RE33 - PART A

Polyurethane Casting Resin

Material Safety Data sheet

Company Details

Name	AMT Composites	Emergency Phone Number	+27 11 392 4232
Address	6 Director Road	Tel	+27 11 392 4232
	Aeroport Spartan Ext 2	Fax	
	Kempton Park, 1619		
	South Africa		

1.Product and Company Identification:

Trade / Commercial Name	**RE33 PART A**		
Chemical Name	Polyether polyol blend		
Formula			
Chemical Family	Polyurethane polyol component		
Synonyms	RE33 PART A COMPONENT		
Un No		Hazchem Code	
ERG No.	0	EAC	

2.Hazards Identification:

GHS Classification according to SANS 10234:2019:
The product is not subject to identification regulations

Label elements: Not required

3.Composition:

Hazardous Components — Type of product: Mixture
Hazardous components: None

4.First Aid Measures

First Aid Skin	Wash with plenty of water and soap for at least 15 minutes.
First Aid Eyes	Flush eyes with water. Hold eyelids open while washing. Seek medical advice.
First Aid Ingested	Induce vomiting if large amounts are ingested. Seek medical advice.
First Aid Inhalation	Immediately remove person to fresh air.

5.Fire Fighting Measures

SMALL FIRES: Water Spray, Foam, Dry Chemical, CO2.
LARGE FIRES: Water spray, fog or standard foam is recommended. Move container from fire area if you can do so without risk.
Dike fire control water for later disposal; do not scatter the material.
Keep unnecessary personnel away; isolate hazard area and deny entry.
Stay upwind; keep out of low areas and ventilate closed spaces before entering.
Protection of fire fighters: Wear positive pressured self-contained breathing apparatus and protective firefighting clothing.

6.Accidental Release Measures

Evacuate unnecessary personnel.
Breathing apparatus for fire only.
Contain (avoid spillage from entering drains or water courses).
Restrict access to area.
Remove sources of heat and flame.
SPILL OR LEAK:
Do not touch spilled material.
Stop leak if you can do so without risk.
Cover and soak up with a suitable absorbent material and place into containers for later disposal.

7.Handling And Storage

Handling:
Observe the usual precautionary measures for handling chemicals
Storage:
Store in a cool, dry area.

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AMT HEAD OFFICE
JOHANNESBURG
TEL: +27 11 392 4232

AMT NATAL
DURBAN
TEL: +27 31 705 2034

AMT CAPE
CAPE TOWN
TEL: +27 21 511 2669

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Storage temperature regarding personal safety: max 50°C
Keep containers tightly closed, product is hygroscopic.
Keep separated from foodstuffs.

8.Exposure Controls/Personal Protection

Occupational Exposure Limits	Not established
Controls	The control measures appropriate for a particular worksite depend on how this material is used and on the extent of exposure. The best protection is to enclose operations and/or provide local exhaust ventilation at the site of substance release. Use a non-sparking, grounded ventilation system separate from other exhaust ventilation systems. Exhaust directly to the outside. Supply sufficient replacement air to make up for air removed. Have a safety shower/eye wash fountain readily available in the immediate work area.
Personal Protection	If engineering controls and work practices are not effective in controlling this material, then wear suitable personal protection equipment, including chemical safety goggles, boots and impervious gloves. RESPIRATORY PROTECTION: If process creates dust or fumes, wear NIOSH approved respirator. PROTECTIVE GLOVES: Impervious gloves EYE PROTECTION: Safety Goggles if processing. Have appropriate equipment available for use in emergencies. Keep working clothes separate. Wash hands before breaks and at end of work.

9.Physical & Chemical Properties

Clear viscous liquid, low odour
Relative Density: 1,00 (± 0,02) at 25 °C
Viscosity: 700 - 1 300 cPs at 25°C

Flash Point: ± 200°C (Pensky - Martens CC) (Not tested - Value for polyether polyol)

10.Stability And Reactivity

Conditions to Avoid	Stable under normal conditions. Do not heat above 50°C for protracted periods. Thermal decomposition does not occur until flash point is reached.
Incompatible Materials	
Other	Product is hygroscopic, may absorb moisture. Keep containers tightly closed.

