exposed via inhalation. Significant increases in nasal papillary adenomas and combined alveolar/bronchiolar adenomas and carcinomas were observed in male rats exposed to 1200 mg/m3 ethyloxirane via inhalation for 103 weeks. There was also a significant positive trend in the incidence of combined alveolar/bronchiolar adenomas and carcinomas. Nasal papillary adenomas were also observed in 2/50 high-dose female rats with none occurring in control or low-dose animals. In mice exposed chronically via inhalation, one male mouse developed a squamous cell papilloma in the nasal cavity (300 mg/m3) but other tumours were not observed. Tumours were not observed in mice exposed chronically via dermal exposure. When trichloroethylene containing 0.8% ethyloxirane was administered orally to mice for up to 35 weeks, followed by 0.4% from weeks 40 to 69, squamous-cell carcinomas of the forestomach occurred in 3/49 males (p=0.029, age-adjusted) and 1/48 females at week 106. Trichloroethylene administered alone did not induce these tumours and they were not observed in control animals . Two structurally related substances, oxirane (ethylene oxide) and methyloxirane (propylene oxide), which are also direct-acting alkylating agents, have been classified as carcinogenic 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. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibodymediated immune reactions. The significance of the contact allergen is not simply determined by its sensitisation potential: the distribution of the substance and the opportunities for contact with it are equally important. A weakly sensitising substance which is widely distributed can be a more important allergen than one with stronger sensitising potential with which few individuals come into contact. From a clinical point of view, substances are noteworthy if they produce an allergic test reaction in more than 1% of the persons tested. BISPHENOL A/ The chemical structure of hydroxylated diphenylalkanes or bisphenols consists of two phenolic rings joined together through a bridging carbon. This class DIGLYCIDYL ETHER of endocrine disruptors that mimic oestrogens is widely used in industry, particularly in plastics **RESIN, LIQUID** Bisphenol A (BPA) and some related compounds exhibit oestrogenic activity in human breast cancer cell line MCF-7, but there were remarkable differences in activity. Several derivatives of BPA exhibited significant thyroid hormonal activity towards rat pituitary cell line GH3, which releases growth hormone in a thyroid hormone-dependent manner. However, BPA and several other derivatives did not show such activity. Results suggest that the 4-hydroxyl group of the A-phenyl ring and the B-phenyl ring of BPA derivatives are required for these hormonal activities, and substituents at the 3,5-positions of the phenyl rings and the bridging alkyl moiety markedly influence the activities. Bisphenols promoted cell proliferation and increased the synthesis and secretion of cell type-specific proteins. When ranked by proliferative potency, the

longer the alkyl substituent at the bridging carbon, the lower the concentration needed for maximal cell yield; the most active compound contained two

	propyl chains at the bridging carbon. Bisphenols with two hydroxyl groups in the para position and an angular configuration are suitable for appropriate hydrogen bonding to the acceptor sile of the oestrogen receptor. 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. In mice, dermal application of bisphenol A diglycidyl ether (BADGE) (1, 10, or 100 mg/kg) for 13 weeks produced mild to moderate chronic active dermatilis. At the high dose, spongiosis and epidemain micro abacess formation were observed. In rats, dermal application of BADGE (10, 10, or 100 mg/kg) for 13 weeks produced mild to moderate chronic active dematilis. At the high dose, is node weight at the high dose. The no-observable effect level (NOEL) for demal exposure was 100 mg/kg for both sexes. In a separate study, application of BADGE (60, 540, or 750 mg/kg) administered to rats via gavage for 14 weeks (P1) or 12 weeks (P2) produced decrease hod weight new all aste at the mid dose and in both makes and females at the high dose, but had no reproductive effects. The NOEL for reproductive effects was 750 mg/kg. Carcinogenicity: IARC concluded that "there is limited evidence for the carcinogenicity to humans (Group 3). In alletime tumourigenicity study in which 90-day-04 C3H line received three deviations per week of BADGE (mdiluted dose) for 23 months, novexer, produced no tumours (Weil et al., 1963). In another lifetime skin-painting study, BADGE (60s en p.) was also reported to be noncarcinogenic to the skin of C3H line; it was devide a papital study. BADGE (0.050 or 10.00 mg/kg). The woyne rubicases at the week core of barGE (1, 10, or 1000 mg/kg) showed ne evidence of dermal carcinogenicity but dia have how incidences of tumours in the oral carring line study. BADGE (0, 0, or 10.00 mg/kg) and dominant leftal assays (1000 mg/kg). Incomuces of tumours in the oral carringenicity but dia day to 14, 1555, BADGE (0, 10,
(C12-14)ALKYLGLYCIDYL ETHER	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. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody- mediated immune reactions. The significance of the contact allergen is not simply determined by its sensitisation potential: the distribution of the substance and the opportunities for contact with it are equally important. A weakly sensitising substance which is widely distributed can be a more important allergen than one with stronger sensitising potential with which few individuals come into contact. From a clinical point of view, substances are noteworthy if they produce an allergic test reaction in more than 1% of the persons tested.
Acute Toxicity	Carcinogenicity

Acute Toxicity	0	Carcinogenicity	\otimes
Skin Irritation/Corrosion	×	Reproductivity	\otimes
Serious Eye Damage/Irritation	✓	STOT - Single Exposure	0
Respiratory or Skin sensitisation	*	STOT - Repeated Exposure	\otimes
Mutagenicity	\otimes	Aspiration Hazard	\otimes
		Lawards	Data raguirad to make classification available

Legend:

✓ – Data required to make classification available

 \mathbf{X} – Data available but does not fill the criteria for classification

🚫 – Data Not Available to make classification

SECTION 12 ECOLOGICAL INFORMATION

12.1. Toxicity

NOT AVAILABLE

Ingredient	Endpoint	Test Duration	Effect	Value	Species	BCF
bisphenol A/ diglycidyl ether resin, liquid	Not Available					
(C12-14)alkylglycidyl ether	Not Available					

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Do NOT allow product to come in contact with surface waters or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash-waters

Wastes resulting from use of the product must be disposed of on site or at approved waste sites.

For bisphenol A and related bisphenols:

In general, studies have shown that bisphenol A can affect growth, reproduction and development in aquatic organisms. Among freshwater organisms, fish appear to be the most sensitive species. Evidence of endocrine-related effects in fish, aquatic invertebrates, amphibians and reptiles has been reported at environmentally relevant exposure levels lower than those required for acute toxicity. There is a widespread variation in reported values for endocrine-related effects, but many fall in the range of 1 ug/L to 1 mg/L Bisphenol A, its derivatives and analogues, can be released from polymers, resins and certain substances by metabolic products

As an environmental contaminant, bisphenol A interferes with nitrogen fixation at the roots of leguminous plants associated with the bacterial symbiont Sinorhizobium meliloti. Despite a half-life in the soil of only 1-10 days, its ubiquity makes it an important pollutant. According to Environment Canada, "initial assessment shows that at low levels, bisphenol A can harm fish and organisms over time. Studies also indicate that it can currently be found in municipal wastewater." However, a study conducted in the United States found that 91-98% of bisphenol A may be removed from water during treatment at municipal water treatment plants.

A 2009 review of the biological impacts of plasticisers on wildlife published by the Royal Society with a focus on annelids (both aquatic and terrestrial), molluscs, crustaceans, insects, fish and amphibians concluded that bisphenol A has been shown to affect reproduction in all studied animal groups, to impair development in crustaceans and amphibians and to induce genetic aberrations. A large 2010 study of two rivers in Canada found that areas contaminated with hormone-like chemicals including bisphenol A showed females made up 85 per cent of the population of a certain fish, while females made up only 55 per cent in uncontaminated areas.

