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## **SECTION 1: IDENTIFICATION**

Product identifier used on the label M-Bond Curing Agent – Type 10

Other means of identification None

Recommended use of the chemical and restrictions

on use

Recommended use Adhesives.

Restrictions on use For professional users only. Anything other than the above.

Supplier/Manufacturer name, address and telephone

number

Supplier/Manufacturer VISHAY MEASUREMENTS GROUP, INC.

Address Post Office Box 27777
Raleigh, NC 27611

USA

Telephone +1 919-365-3800 Fax +1 919-365-3945

E-Mail (competent person) <u>mm.us@vpgsensors.com</u>

Importer/Distributor name, address and telephone

number Name Address Telephone To be added by Australian importer/distributor

Emergency telephone number 61-290372994 (for spills and releases) CHEMTREC (24 hours)

#### SECTION 2: HAZARD(S) IDENTIFICATION

#### Classification of the substance or mixture

In accordance with the Safe Work Australia model Work Health and Safety Regulations (2020) & GHS 7

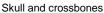
Acute toxicity (oral), Category 4
Acute toxicity (dermal), Category 4
Acute toxicity (inhalative), Category 2
Skin corrosion/irritation, Category 1A
Skin sensitization, Category 1
Eye Damage/Irritation, Category 1
Reproductive toxicity, Category 1

Specific target organ toxicity — repeated exposure, Category 2 Hazardous to the aquatic environment, Chronic, Category 3

Label elements

Hazard Symbol







Health hazard



zard Corrosion

Signal Word(s) DANGER

Hazard Statement(s) H302: Harmful if swallowed.

H312: Harmful in contact with skin.

H314: Causes severe skin burns and eye damage. H317: May cause an allergic skin reaction.

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H330: Fatal if inhaled.

H360Df: May damage the unborn child. Suspected of damaging fertility. H373: May cause damage to organs through prolonged or repeated exposure.

H412: Harmful to aquatic life with long lasting effects.

Precautionary Statement(s) P201: Obtain special instructions before use.

P260: Do not breathe vapour.

P280: Wear protective gloves/protective clothing/eye protection/face protection. P301+P330+P331: IF SWALLOWED: rinse mouth. Do NOT induce vomiting. P304 + P340 + P310: IF INHALED: Remove person to fresh air and keep

comfortable for breathing.

P303+P361+P353: IF ON SKIN (or hair): Take off immediately all contaminated

clothing. Rinse skin with water [or 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.

P333+P313: If skin irritation or rash occurs: Get medical advice/attention. P308+P313: IF exposed or concerned: Get medical advice/attention.

Other Hazards None assigned

Other Hazards that do not Result in Classification None Known

## **SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS**

Substances Not applicable

Mixtures Substances in preparations / mixtures

Chemical identity of the substance	%W/ W	CAS No.	EC No.	Hazard classification				
Triethylenetetramine (TETA) Synonyms: 3,6- diazaoctanethylenediamin	>90	112-24-3	203-950-6	Acute toxicity (oral), Category 4 Acute toxicity (dermal), Category 4 Acute toxicity (inhalative), Category 2 Skin corrosion/irritation, Category 1A Skin sensitization, Category 1 Eye Damage/Irritation, Category 1 Hazardous to the aquatic environment, Chronic, Category 3				
2-(2-Aminoethylamino)ethanol (AEEA)	< 2	111-41-1	203-867-5	Skin Corrosion/Irritation, Category 1B Skin Sensitisation, Category 1 Eye Damage, Category 1 Specific target organ toxicity — single exposure, Category 3 (Respiratory tract) Reproductive toxicity, Category 1B				
2-Piperazin-1-ylethylamine	< 2	140-31-8	500-033-5	Acute toxicity (oral), Category 4 Acute toxicity (dermal), Category 3 Skin Corrosion/Irritation, Category 1B Skin Sensitisation, Category 1 Eye Damage, Category 1 Reproductive toxicity, Category 2 Specific target organ toxicity — repeated exposure, Category 1 Hazardous to the aquatic environment, Chronic, Category 3				
Tetraethylenepentamine (TEPA) Synonym: 3,6,9- Triazaundecamethylenediamine	< 2	205-411-0	204-626-7	Acute toxicity (oral), Category 4 Acute toxicity (dermal), Category 4 Acute toxicity (inhalative), Category 2 Skin Corrosion/Irritation, Category 1A Skin Sensitisation, Category 1 Eye Damage, Category 1 Hazardous to the aquatic environment, Chronic, Category 2				

