832HD Black 1:1 Epoxy Potting and Encapsulating Compound (Part B)

MG Chemicals UK Limited

Version No: **2.6**
Safety Data Sheet (Conforms to Regulation (EC) No 2015/830)

Chemwatch Hazard Alert Code: **4**

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

1.1. Product Identifier

Product name	832HD Black 1:1 Epoxy Potting and Encapsulating Compound (Part B)
Synonyms	SDS Code: 832HD-Part B; 832HD-25ML, 832HD-50ML, 832HD-400ML, 832HD-1.7L, 832HD-7.4L, 832HD-40L
Proper shipping name	CORROSIVE LIQUID, N.O.S. (contains 4-nonylphenol, branched and tetraethylenepentamine)
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
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	+(1) 800-201-8822
Fax	Not Available	+(1) 800-708-9888
Website	Not Available	www.mgchemicals.com
Email	sales@mgchemicals.com	Info@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 Corrosion/Irritation Category 1A, Acute Toxicity (Oral) Category 4, Acute Toxicity (Dermal) Category 4, Acute Toxicity (Inhalation) Category 4, Skin Sensitizer Category 1, Germ cell mutagenicity Category 2, Chronic Aquatic Hazard Category 1, Reproductive Toxicity Category 2, Specific target organ toxicity - single exposure Category 3(respiratory tract irritation)
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)

H314	Causes severe skin burns and eye damage.
H302	Harmful if swallowed.
H312	Harmful in contact with skin.
H332	Harmful if inhaled.

Continued...

H317	May cause an allergic skin reaction.
H341	Suspected of causing genetic defects.
H410	Very toxic to aquatic life with long lasting effects.
H361	Suspected of damaging fertility or the unborn child.
H335	May cause respiratory irritation.

Supplementary statement(s)

Not Applicable

Precautionary statement(s) Prevention

P201	Obtain special instructions before use.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P270	Do not eat, drink or smoke when using this product.
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.
P308+P313	IF exposed or concerned: Get medical advice/ attention.
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.
P301+P312	IF SWALLOWED: Call a POISON CENTER/doctor/physician/first aider/if you feel unwell.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.

Precautionary statement(s) Storage

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

Precautionary statement(s) Disposal

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

4-nonylphenol, branched	Listed in the European Chemicals Agency (ECHA) Candidate List of Substances of Very High Concern for Authorisation

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]
1.84852-15-3 2.284-325-5 3.601-053-00-8 4.01-2119510715-45-XXXX	41	4-nonylphenol, branched	Reproductive Toxicity Category 2, Acute Toxicity (Oral) Category 4, Skin Corrosion/Irritation Category 1B, Acute Aquatic Hazard Category 1, Chronic Aquatic Hazard Category 1; H361fd, H302, H314, H410 [3]
1.68953-36-6 2.271-417-5, 273-201-6 3.Not Available 4.01-2119487006-38-XXXX	37	tall oil/ tetraethylenepentamine polyamides	Metal Corrosion Category 1, Skin Corrosion/Irritation Category 1B, Serious Eye Damage Category 1, Skin Sensitizer Category 1, Reproductive Toxicity Category 1B, Acute Aquatic Hazard Category 1, Chronic Aquatic Hazard Category 1; H290, H314, H318, H317, H360, H410 [1]
1.6864-37-5 2.229-962-1 3.612-110-00-1 4.01-2119497829-12-XXXX	16	4,4'-methylenebis(2-methylcyclohexanamine)	Acute Toxicity (Inhalation) Category 3, Acute Toxicity (Dermal) Category 3, Acute Toxicity (Oral) Category 4, Skin Corrosion/Irritation Category 1A, Chronic Aquatic Hazard Category 2; H331, H311, H302, H314, H411 [3]

Continued...

1.112-57-2 2.203-986-2 3.612-060-00-0 4.Not Available	3	tetraethylenepentamine	Acute Toxicity (Dermal) Category 4, Acute Toxicity (Oral) Category 4, Skin Corrosion/Irritation Category 1B, Skin Sensitizer Category 1, Chronic Aquatic Hazard Category 2; H312, H302, H314, H317, H411 [3]
1.64741-65-7. 2.265-067-2 3.649-275-00-4 4.01-2119850115-46-XXXX	2	naphtha petroleum, heavy alkylate	Flammable Liquid Category 3, Specific target organ toxicity - single exposure Category 3(narcotic effects), Aspiration Hazard Category 1; H226, H336, H304 [1]
1.108-95-2 2.203-632-7 3.604-001-00-2 4.01-2119471329-32-XXXX, 01-2119882293-32-XXXX, no registration number	0.2	phenol	Germ cell mutagenicity Category 2, Acute Toxicity (Inhalation) Category 3, Acute Toxicity (Dermal) Category 3, Acute Toxicity (Oral) Category 3, Specific target organ toxicity - repeated exposure Category 2, Skin Corrosion/Irritation Category 1B; H341, H331, H311, H301, H373, H314 [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

General

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.

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.
- 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 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.
- 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.

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.

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.

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)

Ingestion

- 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.

Continued...

	▸ Observe the patient carefully. ▸ Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious. ▸ 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.

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 acute or short term repeated exposures to phenols/ cresols:
- Phenol is absorbed rapidly through lungs and skin. [Massive skin contact may result in collapse and death]*
- [Ingestion may result in ulceration of upper respiratory tract; perforation of oesophagus and/or stomach, with attendant complications, may occur. Oesophageal stricture may occur.]*
- An initial excitatory phase may present. Convulsions may appear as long as 18 hours after ingestion. Hypotension and ventricular tachycardia that require vasopressor and antiarrhythmic therapy, respectively, can occur.
- Respiratory arrest, ventricular dysrhythmias, seizures and metabolic acidosis may complicate severe phenol exposures so the initial attention should be directed towards stabilisation of breathing and circulation with ventilation, intubation, intravenous lines, fluids and cardiac monitoring as indicated.
- [Vegetable oils retard absorption; do NOT use paraffin oils or alcohols. Gastric lavage, with endotracheal intubation, should be repeated until phenol odour is no longer detectable; follow with vegetable oil. A saline cathartic should then be given.]* ALTERNATIVELY: Activated charcoal (1g/kg) may be given. A cathartic should be given after oral activated charcoal.
- Severe poisoning may require slow intravenous injection of methylene blue to treat methaemoglobinaemia.
- [Renal failure may require haemodialysis.]*
- Most absorbed phenol is biotransformed by the liver to ethereal and glucuronide sulfates and is eliminated almost completely after 24 hours. [*Ellenhorn and Barceloux: Medical Toxicology*] *[*Union Carbide*]