Although abundant data are available on the toxicity of bisphenol-A (2,2-bis (4-hydroxydiphenyl)propane;(BPA) A variety of BPs were examined for their acute toxicity against Daphnia magna, mutagenicity, and oestrogenic activity using the Daphtoxkit (Creasel Ltd.), the umu test system, and the yeast two-hybrid system, respectively, in comparison with BPA. BPA was moderately toxic to D. magna (48-h EC50 was 10 mg/l) according to the current U.S. EPA acute toxicity evaluation standard, and it was weakly oestrogenic with 5 orders of magnitude lower activity than that of the natural estrogen 17 beta-oestradiol in the yeast screen, while no mutagenicity was observed. All seven BPs tested here showed moderate to slight acute toxicity, no mutagenicity, and weak oestrogenic activity as well as BPA. Some of the BPs showed considerably higher oestrogenic activity than BPA, and others exhibited much lower activity. Bisphenol S (bis(4-hydroxyphenyl)sulfide) showed oestrogenic activity.

Biodegradation is a major mechanism for eliminating various environmental pollutants. Studies on the biodegradation of bisphenols have mainly focused on bisphenol A. A number of BPA-degrading bacteria have been isolated from enrichments of sludge from wastewater treatment plants. The first step in the biodegradation of BPA is the hydroxylation of the carbon atom of a methyl group or the quaternary carbon in the BPA molecule. Judging from these features of the biodegradation mechanisms, it is possible that the same mechanism used for BPA is used to biodegrade all bisphenols that have at least one methyl or methylene group bonded at the carbon atom between the two phenol groups. However, bisphenol F ([bis(4-hydroxyphenyl)methane; BPF), which has no substituent at the bridging carbon, is unlikely to be metabolised by such a mechanism. Nevertheless BPF is readily degraded by river water microorganisms under aerobic conditions. From this evidence, it was clear that a specific mechanism for biodegradation of BPF does exist in the natural ecosystem,

Algae can enhance the photodegradation of bisphenols. The photodegradation rate of BPF increased with increasing algae concentration. Humic acid and Fe3+ ions also enhanced the photodegradation of BPF. The effect of pH value on the BPF photodegradation was also important.

Significant environmental findings are limited. Oxiranes (including glycidyl ethers and alkyl oxides, and epoxides) exhibit common characteristics with respect to environmental fate and ecotoxicology. One such oxirane is ethyloxirane and data presented here may be taken as representative.

for 1,2-butylene oxide (ethyloxirane):

Environmental fate: Ethyloxirane is highly soluble in water and has a very low soil-adsorption coefficient, which suggests that if released to water, adsorption of ethyloxirane to sediment and suspended solids is not expected. Volatilisation of ethyloxirane from water surfaces would be expected based on the moderate estimated Henry's Law constant. If ethyloxirane is released to soil, it is expected to have low adsorption and thus very high mobility. Volatilisation from moist soil and dry soil surfaces is expected, based on its vapour pressure. It is expected that ethyloxirane exists solely as a vapour in ambient atmosphere, based on its very high vapour pressure. Ethyloxirane may also be removed from the atmosphere by wet deposition processes, considering its relatively high water solubility.

Persistence: The half-life in air is about 5.6 days from the reaction of ethyloxirane with photochemically produced hydroxyl radicals which indicates that this chemical meets the persistence criterion in air (half-life of = 2 days)*.

Ethyloxirane is hydrolysable, with a half-life of 6.5 days, and biodegradable up to 100% degradation and is not expected to persist in water. A further model-predicted biodegradation half-life of 15 days in water was obtained and used to predict the half-life of this chemical in soil and sediment by applying Boethling's extrapolation factors (t1/2water: t1/2 soil: t1/2sediment = 1: 1: 4) (Boethling 1995). According to these values, it can be concluded that ethyloxirane does not meet the persistence criteria in water and soil (half-lives = 182 days) and sediments (half-life = 365 days).

Experimental and modelled log Kow values of 0.68 and 0.86, respectively, indicate that the potential for bioaccumulation of ethyloxirane in organisms is likely to be low. Modelled bioaccumulation -factor (BAF) and bioconcentration -factor (BCF) values of 1 to 17 L/kg indicate that ethyloxirane does not meet the bioaccumulation criteria (BCF/BAF = 5000)*

Ecotoxicity:

Experimental ecotoxicological data for ethyloxirane (OECD 2001) indicate low to moderate toxicity to aquatic organisms. For fish and water flea, acute LC50/EC50 values vary within a narrow range of 70-215 mg/L; for algae, toxicity values exceed 500 mg/L, while for bacteria they are close to 5000 mg/L

* Persistence and Bioaccumulation Regulations (Canada 2000).

Environmental toxicity is a function of the n-octanol/water partition coefficient (log Pow, log Kow). Compounds with log Pow >5 act as neutral organics, but at a lower log Pow, the toxicity of epoxide-containing polymers is greater than that predicted for simple narcotics.

12.2. Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
bisphenol A/ diglycidyl ether resin, liquid	HIGH	нідн

12.3. Bioaccumulative potential

Ingredient	Bioaccumulation
bisphenol A/ diglycidyl ether resin, liquid	LOW (LogKOW = 2.6835)

12.4. Mobility in soil

Ingredient	Mobility
bisphenol A/ diglycidyl ether resin, liquid	LOW (KOC = 51.43)

12.5.Results of PBT and vPvB assessment

	Р	В	т
Relevant available data	Not Available	Not Available	Not Available
PBT Criteria fulfilled?	Not Available	Not Available	Not Available

12.6. Other adverse effects

No data available

SECTION 13 DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Product / Packaging
 disposal
 disposal
 F Containers may still present a chemical hazard/ danger when empty.
 F Return to supplier for reuse/ recycling if possible.
 Otherwise:
 F If container can not be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then
 A sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then

	 puncture containers, to prevent re-use, and bury at an authorised landfill. Where possible retain label warnings and MSDS and observe all notices pertaining to the product. Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked. A Hierarchy of Controls seems to be common - the user should investigate: Reduction Reuse Recycling Disposal (if all else fails) This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. If it has been contaminated, it may be possible to reclaim the product by filtration, distillation or some other means. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate. 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. It may be necessary to collect all wash water for recycling disposal. In all cases disposal to sever may be subject to local laws and regulations and these should be considered first. Where in doubt contact the responsible authority. Recycle wherever possible or consult manufacturer for recycling options.
	 Where in doubt contact the responsible authority. Recycle wherever possible or consult manufacturer for recycling options. Consult State Land Waste Authority for disposal. Bury or incinerate residue at an approved site. Recycle containers if possible, or dispose of in an authorised landfill.
Waste treatment options	Not Available
Sewage disposal options	Not Available

SECTION 14 TRANSPORT INFORMATION

Labels Required



Land transport (ADR)

14.1. UN number	3082
14.2. Packing group	Ш
14.3. UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (contains bisphenol a/ diglycidyl ether resin, liquid)
14.4. Environmental hazard	No relevant data
14.5. Transport hazard class(es)	Class9SubriskNot Applicable
14.6. Special precautions for user	Special provisions274 335 375 601Limited quantity5 L

Air transport (ICAO-IATA / DGR)

14.1. UN number	3082		
14.2. Packing group	Ш		
14.3. UN proper shipping name	Environmentally hazardous substance, liquid, n.o.s. * (contains bisphenol a/ diglycidyl ether resin, liquid)		
14.4. Environmental hazard	No relevant data		
14.5. Transport hazard class(es)	ICAO/IATA Class9ICAO / IATA SubriskNot ApplicableERG Code9L		
14.6. Special precautions for user	Special provisionsA97Cargo Only Packing Instructions964Cargo Only Maximum Qty / Pack450Passenger and Cargo Packing Instructions964Passenger and Cargo Maximum Qty / Pack450	A158 A197 L L	

Passenger and Cargo Limited Quantity Packing Instructions	Y964
Passenger and Cargo Limited Maximum Qty / Pack	30 kg G

Sea transport (IMDG-Code / GGVSee)

14.1. UN number	3082		
14.2. Packing group	II		
14.3. UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (contains bisphenol a/ diglycidyl ether resin, liquid)		
14.4. Environmental hazard	Not Applicable		
14.5. Transport hazard class(es)	IMDG Class9IMDG SubriskNot Applicable		
14.6. Special precautions for user	EMS NumberF-A, S-FSpecial provisions274 335Limited Quantities5 L		

Inland waterways transport (ADN)