11.Toxicological Information

EFFECTS OF ACUTE EXPOSURE:
Ingestion: Small amounts swallowed incidental to normal handling operations are not likely to cause injury.
Eyes: May cause slight eye irritation.
Inhalation: Non-hazardous at room temperature. Processing at high temperatures may generate vapour levels sufficient to cause irritation and other effects.
Skin: May cause slight irritation on skin.
A single prolonged exposure is not likely to result in the material being absorbed through the skin in harmful amounts.

12.Ecological Information

No information available on aquatic toxicity.
No ecological problems are expected when the product is handled and used with due care.
Do not allow to enter drains or surface waters.
The polyether polyol is expected to degrade only slowly in the environment.

13.Disposal Considerations

Disposal Method Product	Observe prevailing regulations and incinerate.
Disposal Method Packaging	Disposal in accordance with local legal provisions. Empty containers can only be disposed of when the remaining waste products adhering to the container

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JOHANNESBURG
TEL: +27 11 392 4232

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AMT NATAL
DURBAN
TEL: +27 31 705 2034

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CAPE TOWN
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walls have been removed. Remove all labels.
Packaging that cannot be cleaned is to be disposed of in the same manner as the product.

14.Transport Information

ERG No.	0	EAC	
IMDG-Shipping Name	NOT CONTROLLED SUBSTANCE		
IMDG Code	N/A	IMDG-Packaging Group	N/A
Marine Pollutant	No		
Class	Not Controlled		
Subsidiary Risks	None		

15.Regulatory Information

EEC Hazard Classification	
Risk Phrases	Harmful by inhalation, in contact with skin and if swallowed Danger of cumulative effects
Safety Phrases	Keep locked up and out of reach of children Keep away from food, drink and animal feed After contact with skin, wash immediately with plenty of water and soap Wear suitable protective clothing In case of accident or if you feel unwell, seek medical advice immediately and show the label where possible This material and its container must be disposed of as hazardous waste Avoid release into environment; refer to special instructions/material safety data sheet
National Legislation	National Road Traffic Act 1996 (Act 93 of 1996) Occupational Health and Safety Act 1993 (Act 85 of 1993) Hazardous Substances Act 1973 (Act 15 of 1973) SANS 10234:2019

16.Other Information

Reason for Alteration: GHS Classification
The information contained herein is based on the present state of our knowledge.
It characterizes the product with regard to the appropriate safety precautions.
It does not represent a guarantee of the properness of the product.
Date issued: 04/04/2006
Revision date: 01/10/2024
Revision No.: 2

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JOHANNESBURG
TEL: +27 11 392 4232

AMT NATAL
DURBAN
TEL: +27 31 705 2034

AMT CAPE
CAPE TOWN
TEL: +27 21 511 2669

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	Aeroport Spartan Ext 2	Fax	
	Kempton Park, 1619		
	South Africa		

1.Product and Company Identification:

Trade / Commercial Name	**HE33 CLF PART B**		
Chemical Name	Diphenylmethane diisocyanate prepolymer		
Formula			
Chemical Family	MDI based prepolymer		
Synonyms			
Un No		Hazchem Code	1[Z]
ERG No.	0	EAC	0

2.Hazards Identification:

GHS Classification according to SANS 10234:2019:

Acute toxicity (Inhalation)	Category 4 (H332)
Skin irritant	Category 2 (H315)
Eye irritant	Category 2A (H319)
Respiratory sensitization	Category 1 (H334)
Skin sensitization	Category 1 (H317)
Carcinogen	Category 2 (H351)
Specific target organ toxicity - SE (Inhalation)	Category 3 (H335)
Specific target organ toxicity - RE (Inhalation)	Category 2 (H373)

Label elements:
SYMBOL: Health hazard, Exclamation mark



Signal word: Danger

Hazard statements:
H332: Harmful if inhaled
H315: Causes skin irritation
H319: Causes serious eye irritation
H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled
H317: May cause an allergic skin reaction
H351: Suspected of causing cancer
H335: May cause respiratory irritation
H373: May cause damage to respiratory system through prolonged or repeated exposure by inhalation.