BIOLOGICAL EXPOSURE INDEX - BEI

These represent the determinants observed in specimens collected from a healthy worker who has been exposed to the Exposure Standard (ES or TLV):

Determinant	Index	Sampling Time	Comments
1. Total phenol in blood	250 mg/gm creatinine	End of shift	B, NS

B: Background levels occur in specimens collected from subjects **NOT** exposed

NS: Non-specific determinant; also seen in exposure to other materials

SECTION 5 FIREFIGHTING MEASURES

5.1. Extinguishing media

- 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.
Fire/Explosion Hazard	▸ Combustible. ▸ Slight fire hazard when exposed to heat or flame. Combustion products include; carbon dioxide (CO_2) 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

Continued...

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 properly. 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.

Major Spills

Chemical Class: phenols and cresols
For release onto land: recommended sorbents listed in order of priority.

SORBENT TYPE	RANK	APPLICATION	COLLECTION	LIMITATIONS
LAND SPILL - SMALL				
cross-linked polymer - particulate	1	shovel	shovel	R, W, SS
cross-linked polymer - pillow	1	throw	pitchfork	R, DGC, RT
wood fiber - pillow	1	throw	pitchfork	R, P, DGC, RT
foamed glass - pillow	2	shovel	shovel	R, W, P, DGC
sorbent clay - particulate	2	shovel	shovel	R, I, P
wood fibre - particulate	3	shovel	shovel	R, W, P, DGC
LAND SPILL - MEDIUM				
cross-linked polymer - particulate	1	blower	skiploader	R,W, SS
cross-linked polymer - pillow	2	throw	skiploader	R, DGC, RT
sorbent clay - particulate	3	blower	skiploader	R, I, P
polypropylene - particulate	3	blower	skiploader	R, SS, DGC
wood fiber - particulate	4	blower	skiploader	R, W, P, DGC
expanded moneral - particulate	4	blower	skiploader	R, I, W, P, DGC

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.

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.

Fire and explosion protection

See section 5

Other information

- 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 or galvanised containers
- **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

- Reacts with mild steel, galvanised steel / zinc producing hydrogen gas which may form an explosive mixture with air.
- Phenols are incompatible with strong reducing substances such as hydrides, nitrides, alkali metals, and sulfides.
- Avoid use of aluminium, copper and brass alloys in storage and process equipment.
- Avoid strong acids, acid chlorides, acid anhydrides and chloroformates.

Continued...

	▸ Avoid contact with copper, aluminium and their alloys. ▸ 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
UK Workplace Exposure Limits (WELs)	phenol	Phenol	7.8 mg/m3 / 2 ppm	16 mg/m3 / 4 ppm	Not Available	Sk
EU Consolidated List of Indicative Occupational Exposure Limit Values (IOELVs)	phenol	Phenol	7.8 mg/m3 / 2 ppm	Not Available	Not Available	Skin
European Union (EU) Third List of Indicative Occupational Exposure Limit Values (IOELVs) (English)	phenol	Phenol	8 mg/m3 / 2 ppm	16 mg/m3 / 4 ppm	Not Available	skin

EMERGENCY LIMITS

Ingredient	Material name	TEEL-1	TEEL-2	TEEL-3
4-nonylphenol, branched	Nonyl phenol, 4- (branched)	0.074 mg/m3	0.82 mg/m3	260 mg/m3
4,4'-methylenebis(2-methylcyclohexanamine)	Laromin C 260; (bis(4-Amino-3-methylcyclohexyl) methane; Dimethyldicyane)	0.28 mg/m3	3.1 mg/m3	19 mg/m3
tetraethylenepentamine	Tetraethylenepentamine	15 mg/m3	130 mg/m3	790 mg/m3
phenol	Phenol	Not Available	Not Available	Not Available

Ingredient	Original IDLH	Revised IDLH
4-nonylphenol, branched	Not Available	Not Available
tall oil/ tetraethylenepentamine polyamides	Not Available	Not Available
4,4'-methylenebis(2-methylcyclohexanamine)	Not Available	Not Available
tetraethylenepentamine	Not Available	Not Available
naphtha petroleum, heavy alkylate	Not Available	Not Available
phenol	250 ppm	250 [Unch] ppm

MATERIAL DATA

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.
Odour Threshold Value for phenol: 0.060 ppm (detection)
NOTE: Detector tubes for phenol, measuring in excess of 1 ppm, are commercially available.
Systemic absorption by all routes may induce convulsions with damage to the lungs and central nervous system.
NOTE M: The classification as a carcinogen need not apply if it can be shown that the substance contains less than 0.005% w/w benzo[a]pyrene (EINECS No 200-028-5). This note applies only to certain complex oil-derived substances in Annex IV.
NOTE P: The classification as a carcinogen need not apply if it can be shown that the substance contains less than 0.01% w/w benzene (EINECS No 200-753-7). Note E shall also apply when the substance is classified as a carcinogen.

8.2. Exposure controls

8.2.1. Appropriate engineering 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.
8.2.2. Personal protection	
Eye and face protection	▸ Chemical goggles. ▸ Full face shield may be required for supplementary but never for primary protection of eyes.
Skin protection	See Hand protection below

Continued...

Hands/feet protection	▸ 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. ▸ 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).
Body protection	See Other protection below
Other protection	▸ Overalls. ▸ PVC Apron.
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:
832HD 1:1 Epoxy Potting and Encapsulating Compound (Part B)

Material	CPI
BUTYL	A
NEOPRENE	A
VITON	A
BUTYL/NEOPRENE	C
NAT+NEOPR+NITRILE	C
NATURAL RUBBER	C
NATURAL+NEOPRENE	C
NEOPRENE/NATURAL	C
NITRILE	C
PE/EVAL/PE	C
PVA	C
PVC	C
TEFLON	C
VITON/NEOPRENE	C

* 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 AK-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), respiratoryprotection is required.
Degree of protection varies with both face-piece and Class offilter; 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	AK-AUS P2	-	AK-PAPR-AUS / Class 1 P2
up to 50 x ES	-	AK-AUS / Class 1 P2	-
up to 100 x ES	-	AK-2 P2	AK-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 pointorganic compounds(below 65 degC)

76ak-p()

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, amber

Physical state	Liquid	**Relative density (Water = 1)**	0.95
Odour	Not Available	**Partition coefficient n-octanol / water**	Not Available
Odour threshold	Not Available	**Auto-ignition temperature (°C)**	321
pH (as supplied)	Not Available	**Decomposition temperature**	Not Available
Melting point / freezing point (°C)	Not Available	**Viscosity (cSt)**	2300
Initial boiling point and boiling range (°C)	>93	**Molecular weight (g/mol)**	Not Available
Flash point (°C)	150	**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

Continued...