14.1. UN number	3082	
14.2. Packing group	II	
14.3. UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (contains bisphenol a/ diglycidyl ether resin, liquid)	
14.4. Environmental hazard	No relevant data	
14.5. Transport hazard class(es)	9 Not Applicable	
14.6. Special precautions for user	Classification codeM6Limited quantity5 LEquipment requiredPPFire cones number0	

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

Not Applicable

SECTION 15 REGULATORY INFORMATION

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

BISPHENOL A/ DIGLYCIDYL ETHER RESIN, LIQUID(25068-38-6) IS FOUND ON THE FOLLOWING REGULATORY LISTS

EU European Chemicals Agency (ECHA) Community Rolling Action Plan (CoRAP) List of	European Union (EU) No-Longer Polymers List (NLP) (67/548/EEC)	
Substances	European Union (EU) Regulation (EC) No 1272/2008 on Classification, Labelling and	
European Union (EU) Annex I to Directive 67/548/EEC on Classification and Labelling of Dangerous Substances - updated by ATP: 31	Packaging of Substances and Mixtures - Annex VI	
(C12-14)ALKYLGLYCIDYL ETHER(68609-97-2) IS FOUND ON THE FOLLOWING REGULA	ITORY LISTS	
EU European Chemicals Agency (ECHA) Community Rolling Action Plan (CoRAP) List of	European Union - European Inventory of Existing Commercial Chemical Substances (EINEC	

EU European Chemicals Agency (ECHA) Community Rolling Action Plan (CoRAP) List of Substances	European Union - European Inventory of Existing Commercial Chemical Substances (EINECS) (English)
European Customs Inventory of Chemical Substances ECICS (English) European Trade Union Confederation (ETUC) Priority List for REACH Authorisation	European Union (EU) Annex I to Directive 67/548/EEC on Classification and Labelling of Dangerous Substances - updated by ATP: 31
	European Union (EU) Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures - Annex VI

This safety data sheet is in compliance with the following EU legislation and its adaptations - as far as applicable - : 67/548/EEC, 1999/45/EC, 98/24/EC, 92/85/EC, 94/33/EC, 91/689/EEC, 1999/13/EC, Commission Regulation (EU) 2015/830, Regulation (EC) No 1272/2008 and their amendments as well as the following British legislation: - The Control of Substances Hazardous to Health Regulations (COSHH) 2002 - COSHH Essentials - The Management of Health and Safety at Work Regulations 1999

15.2. Chemical safety assessment

For further information please look at the Chemical Safety Assessment and Exposure Scenarios prepared by your Supply Chain if available.

ECHA SUMMARY

Ingredient	CAS number	Index No	ECHA Dossier
bisphenol A/ diglycidyl ether resin, liquid	25068-38-6	603-074-00-8	01-2119456619-26-XXXX

Harmonisation (C&L Inventory)	Hazard Class and Category Code(s)	Pictograms Signal Word Code(s)	Hazard Statement Code(s)
1	Skin Irrit. 2, Skin Sens. 1, Eye Irrit. 2, Aquatic Chronic 2	GHS07, GHS09, Wng	H315, H317, H319, H411
2	Skin Irrit. 2, Skin Sens. 1, Eye Irrit. 2, Skin Corr. 1A, Aquatic Acute 1, Aquatic Chronic 1, Aquatic Chronic 2	GHS07, GHS09, Wng, Dgr	H315, H317, H319, H410, H411
1	Flam. Sol. 1, Skin Irrit. 2, Skin Sens. 1, Eye Irrit. 2, Aquatic Chronic 2	GHS02, Dgr, GHS07, GHS09, Wng	H228, H315, H317, H319, H411
2	Flam. Sol. 1, Skin Irrit. 2, Skin Sens. 1, Eye Irrit. 2, Aquatic Chronic 2, Skin Sens. 1B, Skin Sens. 1A	GHS02, Dgr, GHS07, GHS09, Wng	H228, H315, H317, H319, H411
1	Skin Irrit. 2, Skin Sens. 1, Eye Irrit. 2, Skin Sens. 1A, Aquatic Chronic 2	GHS07, Wng, GHS09	H315, H317, H319, H411
2	Skin Irrit. 2, Skin Sens. 1, Eye Irrit. 2, Skin Sens. 1A, Aquatic Chronic 2	GHS07, Wng, GHS09	H315, H317, H319, H411

Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

Ingredient	CAS number	Index No	ECHA Dossier
(C12-14)alkylglycidyl ether	68609-97-2	603-103-00-4	01-2119485289-22-XXXX

Harmonisation (C&L Inventory)	Hazard Class and Category Code(s)	Pictograms Signal Word Code(s)	Hazard Statement Code(s)
1	Skin Irrit. 2, Skin Sens. 1	GHS07, Wng	H315, H317
2	Skin Irrit. 2, Skin Sens. 1, Aquatic Chronic 2	GHS07, Wng, GHS09	H315, H317, H411

Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

National Inventory	Status
Australia - AICS	Y
Canada - DSL	Y
Canada - NDSL	N ((C12-14)alkylglycidyl ether; bisphenol A/ diglycidyl ether resin, liquid)
China - IECSC	Y
Europe - EINEC / ELINCS / NLP	Y
Japan - ENCS	Y
Korea - KECI	Y
New Zealand - NZIoC	Y
Philippines - PICCS	Y
USA - TSCA	Y
Legend:	Y = All ingredients are on the inventory N = Not determined or one or more ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets)

SECTION 16 OTHER INFORMATION

Full text Risk and Hazard codes

Flammable solid	
Very toxic to aquatic life with long lasting effects	
7	

Other information

Ingredients with multiple cas numbers

Name	CAS No
bisphenol A/ diglycidyl ether resin, liquid	25068-38-6, 25085-99-8

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.

A list of reference resources used to assist the committee may be found at: <u>www.chemwatch.net</u>

The (M)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. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

For detailed advice on Personal Protective Equipment, refer to the following EU CEN Standards:

EN 166 Personal eye-protection

EN 340 Protective clothing

EN 374 Protective gloves against chemicals and micro-organisms

EN 13832 Footwear protecting against chemicals

EN 133 Respiratory protective devices





MG Chemicals UK Limited

Version No: 8.12

Safety Data Sheet (Conforms to Regulation (EC) No 2015/830)

Chemwatch Hazard Alert Code: 4 Issue Date: 10/08/2016 Print Date: 10/08/2016 L.REACH.GBR.EN

SECTION 1 IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

1.1. Product Identifier

Product name	832C-Part B Translucent Epoxy: Encapsulating and Potting Compound		
Synonyms	SDS Code: 832C–Part B, Part # 832C-375ML, 832C-450ML, 832C-3L, 832C-60L, 8320		
Proper shipping name	Proper shipping name AMINES, LIQUID, CORROSIVE, N.O.S. or POLYAMINES, LIQUID, CORROSIVE, N.O.S. (contains c18 fatty acid dimers/ polyethylenepolyamine poly and triethylenetetramine)		
Other means of identification	Not Available		

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

Relevant identified uses	Epoxy hardener for use with resins to pot devices or encapsulate components	
Uses advised against	Not Applicable	

1.3. Details of the supplier of the safety data sheet

Registered company name	MG Chemicals UK Limited	MG Chemicals (Head office)	
Address	Heame House, 23 Bilston Street, Sedgely Dudley DY3 1JA United Kingdom	9347 - 193 Street Surrey V4N 4E7 British Columbia Canada	
Telephone +(44) 1663 362888 - Fax Not Available - Website Not Available -		+(1) 800-201-8822	
		+(1) 800-708-9888 www.mgchemicals.com	

1.4. Emergency telephone number

Association / Organisation	Not Available	Not Available
Emergency telephone numbers	+(44) 870-8200418	Not Available
Other emergency telephone numbers	+(1) 703-527-3887	Not Available

SECTION 2 HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Classification according to regulation (EC) No 1272/2008 [CLP] ^[1]	Skin Sensitizer Category 1, Chronic Aquatic Hazard Category 2, Skin Corrosion/Irritation Category 1C		
Legend:	1. Classified by Chemwatch; 2. Classification drawn from EC Directive 67/548/EEC - Annex I ; 3. Classification drawn from EC Directive 1272/2008 - Annex VI		
2.2. Label elements			
CLP label elements			
SIGNAL WORD	DANGER		
Hazard statement(s)			

H317	May cause an allergic skin reaction.	
H411	Toxic to aquatic life with long lasting effects.	