Precautionary statements (Prevention):
P261: Do not breathe vapours/spray.
P271: Use only outdoors or in well-ventilated area.
P264: Wash exposed skin thoroughly after handling.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P284: In case of inadequate ventilation, wear respiratory protection.
P272: Contaminated work clothing should not be allowed out of the workplace.

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TEL: +27 31 705 2034

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P201: Obtain special instructions before use.
P202: Do not handle until all safety precautions have been read and understood.

Precautionary statements (Response):
P304+341: IF INHALED: If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing.
P342+311: If experiencing respiratory symptoms: Call a doctor.
P302+352: IF ON SKIN: Wash with plenty of water and soap.
P333+313: If skin irritation or rash occurs: Get medical attention
P362+364: Take off contaminated clothing and wash it before re-use
P305+351+308: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+313: If eye irritation persists: Get medical advice.
P308+313: If exposed or concerned: Call a doctor.

Precautionary measures (Storage):
P405: Store locked up.
P403+233: Store in a well-ventilated place and keep the container tightly closed.

Precautionary statements (disposal):
P501: Dispose of contents/container in accordance with local regulations.

For their own protection, persons who suffer from hypersensitivity of the respiratory tract (e.g. asthmatics and chronic bronchitis sufferers) should avoid handling this product.
Symptoms affecting the respiratory tract can also occur several hours after over-exposure.
Vapours and aerosols are the primary risk to the respiratory tract.
Product will react with water and produce carbon dioxide which can lead to dangerous build-up of pressure in sealed containers.

Contains Diphenylmethane-4,4'-diisocyanate (CAS No.: 101-68-8) 50 - 60 %

3.Composition:

Hazardous Components: Type of product: Mixture
Mixture of below with non-hazardous additions:
Diphenylmethane-4,4'-diisocyanate (CAS No.: 101-68-8) 50 - 60 %

4.First Aid Measures

First Aid Skin: Wash with plenty of warm water and soap, but preferably with a cleanser based on polyethylene glycol. Consult a doctor in the event of a skin reaction. Soiled, soaked clothing and shoes must be immediately removed, decontaminated and disposed of.

First Aid Eyes: Flush eyes with lukewarm water for a sufficiently long period of time (10 minutes). Hold eyelids open while washing. Consult a doctor.

First Aid Ingested: Do not induce vomiting, consult a doctor.

First Aid Inhalation: If aerosol or vapour is inhaled in high concentrations: Remove person to fresh air and keep him warm, let him rest. If there is difficulty in breathing, consult a doctor.
Information for the physician: The product irritates the respiratory tract and may trigger sensitisation of the skin and respiratory tract. Treatment of acute irritation and bronchial constriction is primarily symptomatic. Extended medical care may be necessary, depending on the extent of the exposure and the symptoms.

5.Fire Fighting Measures

Extinguishing media: CO_2, Foam, Dry Chemical.
In cases of large fires, water spray should be used.
Formation of carbon monoxide, nitrogen oxide, isocyanate vapour and traces of hydrogen cyanide are possible in a fire.
Self-contained breathing apparatus for firemen.
Evacuate personnel located downwind.
Do not allow contaminated extinguishing water into the soil, groundwater or surface waters.

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JOHANNESBURG
TEL: +27 11 392 4232
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DURBAN
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CAPE TOWN
TEL: +27 21 511 2669

6.Accidental Release Measures

Small spills: Put on protective equipment (see paragraph 8).
Evacuate all persons from the area.
Avoid breathing of fumes.
Contain (avoid spillage from entering drains or water courses) and decontaminate.
Product will react with water and produce a solid polymer and carbon dioxide, the solid polymer is an insoluble product (polyurea).
Cover with damp, fluid-binding material (sand, sawdust or chemical binder based on calcium silicate hydrate).
Transfer to waste container after approx. 1 hour (CO_2 formation). Keep damp and in the open air in a safe place for 7 to 14 days.
Restrict access to area.
Waste should be disposed of as described in Chapter 13, "Advise on disposal".
Large spills: Evacuate all personnel not properly equipped with protective equipment and appropriate breathing apparatus.
Only experienced and properly trained personnel should be authorised to attempt to isolate and contain the spill.
Spilled material should not be washed down a drain, into a river or any surface water.
A 3 % protein-based foam can be sprayed over the material to reduce vapours until an effective decontamination material can be obtained.
Use a solution of 8 - 10 % sodium carbonate and 2 % liquid soap in water to decontaminate and to convert the residue into harmless polyurea polymer and carbon dioxide.