Lower Explosive Limit (%)	Not Available	**Volatile Component (%vol)**	Not Available
Vapour pressure (kPa)	Not Available	**Gas group**	Not Available
Solubility in water (g/L)	Partly miscible	**pH as a solution (1%)**	Not Available
Vapour density (Air = 1)	Not Available	**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

Inhaled	Inhalation of vapours or aerosols (mists, fumes), generated by the material during the course of normal handling, may be harmful. 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.
Ingestion	Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual. The material can produce chemical burns within the oral cavity and gastrointestinal tract following 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.
Skin Contact	Skin contact with the material may be harmful; systemic effects may result following absorption. The material can produce chemical burns following direct contact with the skin. 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. The material can produce severe chemical burns following direct contact with the skin.
Eye	The material can produce chemical burns to the eye following direct contact. Vapours or mists may be extremely irritating. Direct contact with alkaline corrosives may produce pain and burns. Oedema, destruction of the epithelium, corneal opacification and iritis may occur.
Chronic	Long-term exposure to respiratory irritants may result in disease of the airways involving difficult breathing and related systemic problems. Strong evidence exists that the substance may cause irreversible but non-lethal mutagenic effects following a single exposure. 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. Exposure to the material may cause concerns for human fertility, generally on the basis that results in animal studies provide sufficient evidence to cause a strong suspicion of impaired fertility in the absence of toxic effects, or evidence of impaired fertility occurring at around the same dose levels as other toxic effects, but which are not a secondary non-specific consequence of other toxic effects. Exposure to the material may cause concerns for humans owing to possible developmental toxic effects, generally on the basis that results in appropriate animal studies provide strong suspicion of developmental toxicity in the absence of signs of marked maternal toxicity, or at around the same dose levels as other toxic effects but which are not a secondary non-specific consequence of other toxic effects. Exposure to the material may result in a possible risk of irreversible effects. The material may produce mutagenic effects in man. Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems. 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. Repeated or prolonged exposure to acids may result in the erosion of teeth, inflammatory and ulcerative changes in the mouth and necrosis (rarely) of the jaw. Bronchial irritation, with cough, and frequent attacks of bronchial pneumonia may ensue. Prolonged exposure to some derivatives of phenol may produce dermatitis, anorexia, weight loss, weakness, muscle aches and pain, liver damage, dark urine, ochronosis, skin eruptions, diarrhoea, nervous disorders with headache, salivation, fainting, increased skin and scleral pigmentation, vertigo and mental disorders. Liver and kidney damage may also ensue.

832HD 1:1 Epoxy Potting and Encapsulating Compound (Part B)	**TOXICITY**	**IRRITATION**
	Not Available	Not Available
4-nonylphenol, branched	**TOXICITY**	**IRRITATION**
	Oral (rat) LD50: 1246 mg/kg[1]	Eye (rabbit): 100 mg - SEVERE
		Skin (rabbit): 500 mg/24h-SEVERE

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tall oil/ tetraethylenepentamine polyamides	

TOXICITY	IRRITATION
Oral (rat) LD50: >5000 mg/kg[2]	Eyes (rabbit) (-) moderate
	Skin (rabbit) (-) moderate

4,4'-methylenebis(2-methylcyclohexanamine)	

TOXICITY	IRRITATION
Dermal (rabbit) LD50: 200 mg/kg[2]	Nil reported
Inhalation (rat) LC50: 0.42 mg/l/4h*[2]	
Oral (rat) LD50: 320 mg/kg[2]	

tetraethylenepentamine	

TOXICITY	IRRITATION
Dermal (rabbit) LD50: 660 mg/kg[2]	Eye (rabbit): 100 mg/24h moderate
Oral (rat) LD50: 3990 mg/kg[2]	Eye (rabbit): 5 mg moderate
	Skin (rabbit): 495 mg SEVERE
	Skin (rabbit): 5 mg/24h SEVERE

naphtha petroleum, heavy alkylate	

TOXICITY	IRRITATION
Dermal (rabbit) LD50: >5000 mg/kg[2]	Not Available
Inhalation (rat) LC50: >3.83 mg/L/4hr[2]	
Oral (rat) LD50: >25000 mg/kg[2]	

phenol	

TOXICITY	IRRITATION
dermal (rat) LD50: 662.5 mg/kg[1]	Eye(rabbit): 100 mg rinse - mild
Inhalation (rat) LC50: 0.316 mg/L/4hr[2]	Eye(rabbit): 5 mg - SEVERE
Oral (rat) LD50: 317 mg/kg[2]	Skin(rabbit): 500 mg open -SEVERE
	Skin(rabbit): 500 mg/24hr - SEVERE

Legend:	*1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2.* Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances*