Continued...

H314 Causes severe skin burns and eye damage.

Supplementary statement(s)

Not Applicable

Precautionary statement(s) Prevention

P260	Do not breathe dust/fume/gas/mist/vapours/spray.		
P280	P280 Wear protective gloves/protective clothing/eye protection/face protection.		
P273	Avoid release to the environment.		
P272 Contaminated work clothing should not be allowed out of the workplace.			

Precautionary statement(s) Response

P301+P330+P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.		
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.		
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.		
P310	Immediately call a POISON CENTER/doctor/physician/first aider.		
P302+P352	IF ON SKIN: Wash with plenty of water and soap.		
P363	Wash contaminated clothing before reuse.		
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.		
P362+P364	Take off contaminated clothing and wash it before reuse.		
P391	Collect spillage.		
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.		

Precautionary statement(s) Storage

Store locked up.

Precautionary statement(s) Disposal

P405

P501

	Dispose of contents/container in accordance with local regulations.
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REACh - Art.57-59: The mixture does not contain Substances of Very High Concern (SVHC) at the SDS print date.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

3.1.Substances

See 'Composition on ingredients' in Section 3.2

3.2.Mixtures

1.CAS No 2.EC No 3.Index No 4.REACH No	%[weight]	Name	Classification according to regulation (EC) No 1272/2008 [CLP]
1.68410-23-1 2.Not Available 3.Not Available 4.Not Available	88	C18 fatty acid dimers/ polyethylenepolyamine polyamides	Not Applicable
1.112-24-3 2.203-950-6 3.612-059-00-5 4.Not Available	12	triethylenetetramine	Acute Toxicity (Dermal) Category 4, Skin Corrosion/Irritation Category 1B, Skin Sensitizer Category 1, Chronic Aquatic Hazard Category 3; H312, H314, H317, H412 ^[3]
Legend:	1. Classified by Chemwatch; 2. Classification drawn from EC Directive 67/548/EEC - Annex I ; 3. Classification drawn from EC Directive 1272/2008 - Annex VI 4. Classification drawn from C&L		

SECTION 4 FIRST AID MEASURES

4.1. Description of first aid measures

832C–Part B Translucent Epoxy: Encapsulating and Potting Compound

	If this product comes in contact with the eyes: If mediately hold eyelids apart and flush the eye continuously with running water. If mendiately hold eyelids apart and flush the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids. If Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes. If Transport to hospital or doctor without delay. If Itayia 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. Seak immediate modeal attention, preferably from an eyethalmologid. If threes or combustion products are inhaled remove from contaminated area. Lay patient down. Keep warm and restd. Prosthees such as faste teeh, which may block airway, should be removed, where possible, prior to initiating first aid procedures. Apply artificial respiration in the treatming, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary. If Transport to hospital or doctor, without delay. If any application or yours or anoreas (mists, tumes) may cause lung oedema. Corrosive substances may cause lung damage (e.g. Ling oedema, fluid in the lungs). A sthis reaction may be delayed up to 24 hours after exposure, Tadfeedd individuals need complete rest (preferably in semi-recumbent posture) and must be kept under medical dosevation even it no symptoms are (yet) manifested. Before any such maintestation, the administration of a spary oraninging a davamethasone derivative or becomethasone derivative may be considered. This must definitely be left to a doctor or person authorised by him/her. (ICSC 13719) For amines: A leep the affected person away from the contaminated area area area area fresh air. Keep the affected person away from the contaminated area area area area fresh air. Keep the affected person away from the contaminated area area area fr
Eye Contact	 If this product comes in contact with the eyes: 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. For amines: 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 onthalmologist
Skin Contact	 If skin or hair contact occurs: 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. For amines: 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	 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. Inhalation of vapours or aerosols (mists, fumes) may cause lung oedema. Corrosive substances may cause lung damage (e.g. lung oedema, fluid in the lungs). As this reaction may be delayed up to 24 hours after exposure, affected individuals need complete rest (preferably in semi-recumbent posture) and must be kept under medical observation even if no symptoms are (yet) manifested. Before any such manifestation, the administration of a spray containing a dexamethasone derivative or beclomethasone derivative may be considered. This must definitely be left to a doctor or person authorised by him/her. (ICSC13719) For amines: 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. For advice, contact a Poisons Information Centre or a doctor at once. Urgent hospital treatment is likely to be needed. If swallowed do NOT induce vomiting If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. Observe the patient carefully. Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious. Ingestion Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink Transport to hospital or doctor without delay. 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

4.2 Most important symptoms and effects, both acute and delayed

See Section 11

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically

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 esophagoscopic 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," "glaucopsia"), are best prevented by means of formal worker education, industrial hygiene

monitoring, and exposure control methods. Persons who are highly sensitive to the 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 eve 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.

Polyurethene Amine Catalysts: Guidelines for Safe Handling and Disposal Technical Bulletin June 2000

Alliance for Polyurethanes Industry

SECTION 5 FIREFIGHTING MEASURES

- Foam.
- Dry chemical powder.

5.2. Special hazards arising from the substrate or mixture

Fire Incompatibility	Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result
5.3. Advice for firefighters	
Fire Fighting	 Alert Fire Brigade and tell them location and nature of hazard. Wear full body protective clothing with breathing apparatus. For amines: 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	 Combustible. Slight fire hazard when exposed to heat or flame. Combustion products include; carbon dioxide (CO2) nitrogen oxides (NOx) other pyrolysis products typical of burning organic materialMay emit corrosive fumes.

SECTION 6 ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

See section 8

6.2. Environmental precautions

See section 12

6.3. Methods and material for containment and cleaning up

Minor Spills	 Drains for storage or use areas should have retention basins for pH adjustments and dilution of spills before discharge or disposal of material. Check regularly for spills and leaks. Small spills should be covered with inorganic absorbents and disposed of property. Organic absorbents have been known to ignite when contaminated with amines in closed containers. Clean up all spills immediately. Avoid breathing vapours and contact with skin and eyes. for amines: If possible (i.e., without risk of contact or exposure), stop the leak. Contain the spilled material by diking, then neutralize. 							
	Chemical Class: bases For release onto land: recon	ommended sorbents	s listed in order of priority.		001			
	TYPE LAND SPILL - SMALL	RANK	APPLICATION		COL	LECTION	LIMITATIONS	
	cross-linked polymer - part	ticulate		1	shovel	shovel	R,W,SS	
	cross-linked polymer - pillc	w		1	throw	pitchfork	R, DGC, RT	
	sorbent clay - particulate			2	shovel	shovel	R, I, P	
	foamed glass - pillow			2	throw	pitchfork	R, P, DGC, RT	
	expanded minerals - particulate			3	shovel	shovel	R, I, W, P, DGC	
	foamed glass - particulate		4	shovel	shovel	R, W, P, DGC,		
	LAND SPILL - MEDIUM	LAND SPILL - MEDIUM						
	cross-linked polymer -parti	ticulate		1	blower	skiploader	R,W, SS	
	sorbent clay - particulate			2	blower	skiploader	R, I, P	
Major Spills	expanded mineral - particu	ılate		3	blower	skiploader	R, I,W, P, DGC	
	cross-linked polymer - pillow			3	throw	skiploader	R, DGC, RT	
	foamed glass - particulate	foamed glass - particulate			blower	skiploader	R, W, P, DGC	
	foamed glass - pillow			4	throw	skiploader	R, P, DGC., RT	
	Legend DGC: Not effective where ground cover is dense R; Not reusable I: Not incinerable P: Effectiveness reduced when rainy RT:Not effective where terrain is rugged SS: Not for use within environmentally sensitive sites W: Effectiveness reduced when windy Reference: Sorbents for Liquid Hazardous Substance Cleanup and Control; R.W Melvold et al: Pollution Technology Review No. 150: Noyes Data Corporation 1988 • Clear area of personnel and move upwind. • Alert Fire Brigade and tell them location and nature of hazard. For amines: • 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 chomined fire							

6.4. Reference to other sections

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

SECTION 7 HANDLING AND STORAGE

7.1. Precautions for safe handling

Safe handling	 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
Fire and explosion protection	See section 5
Other information	 for bulk storages: If slight coloration of the ethyleneamine is acceptable, storage tanks may be made of carbon steel or black iron, provided they are free of rust and mill scale. However, if the amine is stored in such tanks, color may develop due to iron contamination. Store in original containers. Keep containers securely sealed. DO NOT store near acids, or oxidising agents No smoking, naked lights, heat or ignition sources.