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Diethylenetriamine (DETA) Synonym: 2,2'- iminodi(ethylamine)	<1	111-40-0	203-986-2	Acute toxicity (oral), Category 4 Acute toxicity (dermal), Category 4 Acute toxicity (inhalative), Category 2 Skin Corrosion/Irritation, Category 1A Skin Sensitisation, Category 1 Eye Damage, Category 1 Specific target organ toxicity — single exposure, Category 3 (Respiratory tract)	
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#### **SECTION 4: FIRST AID MEASURES**



Description of first aid measures

First aid facilities

Self-protection of the first aider

Inhalation

Skin Contact

Eye Contact

Ingestion

Most important symptoms and effects, both acute and delayed

Indication of immediate medical attention and special treatment needed, if necessary Notes to a physician:

Eyewash facilities should be stationed close to workplace where possible.

Use personal protective equipment as required. Wear appropriate personal protective equipment, avoid direct contact. Ensure adequate ventilation. [In case of inadequate ventilation] wear respiratory protection. Do not breathe vapour. Avoid all contact. Contaminated clothing should be laundered before reuse. Avoid contact during pregnancy/while nursing.

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. Immediately call a POISON CENTER/doctor. Apply artificial respiration only if patient is not breathing but do not use mouth to mouth resuscitation.

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Continue irrigation until medical attention can be obtained. Immediately call a POISON CENTER/doctor.

IF IN EYES: Flush eyes with water for at least 15 minutes while holding eyelids open. Immediately call a POISON CENTER/doctor. Continue irrigation until medical attention can be obtained. Treatment by an ophthalmologist due to possible caustic burn of the eyes may be required.

IF SWALLOWED: rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER/doctor. Continue irrigation until medical attention can be obtained. Do NOT induce vomiting.

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

Treat symptomatically

IF IN EYES: Obtain prompt consultation, preferably from an ophthalmologist. Chemical eye burns may require extended irrigation.

## **SECTION 5: FIRE-FIGHTING MEASURES**

#### **Extinguishing media**

Suitable Extinguishing Media Unsuitable extinguishing Media

Special hazards arising from the chemical

Special protective equipment and precautions for fire fighters

Extinguish with carbon dioxide, dry chemical, foam or waterspray. Do not use water iet.

Not flammable. Reacts with metals liberating hydrogen. Reaction products may include hydrogen cyanide. May decompose in a fire giving off toxic fumes. Carbon monoxide, Carbon dioxide. May react with some metals including aluminum, magnesium, and zinc, resulting in evolution of phosphorus oxides. Fire fighters should wear complete protective clothing including self-contained breathing apparatus. Do not breathe fumes. Keep containers cool by spraying with water if exposed to fire. Avoid run off to waterways and sewers.

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Hazchem Code 2X

#### **SECTION 6: ACCIDENTAL RELEASE MEASURES**

Personal precautions, protective equipment and

emergency procedures

Ensure adequate ventilation. Stop leak if safe to do so. Use personal protective equipment as required. See Section: 8. Do not breathe vapour. Avoid all contact. Contaminated clothing should be laundered before reuse. Avoid contact during pregnancy/while nursing.

**Environmental precautions** 

Avoid release to the environment. Do not release undiluted and unneutralised to the sewer. Spillages or uncontrolled discharges into watercourses must be alerted to the Environment Agency or other appropriate regulatory body.