4-NONYLPHENOL, BRANCHED	Gastrointestinal changes, liver changes, effects on newborn recorded.
4,4'-METHYLENEBIS(2-METHYLCYCLOHEXANAMINE)	For 4,4'-methylenebis(2-methylcyclohexanamine) (DMD): **Acute toxicity:** In humans (epoxy resins production workers) scleroderma-like skin changes have been described revealing 4,4'-methylenebis(2-methylcyclohexanamine) as most probable causative agent. In DMD production workers unspecific skin changes, but no scleroderma-like symptoms were seen. DMD is harmful via the oral route and toxic via the dermal and inhalation route: LD50 rat (oral): > 320 < 460 mg/kg bw, symptoms: unspecific; LC50 rat (inhalation, liquid aerosol): 420 mg/m3/4h, symptoms: irritation of the airways; LD50 rabbit (dermal): > 200 < 400 mg/kg bw, symptoms: cyanosis, necrotic changes at the test site. The substance is highly corrosive to skin (full thickness necrosis after 3 minutes of exposure) and may cause severe damage to eyes. In the guinea pig maximization test the substance showed no sensitising effect. In a well conducted rat 90-day inhalation study (OECD TG 413) body weight development was impaired, local irritative effects observed for the skin and upper airways (nasal mucosa) and target organ toxicity indicative of a mild anaemic effect as well as effects on the liver, testes and kidneys were seen at 48 mg/m3. No histopathological correlate was found with respect to increased absolute lung weights. At 12 mg/m3 the only effect seen was an increase in GPT levels in males. The NOAEC was 2 mg/m3. **Subchronic toxicity:** The substance may cause local damage as well as systemic toxicity including histopathological changes in several target organs (damage to haematological system, liver, kidney, adrenal gland and heart) after repeated oral uptake and to a lesser extent after inhalative exposure as shown in animal studies. In a subchronic oral toxicity study with rats (OECD TG 408), the animals were exposed to 0, 2.5, 12 and 60 mg/kg bw/day by gavage over 3 months. Liver, white and red blood cells, kidneys, adrenal glands and heart were the target organs for toxic effect showing also histopathological alterations. At the high dose level (60 mg/kg bw/day) body weight development/food consumption were clearly impaired and the general state of health was poor. The absolute testes weight was decreased and an atrophy of the seminiferous tubuli and a reduced content of the seminal vesicle were noted. These changes were interpreted as consequence of the marked impairment on body weight. While the toxic effects at the mid dose of 12 mg/kg bw/day were generally less pronounced, a NOAEL was achieved at 2.5 mg/kg bw/day. **Genotoxicity:** The substance showed no genotoxic effects in the Ames test (OECD TG 471), cytogenetic assay with CHO cells (OECD TG 473) and HGPRT assay (OECD TG 476) when tested up to the cyto-/bacteriotoxic range. **Reproductive toxicity:** In rat 90-day oral and inhalation studies the substance showed no direct adverse effects to the male and female reproductive organs (testes, ovaries and uterus examined). The observed effects on testes being a secondary nonspecific consequence of the severe systemic toxicity (e.g. decrease in body weight) seen at the same dose level. **Developmental toxicity:** In a developmental toxicity study (OECD TG 414) the DMD (0, 5, 15 or 45 mg/kg bw/day) was administered from day 6 to 19 post-coitum orally by gavage to rats. The NOAEL for maternal toxicity was 5 mg/kg bw/day. Slight foetotoxicity (retardation of ossification of skull bones) without teratogenicity was observed at 45 mg/kg bw/day, together with severely reduced body weight of the dams. The NOAEL for developmental toxicity was 15 mg/kg bw/day. The material may produce respiratory tract irritation. Symptoms of pulmonary irritation may include coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and a burning sensation. Unlike most organs, the lung can respond to a chemical insult or a chemical agent, by first removing or neutralising the irritant and then repairing the damage (inflammation of the lungs may be a consequence).

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	The repair process (which initially developed to protect mammalian lungs from foreign matter and antigens) may, however, cause further damage to the lungs (fibrosis for example) when activated by hazardous chemicals. Often, this results in an impairment of gas exchange, the primary function of the lungs. Therefore prolonged exposure to respiratory irritants may cause sustained breathing difficulties. * [BASF]
TETRAETHYLENEPENTAMINE	Triethylenetetramine (TETA) is a severe irritant to skin and eyesand induces skin sensitisation. TETA is of moderate acute toxicity: LD50(oral, rat) > 2000mg/kg bw, LD50(dermal, rabbit) = 550 - 805 mg/kg bw. Acute exposure tosaturated vapour via inhalation was tolerated without impairment. Exposure to to aerosol leads to reversible irritations of the mucous membranes inthe respiratory tract. Following repeated oral dosing via drinking water only in mice butnot in rats at concentration of 3000 ppm there were signs of impairment. TheNOAEL is 600 ppm [92 mg/kg bw (oral, 90 days)]. Lifelong dermal application tomice (1.2 mg/mouse) did not result in tumour formation. There are differing results of the genetic toxicity for TETA. Thepositive results of the in vitro tests may be the result of a direct geneticaction as well as a result of an interference with essential metal ions. Due tothis uncertainty of the in vitro tests, the genetic toxicity of TETA has to beassessed on the basis of in vivo tests. The in vivo micronucleus tests (i.p. and oral) and the SLRL testshowed negative results. There are no human data on reproductive toxicity (fertilityassessment). The analogue diethylenetriamine had no effects on reproduction.TETA shows developmental toxicity in animal studies if the chelating propertyof the substance is effective. The NOEL is 830 mg/kg bw (oral). Experience with female patients suffering from Wilson´s diseasedemonstrated that no miscarriages and no foetal abnormalities occur duringtreatment with TETA.. In rats, there are several studies concerning developmentaltoxicity. The oral treatment of rats with 75, 375 and 750 mg/kg resulted in noeffects on dams and fetuses, except slight increased fetal body weight After oral treatment of rats with 830 or 1670 mg/kg bw only in thehighest dose group increased foetal abnormalities in 27/44 fetus (69,2 %) wererecorded, when simultaneously the copper content of the feed was reduced. Coppersupplementation in the feed reduced significant the fetal abnormalities of thehighest dose group to 3/51 (6,5 % foetus. These findings suggest that thedevelopmental toxicity is produced as a secondary consequence of the chelatingproperties of TETA.
NAPHTHA PETROLEUM, HEAVY ALKYLATE	Studiesindicate that normal, branched and cyclic paraffins are absorbed from themammalian gastrointestinal tract and that the absorption of n-paraffins isinversely proportional to the carbon chain length,with little absorption aboveC30. With respect to the carbon chain lengths likely to be present in mineraloil, n-paraffins may be absorbed to a greater extent that iso- orcyclo-paraffins. The majorclasses of hydrocarbons have been shown to be well absorbed by thegastrointestinal tract in various species. In many cases, the hydrophobichydrocarbons are ingested in association with dietary lipids. The dependence ofhydrocarbon absorption on concomitant triglyceride digestion and absorption,isknown as the 'hydrocarbon continuum hypothesis', and asserts that aseries of solubilising phases in the intestinal lumen, created by dietarytriglycerides and their digestion products, afford hydrocarbons a route to thelipid phase of the intestinal absorptive cell (enterocyte) membrane. While somehydrocarbons may traverse the mucosal epithelium unmetabolised and appear assolutes in lipoprotein particles in intestinal lymph, there is evidence thatmost hydrocarbons partially separate from nutrient lipids and undergo metabolictransformation in the enterocyte. The enterocyte may play a major role indetermining the proportion of an absorbed hydrocarbon that, by escaping initialbiotransformation, becomes available for deposition in its unchanged form inperipheral tissues such as adipose tissue, or in the liver. **for petroleum:** This product contains benzene which is known to cause acute myeloid leukaemia and n-hexane which has been shown to metabolize to compounds which are neuropathic. This product contains toluene. There are indications from animal studies that prolonged exposure to high concentrations of toluene may lead to hearing loss. This product contains ethyl benzene and naphthalene from which there is evidence of tumours in rodents **Carcinogenicity:** Inhalation exposure to mice causes liver tumours, which are not considered relevant to humans. Inhalation exposure to rats causes kidney tumours which are not considered relevant to humans. **Mutagenicity:** There is a large database of mutagenicity studies on gasoline and gasoline blending streams, which use a wide variety of endpoints and give predominantly negative results. All in vivo studies in animals and recent studies in exposed humans (e.g. petrol service station attendants) have shown negative results in mutagenicity assays. **Reproductive Toxicity:** Repeated exposure of pregnant rats to high concentrations of toluene (around or exceeding 1000 ppm) can cause developmental effects, such as lower birth weight and developmental neurotoxicity, on the foetus. However, in a two-generation reproductive study in rats exposed to gasoline vapour condensate, no adverse effects on the foetus were observed. **Human Effects:** Prolonged/ repeated contact may cause defatting of the skin which can lead to dermatitis and may make the skin more susceptible to irritation and penetration by other materials. Lifetime exposure of rodents to gasoline produces carcinogenicity although the relevance to humans has been questioned. Gasoline induces kidney cancer in male rats as a consequence of accumulation of the alpha2-microglobulin protein in hyaline droplets in the male (but not female) rat kidney. Such abnormal accumulation represents lysosomal overload and leads to chronic renal tubular cell degeneration, accumulation of cell debris, mineralisation of renal medullary tubules and necrosis. A sustained regenerative proliferation occurs in epithelial cells with subsequent neoplastic transformation with continued exposure. The alpha2-microglobulin is produced under the influence of hormonal controls in male rats but not in females and, more importantly, not in humans.
PHENOL	The substance is classified by IARC as Group 3: **NOT** classifiable as to its carcinogenicity to humans. Evidence of carcinogenicity may be inadequate or limited in animal testing.
832HD 1:1 Epoxy Potting and Encapsulating Compound (Part B) & 4-NONYLPHENOL, BRANCHED & TALL OIL/ TETRAETHYLENEPENTAMINE POLYAMIDES & 4,4'-METHYLENEBIS(2-METHYLCYCLOHEXANAMINE) & TETRAETHYLENEPENTAMINE & PHENOL	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.
832HD 1:1 Epoxy Potting and Encapsulating Compound (Part B) & TALL OIL/ TETRAETHYLENEPENTAMINE POLYAMIDES & TETRAETHYLENEPENTAMINE	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.
4-NONYLPHENOL, BRANCHED & PHENOL	The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.
4-NONYLPHENOL, BRANCHED & TETRAETHYLENEPENTAMINE	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,