7.Handling And Storage

Handling:
Observe the usual precautionary measures for handling chemicals.
Avoid contact with skin.
In all areas where isocyanate aerosol and/or vapour concentrations are produced, exhaust ventilation must be provided in such a way that the OEL is not exceeded.
The air should be drawn away from personnel handling the product and the efficiency of the exhaust equipment should be periodically checked.
Storage:
Keep containers tightly closed and dry.
Keep separated from foodstuffs.
Prevent cooling below 20°C and heating above 40°C.
Protection against fire and explosion: Explosion protection not required.

8.Exposure Controls/Personal Protection

Occupational Exposure Limits	Diphenylmethane-4,4-diisocyanate: TWA OEL-RL: 0,005 ppm Short term OEL-RL: 0,02 ppm SENSITISER
Controls	The control measures appropriate for a particular worksite depend on how this material is used and on the extent of exposure. The best protection is to enclose operations and/or provide local exhaust ventilation at the site of substance release. Use a non-sparking, grounded ventilation system separate from other exhaust ventilation systems. Exhaust directly to the outside. Supply sufficient replacement air to make up for air removed. Spraying of the product and using the material at higher temperatures will increase the risk. Have a safety shower/eye wash fountain readily available in the immediate work area.
Personal Protection	If engineering controls and work practices are not effective in controlling this material, then wear suitable personal protection equipment. RESPIRATORY PROTECTION: Required at inadequately ventilated workplaces. If product is sprayed, wear air-fed mask or (for short periods only) a combination of charcoal filter and particulate filter mask (German type A2-P2). EYE PROTECTION: Safety Goggles/face protection. Suitable material for protective gloves: Polychloroprene - CR (>= 0,5 mm) Nitrile rubber - NBR (>= 0,35 mm) Butyl rubber - IIR (>= 0,5 mm) Fluorinated rubber - FKM (>= 0,4 mm)

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TEL: +27 11 392 4232
AMT NATAL
DURBAN
TEL: +27 31 705 2034
AMT CAPE
CAPE TOWN
TEL: +27 21 511 2669

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Polyvinylchloride - PVC (>= 0,5 mm)
Store working clothes separately.
Wash hands before breaks and at end of work.
Decontaminate, destroy and dispose of soiled protective clothing (see section 13).
Safety precautions for handling freshly moulded polyurethane parts:
Depending on the production parameters, any uncovered surfaces of polyurethane mouldings produced using this raw material may contain traces of substances (e.g. starting and reaction products, catalysts, release agents) with hazardous characteristics (e.g. harmful, irritating, corrosive, sensitising).
In order to prevent skin contact with the traces of these substances, fully buttoned work clothing and protective gloves whose palm and finger areas at least are coated on the outside with nitrile rubber, PVC or polyurethane should be worn when demoulding or handling the freshly moulded polyurethane parts.

9.Physical & Chemical Properties

Pale yellow liquid, low odour
Boiling Point: Polymerises at ± 200°C with evolution of CO2
Freezing Point: Approx. 5°C
Relative Density: 1,20 ± 0,02 @ 25°C
Vapour Pressure: Not tested
Value for MDI: < 0,00001 mbar @ 20 °C
Flash Point: Not tested; MDI > 170°C
Flammable Limits: Not determined
Not soluble in water.
Viscosity: 300 - 1 000 cps @ 25°C
pH: Not applicable

10.Stability And Reactivity

Conditions to Avoid	Stable at ambient temperatures. Thermal decomposition: Polymerises at ± 200°C with evolution of CO2.
Incompatible Materials	Reacts with water forming CO2, in closed containers risk of bursting due to increase of pressure. Exotherm reaction with alcohols and amines.
Other	In fire situations carbon monoxide, nitrous oxides, isocyanate vapours and a small amount of hydrogen cyanide can be produced.