Methods and material for containment and cleaning

uр

Adsorb spillages onto sand, earth or any suitable adsorbent material. Transfer to a container for disposal. Cautiously neutralize remainder. Then wash away with plenty of water. Ventilate the area and wash spill site after material pick-up is complete. Dispose of this material and its container as hazardous waste

#### **SECTION 7: HANDLING AND STORAGE**

Precautions for safe handling Obtain special instructions before use. Do not handle until all safety precautions

have been read and understood. Ensure operatives are trained to minimise exposures. Avoid all contact. Do not breathe vapour. Avoid contact during pregnancy/while nursing. Ensure adequate ventilation. Use personal protective equipment as required. See Section: 8. Do not eat, drink or smoke when using

this product. Wash hands before breaks and after work.

Conditions for safe storage, including any

incompatibilities Storage temperature

Storage life

Incompatible materials

Store in a well-ventilated place. Keep container tightly closed. Keep cool. Keep away from heat, sources of ignition and direct sunlight.

Ambient. 5 - 25℃

Stable under normal conditions.

Copper, Aluminium, or Brass. Keep away from: Oxidizing agents and Acids. May

be corrosive to metals. (Aluminium, Copper and Zinc).

## **SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION**

## **Occupational Exposure Limits**

Chemical name	Synonym(s)	CAS No.	TWA (ppm)	TWA (mg/m³)	STEL (ppm)	STEL (mg/m³)	Advisory carcinogen category	Other advisory information	Notes
Diethylene triamine (DETA)	2,2'-Diaminodiethylamine 1,4,7-Tri-(aza)-heptane	111-40-0	1	4.2	-	-	-	Sk; Sen	-

Source: Safe Work Australia Workplace Exposure Standards for Airbourne Contaminants (2019)

Abbreviations:

Sk: Absorption through the skin may be a significant source of exposure.

Sen: Respiratory and/or Skin Sensitiser.

Biological exposure indicies Not established

ventilation. or Use appropriate containment. Atmospheric levels should be controlled in compliance with the occupational exposure limit. Guarantee that the eye flushing systems and safety showers are located close to the working

place.

Individual protection measures, such as personal protective equipment (PPE)

General hygiene measures for the handling of chemicals are applicable. Keep good industrial hygiene. Wash hands before breaks and after work. Keep work clothes separately. Do not eat, drink or smoke at the work place.

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Eye/face protection



Wear protective eye glasses for protection against liquid splashes. Wear eye protection with side protection (EN166).

Skin protection



#### Hand protection:

Wear impervious gloves (EN374). Protective index 6, corresponding > 480 minutes of permeation time according to EN 374. Gloves should be changed regularly to avoid permeation problems. Breakthrough time of the glove material: refer to the information provided by the gloves' producer. Neoprene or rubber gloves are recommended. Recommended: Polychloroprene - CR (Minimum thickness; 0.5mm), Nitrile rubber (Minimum thickness; 0.4mm)

#### **Body protection:**

148℃ [Closed cup] Not established.

Not established.

Not established.

Not established. 100% (Water)

Not established. <1 kPa at 20°C

 $0.98 \text{ g/cm}^3 \text{ (H2O} = 1)$ 

Wear impervious protective clothing, including boots, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Respiratory protection



In case of inadequate ventilation wear respiratory protection. Open system(s): Wear suitable respiratory protective equipment. A suitable mask with filter type A (EN141 or EN405) may be appropriate.

Thermal hazards Not applicable.

#### **SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

## Information on basic physical and chemical properties

Physical state Liquid Colour Yellow

Odour Amine-like Odour Melting point and freezing point Not established

Boiling point or initial boiling point and boiling range Not applicable - Liquid

Flammability

Lower and upper explosion limit or lower and upper

flammability limit Flash point

Auto-ignition temperature Decomposition temperature

рΗ

Kinematic viscosity

Solubility

Partition coefficient n-octanol/water (log value)

Vapour pressure

Density and Relative density

Relative vapour density

5 (Air = 1)Particle characteristics Not applicable (Liquid)

Additional parameters

2.83 (BuAc = 1)Evaporation rate Explosive properties Not explosive. Oxidising properties Not oxidising.

#### **SECTION 10: STABILITY AND REACTIVITY**

Reactivity Chemical stability Stable under normal conditions. Stable under normal conditions.