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& PHENOL	given the severity of response, but repeated exposures may produce severe ulceration.
TALL OIL/ TETRAETHYLENEPENTAMINE POLYAMIDES & TETRAETHYLENEPENTAMINE	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
TALL OIL/ TETRAETHYLENEPENTAMINE POLYAMIDES & 4,4'-METHYLENEBIS(2-METHYLCYCLOHEXANAMINE) & TETRAETHYLENEPENTAMINE	The material may produce moderate eye irritation leading to inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.
TALL OIL/ TETRAETHYLENEPENTAMINE POLYAMIDES & 4,4'-METHYLENEBIS(2-METHYLCYCLOHEXANAMINE)	The material may cause 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) and swelling the epidermis. Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis.
TALL OIL/ TETRAETHYLENEPENTAMINE POLYAMIDES & TETRAETHYLENEPENTAMINE	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
TALL OIL/ TETRAETHYLENEPENTAMINE POLYAMIDES & TETRAETHYLENEPENTAMINE	Tetraethylenepentamine (TEPA) has a low acute toxicity when administered orally to rats (LD50 =3250 mg/kg). In an acute inhalation toxicity study with saturated vapor and whole body exposure, the LC50 was calculated to be >9.9 ppm (highest dose tested). TEPA is corrosive to the skin and eyes of rabbits. TEPA is a skin sensitiser in the guinea pig. Dermal acute toxicity LD50 values in the rabbit range from 660 - 1260 mg/kg. The higher toxicity via the dermal route is most likely due to the corrosive nature of TEPA to the skin whereas TEPA would be neutralized by stomach acid. The results of a 28-day repeated dose dermal toxicity study of TEPA indicated a systemic toxicity NOEL of 200 mg/kg/day and a dermal toxicity NOEL (local) of 50 mg/kg/day. The dermal LOAEL was 100 mg/kg/day. In addition, in a repeat dose study of TETA administered in drinking water to male and female rats for 90-92 days, the NOEL was 276 mg/kg/day in males and 352 mg/kg/day in females, the highest dose administered with the NIH-31 diet (several diets were used to study the effects of copper deficiency versus toxicity directly to TEPA). In this same study in mice the NOEL was 487 mg/kg/day in males and 551 mg/kg/day in females, the highest dose administered. A lifetime study was conducted via dermal administration in fifty male mice with a solution of 35% TEPA. There were 20 cases of hyperkeratosis, 13 cases of epidermal necrosis and no evidence of dermal hyperplasia. There were no data available for TEPA for reproductive and developmental toxicity. As a result, data on triethylenetetramine (TETA) was used to address these endpoints. TETA data showed no effects on reproductive organs in rats up to 276 mg/kg/day (males) and 352 mg/kg/day (females) and in mice (up to 500 mg/kg/day) when administered in drinking water. TETA was not considered a developmental toxicant via dermal administration in rabbits at maternally toxic doses up to 125 mg/kg/day but showed developmental toxicity in rats at maternally toxic doses of 830 or 1660 mg/kg/day via drinking water. The maternal and foetal toxicity was most likely due to copper deficiency and zinc toxicity at these levels. Subsequent studies where the diet was supplemented with copper resulted in a decrease of foetal abnormalities. There were no standard fertility studies available. However, there were no effects on the gonads observed in a 90-day drinking water study in rats and mice as described above. In the Ames Salmonella assay, TEPA was found to be positive both with and without metabolic activation. TEPA was found to increase sister chromatid exchange in CHO cells and was considered positive in a UDS assay using rat hepatocytes. TEPA was not considered genotoxic in the mouse micronucleus assay and had equivocal results in the two dominant lethal assays in Drosophila melanogaster. Again, it is believed that the positive results are based upon TEPA's ability to chelate copper.