7.2. Conditions for safe storage, including any incompatibilities

Suitable container	 DO NOT use aluminium, galvanised or tin-plated containers Lined metal can, lined metal pail/ can. Plastic pail. For low viscosity materials 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.
Storage incompatibility	 Triethylenetetramine (TETA): aqueous solutions are strong organic bases reacts with nitrogen containing compounds; may cause violent decomposition reacts violently with strong oxidisers, nitroparaffins, nitrogen tetroxide, permanganates, peroxides, ammonium persulfate, bromine dioxide, sulfuric acid, nitric acid is incompatible with organic anhydrides (eg maleic anhydride), acrylates, alcohols, aldehydes, alkylene oxides, substituted allyls, cellulose nitrate, cresols, caprolactam solutions, epichlorohydrin, ethylene dichloride, glycols, halons, halogenated hydrocarbons, isocyanates, ketones, methyl trichloroacetate, nitrates, phenols, urea, vinyl acetate increases the explosive sensitivity of nitromethane attacks aluminium, cobalt, copper, lad, nickel, tin zinc, and their alloys, and some plastics, rubber and coatings reacts with halon fire extinguishers Avoid contact with copper, aluminium and their alloys. Avoid strong acids, acid chlorides, acid anhydrides and chloroformates. Avoid reaction with oxidising agents

7.3. Specific end use(s)

See section 1.2

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. Control parameters

DERIVED NO EFFECT LEVEL (DNEL) Not Available

PREDICTED NO EFFECT LEVEL (PNEC)

Not Available

OCCUPATIONAL EXPOSURE LIMITS (OEL)

INGREDIENT DATA

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
Not Available						

EMERGENCY LIMITS

5						
	Ingredient	Material name			TEEL-2	TEEL-3
	C18 fatty acid dimers/ polyethylenepolyamine polyamides	C-18 Unsaturated fatty acid, dimers, reaction products with polyethylenepolyamines; (Versamid 140 polyamide resin; Versamid 125)			330 mg/m3	2000 mg/m3
	triethylenetetramine	Triethylenetetramine			5.7 ppm	83 ppm
	Ingredient	Original IDLH	Revised IDLH			
	C18 fatty acid dimers/ polyethylenepolyamine polyamides	Not Available	Not Available			
	triethylenetetramine	Not Available	Not Available			

Sensory irritants are chemicals that produce temporary and undesirable side-effects on the eyes, nose or throat. Historically occupational exposure standards for these irritants have been based on observation of workers' responses to various airborne concentrations.

Polyamide hardeners have much reduced volatility, toxicity and are much less irritating to the skin and eyes than amine hardeners. However commercial polyamides may contain a percentage of residual unreacted amine and all unnecessary contact should be avoided.

8.2. Exposure controls 8.2.1. Appropriate Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly engineering controls effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection. 8.2.2. Personal protection Safety glasses with unperforated side shields may be used where continuous eye protection is desirable, as in laboratories; spectacles are not sufficient where complete eye protection is needed such as when handling bulk-quantities, where there is a danger of splashing, or if the material may be under pressure. Chemical goggles, whenever there is a danger of the material coming in contact with the eves; goggles must be properly fitted. Eye and face protection For amines: SPECIAL PRECAUTION: 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 Elbow length PVC gloves • When handling corrosive liquids, wear trousers or overalls outside of boots, to avoid spills entering boots. NOTE: 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. The selection of suitable gloves does not only depend on the material, but also on further marks of guality which vary from manufacturer to manufacturer. Where Hands/feet protection 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 • When handling liquid-grade epoxy resins wear chemically protective gloves (e.g. nitrile or nitrile-butatoluene rubber), boots and aprons. DO NOT use cotton or leather (which absorb and concentrate the resin), polyvinyl chloride, rubber or polyethylene gloves (which absorb the resin). DO NOT use solvent to clean the skin For amines: · Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. **Body protection** See Other protection below Overalls. Other protection PVC Apron. Thermal hazards Not Available

Recommended material(s)

GLOVE SELECTION INDEX

Materia

BUTY

NEOPRENE

PE/EVAL/PE

A: Best Selection

NITRILE

VITON

Glove selection is based on a modified presentation of the:

"Forsberg Clothing Performance Index".

* CPI - Chemwatch Performance Index

selection must be based on detailed observation. -

The effect(s) of the following substance(s) are taken into account in the *computer-generated* selection:

CPI

А

А

A

A

А

832C–Part B Translucent Epoxy: Encapsulating and Potting Compound

B: Satisfactory; may degrade after 4 hours continuous immersion

C: Poor to Dangerous Choice for other than short term immersion

NOTE: As a series of factors will influence the actual performance of the glove, a final

Where the glove is to be used on a short term, casual or infrequent basis, factors such as

"feel" or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise

be unsuitable following long-term or frequent use. A gualified practitioner should be consulted.

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

Where the concentration of gas/particulates in the breathing zone, approaches or exceeds the "Exposure Standard" (or ES), respiratory protection is required.

Degree of protection varies with both face-piece and Class of filter; the nature of protection varies with Type of filter.

Required Minimum Protection Factor	Half-Face Respirator	Full-Face Respirator	Powered Air Respirator
up to 10 x ES	EK-AUS P2	-	EK-PAPR-AUS / Class 1 P2
up to 50 x ES	-	EK-AUS / Class 1 P2	-
up to 100 x ES	-	EK-2 P2	EK-PAPR-2 P2 ^

^ - Full-face

A(All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO2), G = Agricultural chemicals, K = Ammonia(NH3), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

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.

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.

76ak-p()

8.2.3. Environmental exposure controls

See section 12

9.1. Information on basic physical and chemical properties

Appearance	Clear, amber		
Physical state	Liquid	Relative density (Water = 1)	0.963
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	Not Available
Melting point / freezing point (°C)	Not Available	Viscosity (cSt)	6000
Initial boiling point and boiling range (°C)	Not Available	Molecular weight (g/mol)	Not Available
Flash point (°C)	>122	Taste	Not Available
Evaporation rate	Not Available	Explosive properties	Not Available
Flammability	Not Applicable	Oxidising properties	Not Available
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)	0.001	Gas group	Not Available
Solubility in water (g/L)	Immiscible	pH as a solution (1%)	Not Available
Vapour density (Air = 1)	5	VOC g/L	Not Available

9.2. Other information

Not Available

SECTION 10 STABILITY AND REACTIVITY

10.1.Reactivity	See section 7.2
10.2. Chemical stability	 Unstable in the presence of incompatible materials. Product is considered stable.
10.3. Possibility of hazardous reactions	See section 7.2
10.4. Conditions to avoid	See section 7.2
10.5. Incompatible materials	See section 7.2
10.6. Hazardous decomposition products	See section 5.3