Flammable Limits (Lower) (%v/v): 1 @ 185℃

Flammable Limits (Upper) (%v/v): >6.4 @ 185℃

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Possibility of hazardous reactions Hazardous polymerisation will not occur.

Conditions to avoid Keep away from heat, sources of ignition and direct sunlight.

Incompatible materials Keep away from: Oxidizing agents and Acids. May be corrosive to metals.

(Aluminium, Copper and Zinc).

Hazardous decomposition product(s)

Decomposes in a fire giving off toxic fumes: Nitrogen oxides, Carbon monoxide

and Carbon dioxide.

#### **SECTION 11: TOXICOLOGICAL INFORMATION**

Information on toxicological effects

(Substances in preparations / mixtures)

**Acute toxicity** 

Inhalation

Dermal

Ingestion Acute toxicity (oral), Category 4; Harmful if swallowed.

Acute Toxicity Estimate Mixture Calculation: Estimated LD50 >300 - ≤2000

mg/kg bw/day.

Triethylenetetramine (TETA) Acute toxicity (oral), Category 4. (NICNAS IMAP Assessment)

2-Piperazin-1-ylethylamine Acute toxicity (oral), Category 4

LD50 (oral,rat) mg/kg: 1680 (Gigiena i Sanitariya, 1986)

Tetraethylenepentamine (TEPA) Acute toxicity (oral), Category 4. (NICNAS IMAP Assessment)

Diethylenetriamine (DETA) Acute toxicity (oral), Category 4. (NICNAS IMAP Assessment)

Acute toxicity (inhalative), Category 2; Fatal if inhaled.

Acute Toxicity Estimate Mixture Calculation: Estimated LD50 >0.5 - ≤2mg/l.

Triethylenetetramine (TETA) Acute toxicity (inhalative), Category 2 (NICNAS IMAP Assessment)

Tetraethylenepentamine (TEPA) Acute toxicity (inhalative), Category 2 (NICNAS IMAP Assessment)

Diethylenetriamine (DETA) Acute toxicity (inhalative), Category 2 (NICNAS IMAP Assessment)

Acute toxicity (dermal), Category 4; Harmful in contact with skin.

Acute Toxicity Estimate Mixture Calculation: Estimated LC50 >1000 - ≤2000

mg/kg bw/day.

Triethylenetetramine (TETA) Acute toxicity (dermal), Category 4. (NICNAS IMAP Assessment)

2-Piperazin-1-ylethylamine Acute toxicity (dermal), Category 3.

LD50 (rabbit, male): 8.66 mg/kg bw (Smyth et al, 1962)

Tetraethylenepentamine (TEPA) Acute toxicity (dermal), Category 4 (NICNAS IMAP Assessment)
Diethylenetriamine (DETA) Acute toxicity (dermal), Category 4 (NICNAS IMAP Assessment)

Skin corrosion/irritation Skin corrosion/irritation, Category 1A; Causes severe skin burns and eye

damage.

Triethylenetetramine (TETA) Skin corrosion/irritation, Category 1A

2-(2-Aminoethylamino)ethanol (AEEA) Skin corrosion/irritation, Category 1B

2-Piperazin-1-ylethylamine Skin corrosion/irritation, Category 1B Tetraethylenepentamine (TEPA) Skin corrosion/irritation, Category 1A

Diethylenetriamine (DETA) Skin corrosion/irritation, Category 1A

Serious eye damage/irritation Eye Damage/Irritation, Category 1

All components: Eye Damage/Irritation, Category 1 **Respiratory or skin sensitization**Skin sensitization, Category 1; May cause an allergic skin reaction.

All components: Skin sensitization, Category 1

Germ cell mutagenicity

Based upon the available data, the classification criteria are not met.

Carcinogenicity Based upon the available data, the classification criteria are not met.

Reproductive toxicity Reproductive toxicity, Category 1; May damage the unborn child. Suspected of

damaging fertility.

2-(2-Aminoethylamino)ethanol (AEEA) Reproductive toxicity, Category 1; May damage the unborn child. Suspected of

damaging fertility.