Acute Toxicity	✔	**Carcinogenicity**	⊘
Skin Irritation/Corrosion	✔	**Reproductivity**	✔
Serious Eye Damage/Irritation	⊘	**STOT - Single Exposure**	✔
Respiratory or Skin sensitisation	✔	**STOT - Repeated Exposure**	⊘
Mutagenicity	✔	**Aspiration Hazard**	⊘

Legend: ✘ *– Data available but does not fill the criteria for classification*
✔ *– Data required to make classification available*
⊘ *– Data Not Available to make classification*

SECTION 12 ECOLOGICAL INFORMATION

12.1. Toxicity

Ingredient	Endpoint	Test Duration (hr)	Species	Value	Source
4-nonylphenol, branched	BCF	24	Fish	0.193mg/L	4
4-nonylphenol, branched	EC10	96	Algae or other aquatic plants	0.012mg/L	4
4-nonylphenol, branched	LC50	96	Fish	0.017mg/L	4
4-nonylphenol, branched	EC50	48	Crustacea	0.0844mg/L	2
4-nonylphenol, branched	NOEC	168	Crustacea	0.001mg/L	2

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4-nonylphenol, branched	EC50	96	Algae or other aquatic plants	0.027mg/L	2
tall oil/ tetraethylenepentamine polyamides	LC50	96	Fish	0.19mg/L	2
tall oil/ tetraethylenepentamine polyamides	EC50	24	Crustacea	0.42mg/L	2
tall oil/ tetraethylenepentamine polyamides	EC50	48	Crustacea	0.18mg/L	2
tall oil/ tetraethylenepentamine polyamides	NOEC	48	Crustacea	0.32mg/L	2
tall oil/ tetraethylenepentamine polyamides	EC50	72	Algae or other aquatic plants	0.638mg/L	2
4,4'-methylenebis(2-methylcyclohexanamine)	EC50	96	Algae or other aquatic plants	1.122mg/L	3
4,4'-methylenebis(2-methylcyclohexanamine)	LC50	96	Fish	2.974mg/L	3
4,4'-methylenebis(2-methylcyclohexanamine)	EC10	96	Algae or other aquatic plants	=0.41mg/L	1
4,4'-methylenebis(2-methylcyclohexanamine)	EC50	48	Crustacea	4.57mg/L	2
4,4'-methylenebis(2-methylcyclohexanamine)	NOEC	72	Algae or other aquatic plants	0.13mg/L	2
tetraethylenepentamine	EC50	48	Crustacea	=24.1mg/L	1
tetraethylenepentamine	LC50	96	Fish	1.27628mg/L	3
tetraethylenepentamine	EC50	72	Algae or other aquatic plants	=2.1mg/L	1
tetraethylenepentamine	EC50	72	Algae or other aquatic plants	=6.8mg/L	1
tetraethylenepentamine	NOEC	72	Algae or other aquatic plants	=0.5mg/L	1
naphtha petroleum, heavy alkylate	EC50	72	Algae or other aquatic plants	=13mg/L	1
naphtha petroleum, heavy alkylate	EC50	72	Algae or other aquatic plants	=30000mg/L	1
naphtha petroleum, heavy alkylate	NOEC	72	Algae or other aquatic plants	=0.1mg/L	1
phenol	EC50	48	Crustacea	=3.1mg/L	1
phenol	BCF	24	Fish	60mg/L	4
phenol	EC50	24	Crustacea	0.000395mg/L	4
phenol	EC50	96	Algae or other aquatic plants	0.0611mg/L	4
phenol	LC50	96	Fish	0.00175mg/L	4
phenol	NOEC	144	Crustacea	0.01mg/L	4
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*				

Very 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 4,4'-methylenebis(2-methylcyclohexanamine) (DMD):
Environmental fate:
DMD has a water solubility of 3.6 g/l, a vapour pressure of 0.08 Pa and a measured log Kow of 2.51. However, due to the Lewis base character of the substance the experimental determination of the log Kow is inaccurate.
Environmental toxicity is a function of the n-octanol/ water partition coefficient (log Pow, log Kow). Phenols with log Pow >7.4 are expected to exhibit low toxicity to aquatic organisms.
Drinking Water Standards: hydrocarbon total: 10 ug/l (UK max.).
for alkylphenols and their ethoxylates, or propoxylates:
Environmental fate: Alkylphenolsare ubiquitous in the environmental after the introduction, generally aswastes, of their alkoxylated forms (ethoxylates and propoxylates, for example);these are extensively used throughout industry and in the home.
Alkylphenol ethoxylates are widely used surfactants in domesticand industrial products, which are commonly found in wastewater discharges andin sewage treatment plant (STP) effluent's.
Prevent, by any means available, spillage from entering drains or water courses.
DO NOT discharge into sewer or waterways.