SECTION 11 TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

	Evidence shows, or practical experience predicts, that the material produces irritation of the respiratory system, in a substantial number of individuals, following inhalation. In contrast to most organs, the lung is able to respond to a chemical insult by first removing or neutralising the irritant and then repairing the damage. Inhalation of alkaline corrosives may produce irritation of the respiratory tract with coughing, choking, pain and mucous membrane damage. Pulmonary oedema may develop in more severe cases; this may be immediate or in most cases following a latent period of 5-72 hours.
Inhaled	Inhalation of amine vapours may cause irritation of the mucous membranes of the nose and throat and lung irritation with respiratory distress and cough. Single exposures to near lethal concentrations and repeated exposures to sublethal concentrations produces tracheitis, bronchitis, pneumonitis and pulmonary oedema. Inhalation of epoxy resin amine hardener vapours (including polyamines and amine adducts) may produce bronchospasm and coughing episodes lasting days after cessation of the exposure. Even faint traces of these vapours may trigger an intense reaction in individuals showing "amine asthma".
Ingestion	Ingestion of alkaline corrosives may produce immediate pain, and circumoral burns. Mucous membrane corrosive damage is characterised by a white appearance and soapy feel; this may then become brown, oedematous and ulcerated. Accidental ingestion of the material may be damaging to the health of the individual. Aliphatic and alicyclic amines are generally well absorbed from the gut. Corrosive action may cause tissue damage throughout the gastrointestinal tract.
Skin Contact	The material can produce severe chemical burns following direct contact with the skin. Skin contact is not thought to have harmful health effects (as classified under EC Directives); the material may still produce health damage following entry through wounds, lesions or abrasions. Skin contact with alkaline corrosives may produce severe pain and burns; brownish stains may develop. The corroded area may be soft, gelatinous and necrotic; tissue destruction may be deep. Volatile amine vapours produce primary skin irritation and dermatitis. Direct local contact, with the lower molecular weight liquids, may produce skin burns. Open cuts, abraded or irritated skin should not be exposed to this material Entry into the blood-stream through, for example, cuts, abrasions, puncture wounds 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.
Eye	Direct contact with alkaline corrosives may produce pain and burns. Oedema, destruction of the epithelium, corneal opacification and iritis may occur. Vapours of volatile amines cause eye irritation with lachrymation, conjunctivitis and minor transient corneal oedema which results in "halos" around lights (glaucopsia, "blue haze", or "blue-grey haze"). Vision may become misty and halos may appear several hours after workers are exposed to the substance This effect generally disappears spontaneously within a few hours of the end of exposure, and does not produce physiological after-effects.

		5 5 1	-
Chronic	Repeated or prolonged exposure to corrosives may result in the exposure to respiratory irritants may result in disease of bronce Long-term exposure to respiratory irritants may result in disease of producing a positive response in experimental animals. Limited evidence suggests that repeated or long-term occupation On the basis, primarily, of animal experiments, concern has been mutagenic effects; in respect of the available information, howeve There exists limited evidence that shows that skin contact with the individuals, and/or of producing positive response in experimental second	erosion of teeth, inflammatory and ulcerative of hial pneumonia may ensue. of the airways involving difficult breathing and capable either of inducing a sensitisation read al exposure may produce cumulative health e expressed by at least one classification body r, there presently exists inadequate data for m e material is capable either of inducing a sen- l animals.	changes in the mouth and necrosis (rarely) of the I related systemic problems. tion in a substantial number of individuals, and/or effects involving organs or biochemical systems. that the material may produce carcinogenic or naking a satisfactory assessment. sitisation reaction in a significant number of
832C–Part B Translucent	TOXICITY	IRRITATION	
Epoxy: Encapsulating and Potting Compound	Not Available	Not Available	
· · ···· · · · · · · · · · · · · · · ·		1	
C18 fatty acid dimers/	TOXICITY		IRRITATION
polyethylenepolyamine	dermal (rat) LD50: >5000 mg/kg ^[2]		Not Available
polyamides	Oral (rabbit) LD50: 800 mg/kg ^[2]		
	TOVIOITY	IDDITATION	
	Dermal (rabbit) LD50: 805 mg/kg ^[2]	Eye (rabbit):20 mg/24 h - moc	lerate
triethylenetetramine	Oral (rat) LD50: 2500 mg/kg ^[2]	Eye (rabbit); 49 mg - SEVER	E
		Skin (rabbit): 490 mg open SE	EVERE
		Skin (rabbit): 5 mg/24 SEVEF	E
Legend:	1. Value obtained from Europe ECHA Registered Substances - A extracted from BTECS - Benister of Toxic Effect of chemical Sub	Acute toxicity 2.* Value obtained from manufactor	cturer's SDS. Unless otherwise specified data
		Sichers	
832C–Part B Translucent Epoxy: Encapsulating and Potting Compound	 While it's difficult to generalise about the full range of potential h those used in the manufacture of polyurethane and polyisocyanu health effects. Many amine-based compounds can induce histamine liber bronchoconstriction or bronchial asthma and rhinitis. Systemic symptoms include headache, nausea, faintness, ar of the skin), urticaria (hives), and facial edema (swelling). S amines are usually transient. Typically, there are four routes of possible or potential exposure: Inhalation: Inhalation of vapors may, depending upon the physical and cherr moderate to severe irritation of the tissues of the nose and throa Products with higher vapour pressures have a greater potential Higher concentrations of certain amines can produce severe rechest pains. Chronic exposure via inhalation may cause headache, nausea, v repeated and/or prolonged exposure to some amines may result kidney, blood, and central nervous system disorders in laboratory. While most polyurethane amine catalysts are not sensitisers, sor distress, including asthma-like attacks, whenever they are subset avoid any further exposure to amines. Although chronic or repeat should not ordinarily affect healthy individuals, chronic overexpos breathlessness, chronic bronchitis, and immunologic lung disear Inhalation hazards are increased when exposure to amine cataly include leaks in fitting or transfer lines. Medical conditions gener Skin Contact: Skin contact with amine catalysts poses a number of concerns. I and swelling to painful bistering, ulceration, and chernical burns Skin contact with the liquid amine may cause severe irritation fives, and facial swelling. These symptoms may be related to the Eye Contact: Amine catalysts are alkaline in nature and their vapours are irrita Direct contact with the liquid amine may cause severe irritation result in mechanical inveling. These symptoms are transient and us Some individuals may experience this effect even when exposed individua	eatth effects posed by exposure to the many of rate foams, it is agreed that overexposure to th ation, which, in turn, can trigger allergic and of nxiety, a decrease in blood pressure, tachycar ystemic effects (those affecting the body) that inhalation, skin contact, eye contact, and inge- nical properties of the specific product and the t and can irritate the lungs. for higher airborne concentrations. This incre- spiratory irritation, characterised by nasal dis vomiting, drowsiness, sore throat, bronchopne in liver disorders, jaundice, and liver enlargen <i>y</i> animal studies. me certain individuals may also become sensi quently exposed to even very small amounts of ted inhalation of vapor concentrations below h sure may lead to permanent pulmonary injury, ase. yets occurs in situations that produce aerosols ally aggravated by inhalation exposure inclue Direct skin contact can cause moderate to se . Repeated or prolonged exposure may also on. Sensitised persons should avoid all contact due headaches, nausea, faintness, anxiety, d e pharmacological action of the amines, and ti ting to the eyes, even at low concentrations. and tissue injury, and the "burning" may lead to onjunctivitis, and corneal swelling. uch as blurred or "foggy" vision with a blue tin isually disappear when exposure ceases. 4 to concentrations below doses that ordinarily	different amine compounds, characterised by ne majority of these materials may cause adverse other physiological effects, including rdia (rapid heartbeat), itching, erythema (reddening it are related to the pharmacological action of estion. degree and length of exposure, result in asses the probability of worker exposure. tacharge, coughing, difficulty in breathing, and eumonia, and possible lung damage. Also, nent. Some amines have been shown to cause tized to amines and may experience respiratory of vapor. Once sensitised, these individuals must iazardous or recommended exposure limits including a reduction in lung function, s, mists, or heated vapors. Such situations de asthma, bronchitis, and emphysema. vere irritation and injury-i.e., from simple redness result in severe cumulative dermatitis. .:t with amine catalysts. Systemic effects resulting ecrease in blood pressure, reddening of the skin, hey are usually transient. o blindness. (Contact with solid products may t ("blue haze") and sometimes a halo r cause respiratory irritation.