Test Result: NOAEL 250 mg/kg bw/day (OECD 421) Test Result: NOAEL 50 mg/kg bw/day (OECD 414)

2-Piperazin-1-ylethylamine Reproductive toxicity, Category 2

NOAEL 75 mg/kg bw/day (OECD 414)

**STOT - single exposure**Based upon the available data, the classification criteria are not met.

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STOT - repeated exposure Specific target organ toxicity — repeated exposure, Category 2; May cause

damage to organs through prolonged or repeated exposure.

2-Piperazin-1-ylethylamine Specific target organ toxicity — repeated exposure, Category 1; Causes damage

to organs through prolonged or repeated exposure: Respiratory tract

NOAEL (Oral) 2000 mg/l (OECD 422) NOEC (Inhalation) 0.2 mg/m³ (OECD 413)

Aspiration hazard Based upon the available data, the classification criteria are not met.

Information on likely routes of exposure

InhalationPossible route of exposure.IngestionUnlikely route of exposure.Skin ContactPossible route of exposure.Eye ContactUnlikely route of exposure.

Early onset symptoms related to exposure Fatal if inhaled. Harmful if swallowed. Harmful in contact with skin. Causes

severe skin burns and eye damage. May cause an allergic skin reaction.

**Delayed health effects from exposure**May damage the unborn child. Suspected of damaging fertility. May cause

damage to organs through prolonged or repeated exposure.

Exposure levels and health effects See section 8

Interactive effects None Known

Other information None Known

NTP Report on Carcinogens No components listed.

IARC Monographs No components listed.

## **SECTION 12: ECOLOGICAL INFORMATION**

Ecotoxicity Hazardous to the aquatic environment, Chronic, Category 3; Harmful to aquatic

life with long lasting effects.

Estimated Mixture LC50 >10 to  $\leq$  100 mg/l (Fish)

Triethylenetetramine (TETA) Hazardous to the aquatic environment, Chronic, Category 3

EC50 (Daphnia magna) 31.1 mg/l (48 hour) (Unnamed, 1989)

 $\hbox{2-Piperazin-1-ylethylamine} \quad \hbox{Hazardous to the aquatic environment, Chronic, Category 3}$ 

EC50 (Daphnia magna) 58 mg/l (48 hour) (OECD 202)

Tetraethylenepentamine (TEPA) Hazardous to the aquatic environment, Chronic, Category 2.

No data. EU Harmonised Classification

Persistence and degradability

No data for the mixture as a whole. Part of the components are poorly

biodegradable.

Triethylenetetramine (TETA) Not readily biodegradable. (OECD 301 D)

2-Piperazin-1-ylethylamine ECHA Registration Endpoint summary: Little or no biodegradation has been

observed (OECD 301 F)

Tetraethylenepentamine (TEPA) No data. EU Harmonised Classification

Bioaccumulative potential No data for the mixture as a whole. The product is predicted to have low

potential for bioaccumulation.

Triethylenetetramine (TETA) The substance has low potential for bioaccumulation. 2-Piperazin-1-ylethylamine The substance has low potential for bioaccumulation.

Tetraethylenepentamine (TEPA) No data. EU Harmonised Classification

Mobility in soil

No data for the mixture as a whole. The

No data for the mixture as a whole. The product is predicted to have high

mobility in soil. Soluble in water.

Triethylenetetramine (TETA) The substance is predicted to have high mobility in soil. 2-Piperazin-1-ylethylamine The substance is predicted to have low mobility in soil.

Tetraethylenepentamine (TEPA) No data. EU Harmonised Classification

Other adverse effects

None known

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## **SECTION 13: DISPOSAL CONSIDERATIONS**

Safe handling and disposal methods

This material and its container must be disposed of as hazardous waste.

Dispose of wastes in an approved waste disposal facility. Send after pretreatment to a appropriate hazardous waste incinerator facility according to

legislation. Do not reuse empty containers.

**Disposal of contaminated packaging**Containers of this material may be hazardous when empty since they retain

product residue. Handle contaminated packages in the same way as the

substance itself.