12.2. Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
4-nonylphenol, branched	HIGH	HIGH
4,4'-methylenebis(2-methylcyclohexanamine)	HIGH	HIGH
tetraethylenepentamine	LOW	LOW
phenol	LOW (Half-life = 10 days)	LOW (Half-life = 0.95 days)

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12.3. Bioaccumulative potential

Ingredient	Bioaccumulation
4-nonylphenol, branched	LOW (BCF = 271)
4,4'-methylenebis(2-methylcyclohexanamine)	LOW (BCF = 60)
tetraethylenepentamine	LOW (LogKOW = -3.1604)
phenol	LOW (BCF = 17.5)

12.4. Mobility in soil

Ingredient	Mobility
4-nonylphenol, branched	LOW (KOC = 56010)
4,4'-methylenebis(2-methylcyclohexanamine)	LOW (KOC = 1838)
tetraethylenepentamine	LOW (KOC = 1098)
phenol	LOW (KOC = 268)

12.5.Results of PBT and vPvB assessment

	P	B	T
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. ▸ **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. ▸ Consult manufacturer for recycling options or consult local or regional waste management authority for disposal if no suitable treatment or disposal facility can be identified.
Waste treatment options	Not Available
Sewage disposal options	Not Available

SECTION 14 TRANSPORT INFORMATION

Labels Required

	 LIMITED QUANTITY: Part B of 832HD-400ML, 832HD-1.7L kits
Marine Pollutant	
HAZCHEM	2X

Land transport (ADR)

14.1.UN number	1760
14.2.UN proper shipping name	CORROSIVE LIQUID, N.O.S. (contains 4-nonylphenol, branched and tetraethylenepentamine)
14.3. Transport hazard class(es)	Class: 8 Subrisk: Not Applicable
14.4.Packing group	II
14.5.Environmental hazard	Not Applicable
14.6. Special precautions for user	Hazard identification (Kemler): 80 Classification code: C9

Continued...

	Hazard Label: 8 Special provisions: 274 Limited quantity: 1 L

Air transport (ICAO-IATA / DGR)

14.1. UN number	1760
14.2. UN proper shipping name	Corrosive liquid, n.o.s. * (contains 4-nonylphenol, branched and tetraethylenepentamine)
14.3. Transport hazard class(es)	ICAO/IATA Class: 8 ICAO / IATA Subrisk: Not Applicable ERG Code: 8L
14.4. Packing group	II
14.5. Environmental hazard	Not Applicable
14.6. Special precautions for user	Special provisions: A3A803 Cargo Only Packing Instructions: 855 Cargo Only Maximum Qty / Pack: 30 L Passenger and Cargo Packing Instructions: 851 Passenger and Cargo Maximum Qty / Pack: 1 L Passenger and Cargo Limited Quantity Packing Instructions: Y840 Passenger and Cargo Limited Maximum Qty / Pack: 0.5 L

Sea transport (IMDG-Code / GGVSee)

14.1. UN number	1760
14.2. UN proper shipping name	CORROSIVE LIQUID, N.O.S. (contains 4-nonylphenol, branched and tetraethylenepentamine)
14.3. Transport hazard class(es)	IMDG Class: 8 IMDG Subrisk: Not Applicable
14.4. Packing group	II
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	1760
14.2. UN proper shipping name	CORROSIVE LIQUID, N.O.S. (contains 4-nonylphenol, branched and tetraethylenepentamine)
14.3. Transport hazard class(es)	8 Not Applicable
14.4. Packing group	II
14.5. Environmental hazard	Not Applicable
14.6. Special precautions for user	Classification code: C9 Special provisions: 274 Limited quantity: 1 L Equipment required: PP, EP Fire cones number: 0

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

Continued...

4-NONYLPHENOL, BRANCHED(84852-15-3) IS FOUND ON THE FOLLOWING REGULATORY LISTS

EU European Chemicals Agency (ECHA) Community Rolling Action Plan (CoRAP) List of Substances
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 REACH Regulation (EC) No 1907/2006 - Proposals to identify Substances of Very High Concern: Annex XV reports for commenting by Interested Parties
Europe AeroSpace and Defence Industries Association of Europe (ASD) REACH Implementation Working Group Priority Declarable Substances List (PDSL)
Europe European Chemicals Agency (ECHA) Candidate List of Substances of Very High Concern for Authorisation
European Customs Inventory of Chemical Substances ECICS (English)
European Trade Union Confederation (ETUC) Priority List for REACH Authorisation
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

TALL OIL/ TETRAETHYLENEPENTAMINE POLYAMIDES(68953-36-6) 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
European Union - European Inventory of Existing Commercial Chemical Substances (EINECS) (English)

4,4'-METHYLENEBIS(2-METHYLCYCLOHEXANAMINE)(6864-37-5) IS FOUND ON THE FOLLOWING REGULATORY LISTS

EU European Chemicals Agency (ECHA) Community Rolling Action Plan (CoRAP) List of Substances
European Customs Inventory of Chemical Substances ECICS (English)
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

TETRAETHYLENEPENTAMINE(112-57-2) 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
European Customs Inventory of Chemical Substances ECICS (English)
European Trade Union Confederation (ETUC) Priority List for REACH Authorisation
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

NAPHTHA PETROLEUM, HEAVY ALKYLATE(64741-65-7.) IS FOUND ON THE FOLLOWING REGULATORY LISTS

EU REACH Regulation (EC) No 1907/2006 - Annex XVII (Appendix 2) Carcinogens: category 1B (Table 3.1)/category 2 (Table 3.2)
EU REACH Regulation (EC) No 1907/2006 - Annex XVII (Appendix 4) Mutagens: category 1B (Table 3.1)/category 2 (Table 3.2)
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) Annex I to Directive 67/548/EEC on Classification and Labelling of Dangerous Substances (updated by ATP: 31) - Carcinogenic Substances
European Union (EU) Annex I to Directive 67/548/EEC on Classification and Labelling of Dangerous Substances (updated by ATP: 31) - Mutagenic Substances
European Union (EU) Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures - Annex VI

PHENOL(108-95-2) IS FOUND ON THE FOLLOWING REGULATORY LISTS

EU Consolidated List of Indicative Occupational Exposure Limit Values (IOELVs)
EU European Chemicals Agency (ECHA) Community Rolling Action Plan (CoRAP) List of Substances
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
European Customs Inventory of Chemical Substances ECICS (English)
European List of Notified Chemical Substances (ELINCS)
European Trade Union Confederation (ETUC) Priority List for REACH Authorisation
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
European Union (EU) Third List of Indicative Occupational Exposure Limit Values (IOELVs) (English)
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
UK Workplace Exposure Limits (WELs)

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
4-nonylphenol, branched	84852-15-3	601-053-00-8	01-2119510715-45-XXXX

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, Eye Dam. 1, Repr. 2, Aquatic Acute 1, Aquatic Chronic 1	GHS07, GHS09, GHS05, GHS08, Dgr	H302, H314, H318, H361
2	Acute Tox. 4, Skin Corr. 1B, Eye Dam. 1, Repr. 2, Aquatic Acute 1, Aquatic Chronic 1, STOT SE 3, Not Classified	GHS09, GHS05, GHS08, Wng, Dgr	H302, H314, H318, H360, H335

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

Ingredient	CAS number	Index No	ECHA Dossier
tall oil/ tetraethylenepentamine polyamides	68953-36-6	Not Available	01-2119487006-38-XXXX

Harmonisation (C&L Inventory)	Hazard Class and Category Code(s)	Pictograms Signal Word Code(s)	Hazard Statement Code(s)

Continued...