C18 FATTY ACID DIMERS/ POLYETHYLENEPOLYAMINE POLYAMIDES	No significant acute toxicological data identified in literature search. The material may produce moderate eye irritation leading to inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.			
TRIETHYLENETETRAMINE	The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis. The material may produce severe skin irritation after prolonged or repeated exposure, and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) thickening of the epidermis. Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis. Prolonged contact is unlikely, given the severity of response, but repeated exposures may produce severe ulceration. For alkyl polyamines: The alkyl polyamines cluster consists of organic compounds containing two terminal primary amine groups and at least one secondary amine group. Typically these substances are derivatives of ethylenediamine, propylenediamine or hexanediamine. The molecular weight range for the entire cluster is relatively narrow, ranging from 103 to 232 Acute toxicity of the alkyl polyamines cluster is low to moderate via oral exposure and a moderate to high via dermal exposure. Cluster members have been shown to be eye irritants, skin irritants, and skin sensitisers in experimental animals. Repeated exposure in rats via the oral route indicates a range of toxicity from low to high hazard. Most cluster members gave positive results in tests for potential genotoxicity. Limited carcinogenicity studies on several members of the cluster showed no evidence of carcinogenicity. Unlike aromatic amines, aliphatic amines are not expected to be potential carcinogens because they are not expected to undergo metabolic activation, nor would activated intermediates be stable enough to reach target macromolecules. Polyamines potentiate NMDA induced whole-cell currents in cultured striatal neurons Exposure to the material for prolonged periods may cause physical defects in the developing embryo (teratogenesis)			
832C-Part B Translucent Epoxy: Encapsulating and Potting Compound & C18 FATTY ACID DIMERS/ POLYETHYLENEPOLYAMINE POLYAMIDES & TRIETHYLENETETRAMINE	Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production			
832C–Part B Translucent Epoxy: Encapsulating and Potting Compound & TRIETHYLENETETRAMINE	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. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody-mediated immune reactions. The significance of the contact allergen is not simply determined by its sensitisation potential: the distribution of the substance and the opportunities for contact with it are equally important. A weakly sensitising substance which is widely distributed can be a more important allergen than one with stronger sensitising potential with which few individuals come into contact. From a clinical point of view, substances are noteworthy if they produce an allergic test reaction in more than 1% of the persons tested.			
832C–Part B Translucent Epoxy: Encapsulating and Potting Compound & TRIETHYLENETETRAMINE	Handling ethyleneamine products is complicated by their tendency to react with other chemicals, such as carbon dioxide in the air, which results in the formation of solid carbamates. Because of their ability to produce chemical burns, skin rashes, and asthma-like symptoms, ethyleneamines also require substantial care in handling. Higher molecular weight ethyleneamines are often handled at elevated temperatures further increasing the possibility of vapor exposure to these compounds. Because of the fragility of eye tissue, almost any eye contact with any ethyleneamine may cause irreparable damage, even blindness. A single, short exposure to ethyleneamines, may cause severe skin burns, while a single, prolonged exposure may result in the material being absorbed through the skin in harmful amounts. Exposures have caused allergic skin reactions in some individuals. Single dose oral toxicity of ethyleneamines is low. The oral LD50 for rats is in the range of 1000 to 4500 mg/kg for the ethyleneamines. In general, the low-molecular weight polyamines have been positive in the Ames assay, increase sister chromatid exchange in Chinese hamster ovary (CHO) cells, and are positive for unscheduled DNA synthesis although they are negative in the mouse micronucleus assay. It is believed that the positive results are based on its ability to chelate copper			
832C–Part B Translucent Epoxy: Encapsulating and Potting Compound & TRIETHYLENETETRAMINE	Triethylenetetramine (TETA) is a severe irritant to skin and eyes and induces skin sensitisation. TETA is of moderate acute toxicity: LD50(oral, rat) > 2000 mg/kg bw, LD50(dermal, rabbit) = 550 - 805 mg/kg bw. Acute exposure to saturated vapour via inhalation was tolerated without impairment. Exposure to to aerosol leads to reversible irritations of the mucous membranes in the respiratory tract. Following repeated oral dosing via drinking water only in mice but not in rats at concentration of 3000 ppm there were signs of impairment. The NOAEL is 600 ppm [92 mg/kg bw (oral, 90 days)]. Lifelong dermal application to mice (1.2 mg/mouse) did not result in tumour formation. There are differing results of the genetic toxicity for TETA. The positive results of the in vitro tests may be the result of a direct genetic action as well as a result of an interference with essential metal ions. Due to this uncertainty of the in vitro tests, the genetic toxicity of TETA has to be assessed on the basis of in vivo tests. The in vivo micronucleus tests (i.p. and oral) and the SLRL test showed negative results. There are no human data on reproductive toxicity (fertility assessment). The analogue diethylenetriamine had no effects on reproduction. TETA shows developmental toxicity in animal studies if the chelating property of the substance is effective. The NOEL is 830 mg/kg bw (oral). Experience with female patients suffering from Wilson's disease demonstrated that no miscarriages and no foetal abnormalities occur during treatment with TETA In rats, there are several studies concerning developmental toxicity. The oral treatment of rats with 75, 375 and 750 mg/kg resulted in no effects on dams and fetuses, except slight increased fetal body weight After oral treatment of rats with 830 or 1670 mg/kg bw only in the highest dose group increased foetal abnormalities in 27/44 fetus (69.2 %) were recorded, when simultaneously the copper content of the feed was reduced. Copper supplementation in the feed reduced signifi			
Acute Toxicity	0	Carcinogenicity	0	
Skin Irritation/Corrosion	•	Reproductivity	0	
Damage/Irritation	0	STOT - Single Exposure	0	
Respiratory or Skin sensitisation	✓	STOT - Repeated Exposure	0	
Mutagenicity	0	Aspiration Hazard	0	
		Legend: 🗙 V	 Data available but does not fill the criteria for classification Data required to make classification available Data Not Available to make classification 	

12.1. Toxicity

Ingredient	Endpoint	Test Duration (hr)	Species	Value	Source
C18 fatty acid dimers/ polyethylenepolyamine polyamides	LC50	96	Fish	7.07mg/L	2
C18 fatty acid dimers/ polyethylenepolyamine polyamides	EC50	24	Crustacea	7.07mg/L	2
C18 fatty acid dimers/ polyethylenepolyamine polyamides	EC50	48	Crustacea	5.18mg/L	2
C18 fatty acid dimers/ polyethylenepolyamine polyamides	EC50	72	Algae or other aquatic plants	4.11 mg/L	2
C18 fatty acid dimers/ polyethylenepolyamine polyamides	NOEC	72	Algae or other aquatic plants	1.25mg/L	2
triethylenetetramine	EC50	48	Crustacea	31.1mg/L	1
triethylenetetramine	EC10	72	Algae or other aquatic plants	0.67mg/L	1
triethylenetetramine	EC50	72	Algae or other aquatic plants	2.5mg/L	1
triethylenetetramine	NOEC	72	Algae or other aquatic plants	<2.5mg/L	1
triethylenetetramine	LC50	96	Fish	180mg/L	1
Legend:	Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 - Aquatic Toxicity Data (Estimated) 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				IN Suite V3.12 - IITE (Japan) -

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Do NOT allow product to come in contact with surface waters or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash-waters.

For ethyleneamines:

Adsorption of the ethyleneamines correlates closely with both the cation exchange capacity (CEC) and organic content of the soil. Soils with increased CEC and organic content exhibited higher affinities for these amines.

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

for triethylenetetramine (TETA):

Environmental fate:

TETA is completely miscible with water forming an alkaline solution (pH 10 at 10 g/l). The technical product has a vapour pressure of ca.

DO NOT discharge into sewer or waterways.