Environmental regulations Avoid release to the environment. Do not empty into drains, dispose of this

material and its container at hazardous or special waste collection point. Dispose of contents in accordance with local, state or national legislation.

#### **SECTION 14: TRANSPORT INFORMATION**

 ADG
 IMDG
 IATA/ICAO

 UN number
 UN 2259
 UN 2259
 UN 2259

Proper Shipping Name

TRIETHYLENETHETRA
MINE

TRIETHYLENETHETRA
MINE

TRIETHYLENETHETRA
MINE

MINE

MINE MINE MINE
Transport hazard class(es) 8 8 8
Packing group II II II

Environmental hazards Not classified Not classified as a Not classified

See Section: 2

Not applicable.

Marine Pollutant.

Special precautions for user

Transport in bulk according to Annex II of MARPOL

73/78 and the IBC Code

Hazchem code 2X

## SECTION 15: REGULATORY INFORMATION

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

International Regulations (for example)

Montreal Protocol/Stockholm Convention/ Rotterdam

Convention/ Basel Convention / MARPOL

**National Regulations** 

Australian Inventory of Chemical Substances (AICS)

NICNAS - Priority Existing Chemicals

NICNAS - IMAP Framework

All chemicals are not listed

All components are listed on AICS

All chemicals are not listed

Triethylenetetramine (TETA); 2-(2-Aminoethylamino)ethanol (AEEA) and Diethylenetriamine (DETA): Tier I: Environment Assessment & Tier II: Human

Health Assessment

Tetraethylenepentamine (TEPA): Tier II: Human Health Assessment

NICNAS - High Volume Industrial Chemical List

National Pollutant Inventory

The Standard for the Uniform Scheduling of Medicines

and Poisons (SUSMP)

All chemicals are not listed

All chemicals are not listed

#### SECTION 16: OTHER INFORMATION

The following sections contain revisions or new statements: not applicable – V1.0

Version: 1.0 Revision Date: not applicable – V1.0 Date of First Issue: 23/02/2021

#### References:

Safety Data Sheets for ingoing ingredients. National Industrial Chemical Notification and Assessment Scheme (NICNAS).

EU Data: Harmonised Classification(s) for Triethylenetetramine (TETA) (CAS No. 112-24-3), 2-(2-Aminoethylamino)ethanol (AEEA) (CAS No. 111-41-1), 2-Piperazin-1-ylethylamine (CAS No. 140-31-8), Tetraethylenepentamine (TEPA) (CAS No. 112-57-2) and Diethylenetriamine (DETA) (CAS

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No. 111-40-0). Existing ECHA registration(s) for 2-(2-Aminoethylamino)ethanol (AEEA) (CAS No. 111-41-1), 2-Piperazin-1-ylethylamine (CAS No. 140-31-8) and Diethylenetriamine (DETA) (CAS No. 111-40-0).

#### NICNAS IMAP Human Health Assessments:

TETA, TEPA and DETA: <a href="https://www.nicnas.gov.au/chemical-information/imap-assessments/imap-group-assessment-report?assessment\_id=1384">https://www.nicnas.gov.au/chemical-information/imap-assessments/imap-assessment-details?assessment\_id=2060</a>

#### Literature References

1. Smyth, HF, Carpenter, CP, Well, CS, Pozzani, UC & Stregel, JA (1962) Range-Finding Toxicity Data: List VI, p95-107.

The mixture is classified in accordance with Safe Work Australia model Work Health and Safety Regulations (2020) & GHS 7

#### **LEGEND**

ADG Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

IATA International Air Transport Association
IARC International Agency for Research on Cancer
ICAO International Civil Aviation Organization
IMDG International Maritime Dangerous Goods

LTEL Long term exposure limit

NICNAS National Industrial Chemicals Notification and Assessment Scheme

NTP National Toxicology Program

RID Regulations concerning the International Carriage of Dangerous Goods by Rail

STEL Short term exposure limit TWA Time Weighted Average

Training advice: Consideration should be given to the work procedures involved and the potential extent of exposure as they may determine whether a higher level of protection is required.

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