2	Skin Corr. 1C, Skin Sens. 1A, Aquatic Acute 1, Aquatic Chronic 1, Skin Irrit. 2, Skin Sens. 1, Eye Irrit. 2, STOT SE 3, Not Classified, Eye Dam. 1, Aquatic Chronic 2, Resp. Sens. 1, Met. Corr. 1, Skin Corr. 1A, Skin Corr. 1B	GHS09, GHS05, Dgr, Wng, GHS08	H314, H317, H335, H318, H334, H290

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

Ingredient	CAS number	Index No	ECHA Dossier
4,4'-methylenebis(2-methylcyclohexanamine)	6864-37-5	612-110-00-1	01-2119497829-12-XXXX

Harmonisation (C&L Inventory)	Hazard Class and Category Code(s)	Pictograms Signal Word Code(s)	Hazard Statement Code(s)
1	Acute Tox. 4, Acute Tox. 3, Skin Corr. 1A, Aquatic Chronic 2	GHS06, GHS09, GHS05, Dgr	H302, H311, H314, H331
2	Acute Tox. 4, Acute Tox. 3, Skin Corr. 1A, Eye Dam. 1, Acute Tox. 2, STOT RE 2, Aquatic Chronic 2	GHS06, GHS09, GHS08, GHS05, Dgr	H302, H311, H314, H330, H373, H318

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

Ingredient	CAS number	Index No	ECHA Dossier
tetraethylenepentamine	112-57-2	612-060-00-0	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 2	GHS07, GHS09, GHS05, Dgr	H302, H312, H314, H317
2	Acute Tox. 4, Skin Corr. 1B, Skin Sens. 1, Aquatic Chronic 2, Acute Tox. 3, Eye Dam. 1, Resp. Sens. 1, Not Classified, Flam. Liq. 2, Aquatic Acute 2	GHS09, GHS05, Dgr, GHS06, GHS08, GHS02	H302, H314, H317, H311, H318, H334

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

Ingredient	CAS number	Index No	ECHA Dossier
naphtha petroleum, heavy alkylate	64741-65-7.	649-275-00-4	01-2119850115-46-XXXX

Harmonisation (C&L Inventory)	Hazard Class and Category Code(s)	Pictograms Signal Word Code(s)	Hazard Statement Code(s)
1	Asp. Tox. 1, Muta. 1B, Carc. 1B	GHS08, Dgr	H304, H340, H350
2	Asp. Tox. 1, Muta. 1B, Carc. 1B, Flam. Liq. 3, Aquatic Chronic 4, Aquatic Chronic 2, Not Classified, Acute Tox. 3, STOT SE 3, Flam. Liq. 1, Skin Irrit. 2, Flam. Liq. 2, Repr. 2, Aquatic Chronic 3	GHS08, Dgr, GHS02, GHS09, GHS06, Wng	H304, H340, H350, H331, H336, H224, H315, H361

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

Ingredient	CAS number	Index No	ECHA Dossier
phenol	108-95-2	604-001-00-2	01-2119471329-32-XXXX, 01-2119882293-32-XXXX, no registration number

Harmonisation (C&L Inventory)	Hazard Class and Category Code(s)	Pictograms Signal Word Code(s)	Hazard Statement Code(s)
1	Acute Tox. 3, Skin Corr. 1B, Muta. 2, STOT RE 2	GHS06, GHS05, GHS08, Dgr	H301, H311, H314, H331, H341, H373
2	Acute Tox. 3, Skin Corr. 1B, Muta. 2, STOT RE 2, Aquatic Chronic 2, Eye Dam. 1, STOT SE 2, Eye Irrit. 2, STOT RE 1, Aquatic Chronic 1, Acute Tox. 1, Aquatic Acute 1, Muta. 1B, Acute Tox. 4, Acute Tox. 2, Skin Irrit. 2, Not Classified, Skin Corr. 1C, Repr. 1B, STOT SE 1, Skin Corr. 1A, Skin Sens. 1, Carc. 2	GHS09, GHS06, GHS08, GHS05, Dgr	H301, H311, H314, H318, H372, H330, H335, H340, H360, H370, H317, H351
1	Acute Tox. 4, Skin Corr. 1B, Acute Tox. 3, Muta. 2	GHS06, GHS05, GHS08, Dgr	H302, H312, H314, H331, H341
2	Acute Tox. 4, Skin Corr. 1B, Acute Tox. 3, Muta. 2	GHS06, GHS05, GHS08, Dgr	H314, H331, H341, H301, H311

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 (phenol; 4-nonylphenol, branched; tetraethylenepentamine; 4,4'-methylenebis(2-methylcyclohexanamine); naphtha petroleum, heavy alkylate)
China - IECSC	Y
Europe - EINEC / ELINCS / NLP	Y
Japan - ENCS	N (tall oil/ tetraethylenepentamine polyamides; naphtha petroleum, heavy alkylate)
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)*

Continued...

SECTION 16 OTHER INFORMATION

Full text Risk and Hazard codes

H224	Extremely flammable liquid and vapour.
H226	Flammable liquid and vapour.
H290	May be corrosive to metals.
H301	Toxic if swallowed.
H304	May be fatal if swallowed and enters airways.
H311	Toxic in contact with skin.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H330	Fatal if inhaled.
H331	Toxic if inhaled.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H336	May cause drowsiness or dizziness.
H340	May cause genetic defects.
H350	May cause cancer.
H351	Suspected of causing cancer.
H360	May damage fertility or the unborn child.
H361	Suspected of damaging fertility or the unborn child.
H361fd	Suspected of damaging fertility. Suspected of damaging the unborn child.
H370	Causes damage to organs.
H372	Causes damage to organs.
H373	May cause damage to organs.
H411	Toxic to aquatic life with long lasting effects.

Other information

Ingredients with multiple cas numbers

Name	CAS No
tall oil/ tetraethylenepentamine polyamides	68513-05-3, 68953-36-6, 68555-22-6, 1226892-45-0

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