12.2. Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
triethylenetetramine	LOW	LOW

12.3. Bioaccumulative potential

Ingredient E	Bioaccumulation
triethylenetetramine	LOW (LogKOW = -2.6464)

12.4. Mobility in soil

Ingredient	Mobility
triethylenetetramine	LOW (KOC = 309.9)

12.5.Results of PBT and vPvB assessment

	Р	В	т
Relevant available data	Not Available	Not Available	Not Available
PBT Criteria fulfilled?	Not Available	Not Available	Not Available

12.6. Other adverse effects

No data available

SECTION 13 DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Product / Packaging disposal	 Containers may still present a chemical hazard/ danger when empty. Return to supplier for reuse/ recycling if possible. Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. 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 Management Authority for disposal.
Waste treatment options	Not Available

Sewage disposal options Not Available

SECTION 14 TRANSPORT INFORMATION

Labels Required



LIMITED QUANTITY: Part B of 832C-375ML, 832C-450ML, 832C-3L

Land transport (ADR)

2735	
AMINES, LIQUID, CORROSIVE, and triethylenetetramine)	, N.O.S. or POLYAMINES, LIQUID, CORROSIVE, N.O.S. (contains c18 fatty acid dimers/ polyethylenepolyamine polyamides
Class 8 Subrisk Not Applicable	
П	
Not Applicable	
Hazard identification (Kemler) Classification code Hazard Label Special provisions Limited quantity	80 C7 8 274 1 L
	2735 AMINES, LIQUID, CORROSIVE and triethylenetetramine) Class 8 Subrisk Not Applicable II Not Applicable Hazard identification (Kemler) Classification code Hazard Label Special provisions Limited quantity

Air transport (ICAO-IATA / DGR)

444 101	0705				
14.1. UN number	2/35				
14.2. UN proper shipping name	Amines, liquid, corrosive, n.o.s. *; Polyamines, liquid, corrosive, n.o.s. * (contains c18 fatty acid dimers/ polyethylenepolyamine polyamides and triethylenetetramine)				
14.3. Transport hazard class(es)	ICAO/IATA Class ICAO / IATA Subrisk ERG Code	8 Not Applicable 8L			
14.4. Packing group	Ш	I			
14.5. Environmental hazard	Not Applicable				
14.6. Special precautions for user	Special provisions Cargo Only Packing I Cargo Only Maximum Passenger and Cargo Passenger and Cargo Passenger and Cargo	nstructions Qty / Pack > Packing Instructions > Maximum Qty / Pack > Limited Quantity Packing Instructions > Limited Maximum Qty / Pack	A3A803 855 30 L 851 1 L Y840 0.5 L		

Sea transport (IMDG-Code / GGVSee)

14.1. UN number	2735
14.2. UN proper shipping name	AMINES, LIQUID, CORROSIVE, N.O.S. or POLYAMINES, LIQUID, CORROSIVE, N.O.S. (contains c18 fatty acid dimers/ polyethylenepolyamine polyamides and triethylenetetramine)
14.3. Transport hazard class(es)	IMDG Class8IMDG SubriskNot Applicable
14.4. Packing group	Ш
14.5. Environmental hazard	Marine Pollutant

14.6. Special precautions for user	EMS Number	F-A, S-B
	Special provisions 274	
	Limited Quantities	1 L

Inland waterways transport (ADN)

14.1. UN number	2735		
14.2. UN proper shipping name	AMINES, LIQUID, CORROSIVE, N.O.S. or POLYAMINES, LIQUID, CORROSIVE, N.O.S. (contains c18 fatty acid dimers/ polyethylenepolyamine polyamides and triethylenetetramine)		
14.3. Transport hazard class(es)	8 Not Applicable		
14.4. Packing group	l		
14.5. Environmental hazard	Not Applicable		
14.6. Special precautions for user	Classification codeC7Special provisions274Limited quantity1 LEquipment requiredPP, EPFire cones number0		

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

Not Applicable

SECTION 15 REGULATORY INFORMATION

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

C18 FATTY ACID DIMERS/ POLYETHYLENEPOLYAMINE POLYAMIDES(68410-23-1) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Not Applicable

TRIETHYLENETETRAMINE(112-24-3) IS FOUND ON THE FOLLOWING REGULATORY LISTS

 EU REACH Regulation (EC) No 1907/2006 - Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles
 Eu

 European Customs Inventory of Chemical Substances ECICS (English)
 Eu

 European Trade Union Confederation (ETUC) Priority List for REACH Authorisation
 Da

European Union - European Inventory of Existing Commercial Chemical Substances (EINECS) (English)

European Union (EU) Annex I to Directive 67/548/EEC on Classification and Labelling of Dangerous Substances - updated by ATP: 31

European Union (EU) Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures - Annex VI

This safety data sheet is in compliance with the following EU legislation and its adaptations - as far as applicable - : 67/548/EEC, 1999/45/EC, 98/24/EC, 92/85/EC, 94/33/EC, 91/689/EEC, 1999/13/EC, Commission Regulation (EU) 2015/830, Regulation (EC) No 1272/2008 and their amendments as well as the following British legislation: - The Control of Substances Hazardous to Health Regulations (COSHH) 2002 - COSHH Essentials - The Management of Health and Safety at Work Regulations 1999

15.2. Chemical safety assessment

For further information please look at the Chemical Safety Assessment and Exposure Scenarios prepared by your Supply Chain if available.

ECHA SUMMARY

Ingredient	CAS number	Index No	ECHA Dossier	
C18 fatty acid dimers/ polyethylenepolyamine polyamides	68410-23-1	Not Available	Not Available	
Harmonisation (C&L Inventory)	Hazard Class and Category Code(s)		Pictograms Signal Word Code(s)	Hazard Statement Code(s)
1	Skin Irrit. 2, Eye Irrit. 2		GHS07, Wng	H315, H319
2	Skin Irrit. 2, Skin Sens. 1A, Eye Dam. 1, Aquatic Chronic 2, Eye Irrit. 2, Skin Sens. 1, Skin Corr. 1C, Aquatic Chronic 1, Aquatic Acute 1, Not Classified		GHS09, GHS05, Dgr, Wng, GHS06	H317, H318, H314, H335

Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

Ingredient	CAS number	Index No		ECHA Dossier	
triethylenetetramine	112-24-3	612-059-00-5		Not Available	
Harmonisation (C&L Inventory)	Hazard Class and Category Code(s)		Pictograms Signal Word Code(s)		Hazard Statement Code(s)
1	Acute Tox. 4, Skin Corr. 1B, Skin Sens. 1, Aquatic Chronic 3		GHS07,	GHS05, Dgr	H312, H314, H317
2	Acute Tox. 4, Skin Corr. 1B, Skin Sens. 1, Aquatic Chronic 3, Eye Dam. 1, Acute Tox. 3, Resp. Sens. 1, STOT SE 3, Aquatic Chronic 2, Not Classified		GHS05, GHS08,	Dgr, GHS06, GHS09	H314, H317, H318, H302, H311, H334, H335
Harmonisation Code 1 – The most prevalent classification Harmonisation Code 2 – The most severe classification					

National Inventory	Status
Australia - AICS	Y
Canada - DSL	Y
Canada - NDSL	N (C18 fatty acid dimers/ polyethylenepolyamine polyamides; triethylenetetramine)
China - IECSC	Y
Europe - EINEC / ELINCS / NLP	N (C18 fatty acid dimers/ polyethylenepolyamine polyamides)
Japan - ENCS	Y
Korea - KECI	Y
New Zealand - NZIoC	Y
Philippines - PICCS	Y
USA - TSCA	Y
Legend:	Y = All ingredients are on the inventory N = Not determined or one or more ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets)

SECTION 16 OTHER INFORMATION

Full text Risk and Hazard codes

H302	Harmful if swallowed.
H311	Toxic in contact with skin.
H312	Harmful in contact with skin.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335	May cause respiratory irritation.
H412	Harmful to aquatic life with long lasting effects.

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.

A list of reference resources used to assist the committee may be found at:

www.chemwatch.net

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.

For detailed advice on Personal Protective Equipment, refer to the following EU CEN Standards:

EN 166 Personal eye-protection

EN 340 Protective clothing

EN 374 Protective gloves against chemicals and micro-organisms

EN 13832 Footwear protecting against chemicals

EN 133 Respiratory protective devices

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

- STEL: Short Term Exposure Limit
- TEEL: Temporary Emergency Exposure Limit。
- IDLH: Immediately Dangerous to Life or Health Concentrations
- 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