11.Toxicological Information

Analogous to diphenylmethane-diisocyanate, isomers and homologues:
LD50 Oral, rat (female): >15 000 mg/kg
LC50 inhalation, rat: 490 mg/m³ as aerosol, 4 h exposure
Concentration of the saturated vapour of MDI at 25°C: 0,09 mg/m³
Skin contact: dermal LD50 (rabbit) > 9 000 mg/kg
Effects on humans by exposure to the product:
Eyes: Causes slight temporary reddening and swelling of the conjunctiva and slight reversable clouding of the cornea.
Skin: Irritant. In case of longer contact with skin, tanning and irritating effects are possible.
Respiratory tract: In high concentrations vapour of product has irritating effects on eyes and mucous membranes.
Special effects/properties: Experience on humans:
Irritation of the mucous membranes in the nose, throat and lungs, dryness of the throat, pressure on the chest, sometimes accompanied by breathing difficulties and headaches. Delayed appearance of the symptoms and allergic reaction in susceptible persons possible.
No detrimental effects to health are known where the product is handled properly and industrial hygiene precautions are observed.
EFFECTS OF CHRONIC EXPOSURE:
Carcinogen Category 2
May cause sensitisation by inhalation or skin contact.

12.Ecological Information

No ecological problems are expected when the product is handled and used with due care.
Immiscible with water. Reacts with water producing CO2 and forming a solid and insoluble product with high melting point (polyurea). This reaction is accelerated by surfactants (e.g. detergents) or by water soluble solvents. Previous experience shows that polyurea is non-degradable.

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JOHANNESBURG
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Can be slightly hazardous to water.
Biodegradability: 0 % after 28 days (respirometer test)
Acute fish toxicity: LC50 => 1 000 mg/l (Brachydanio rerio 96h)
Daphnia: EC50 => 1 000 mg/l (24h)
Acute bacteria toxicity: EC50 => 100 mg/l (Tested on activated sludge microorganisms 3h)

13.Disposal Considerations

Disposal Method Product	Product waste: May be transported to a controlled incinerator if local regulations are observed. Decontaminated waste (solid) can be disposed of in a landfill. Check with local authority.
Disposal Method Packaging	Disposal in accordance with local legal provisions. After containers have been emptied as thoroughly as possible (e.g. by pouring, scraping or draining until "drip-dry"), any product residue adhering to their walls has been rendered harmless, and the product and hazard labelling has been invalidated, they can be sent to an appropriate collection point set up within the framework of the existing take-back scheme of the chemical industry.

14.Transport Information

		Hazchem Code	1[Z]
ERG No.	0	EAC	0
IMDG-Shipping Name	NOT CONTROLLED SUBSTANCE		
IMDG Code	N/A	IMDG-Packaging Group	N/A
Marine Pollutant	No		
Class	Non-hazardous		
Subsidiary Risks	None		

15.Regulatory Information

EEC Hazard Classification	
Risk Phrases	Harmful by inhalation Irritating to eyes, respiratory tract and skin May cause sensitisation by inhalation and skin contact
Safety Phrases	Keep locked up and out of reach of children Do not breathe vapour/spray Wear suitable protective clothing and gloves In case of accident or if you feel unwell, seek medical advice immediately and show the label where possible
National Legislation	National Road Traffic Act 1996 (Act 93 of 1996) Occupational Health and Safety Act 1993 (Act 85 of 1993) Hazardous Substances Act 1973 (Act 15 of 1973) SANS 10234:2019

16.Other Information

Reason for Alteration: GHS Classification
The information contained herein is based on the present state of our knowledge.
It characterizes the product with regard to the appropriate safety precautions.
It does not represent a guarantee of the properness of the product.
Date issued: 15/10/2003
Revision date: 03/12/2024
Revision No.: 3

LAST PAGE

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AMT HEAD OFFICE
JOHANNESBURG
TEL: +27 11 392 4232
AMT NATAL
DURBAN
TEL: +27 31 705 2034
AMT CAPE
CAPE TOWN
TEL: +27 21 511 2669