

MATERIAL SAFETY DATA SHEET**1. IDENTIFICATION OF PRODUCT AND COMPANY**

Product: Ronadeck Resin Bound Surfacing Resin Part A
Company: Ronacrete (Far East) Ltd., 16/F, No. 3 Lockhart Rd,
Wanchai, Hong Kong SAR
Tel/Fax: +852 2865 5872 / +852 2865 5568

2. COMPOSITION

Chemical name	CAS	% by weight	Symbol	R-Phrases
Dibutyltin dilaurate	77-58-7	<5	Xn.n	36/38-48/22 50/53
2-(3-heptyl)-N-butyl-1,3 oxazolane	165101-57-5	<5	N	51/53
Xylene		<5	Xn	10-20/2, 38
Branded polyalcohol With Esten and Ethergroup		<95		Non hazardous To health and environment according to EC

3. HAZARDS IDENTIFICATION

This health hazard assessment is based on a consideration of the composition of this product. Possible risk of irreversible effect and harmful by inhalation. It may cause irritation to skin and eyes.

4. FIRST AID MEASURES

Inhalation: Remove patient from exposure. Rest, and obtain medical advice. **DO NOT SMOKE.**

Skin contact: Remove contaminated clothing. Wash skin with water. If symptoms develop, obtain medical attention.

Eye contact: Irrigate with flowing water immediately and continuously for 15 minutes. Consult medical personnel. This material may be difficult to remove from the eyes. Materials containing MDI may react with the moisture of the eye forming a thick material which may be difficult to wash from the eyes.

Ingestion: The decision of whether to induce vomiting or not should be made by an attending physician.

5. FIRE FIGHTING MEASURES

Extinguishing media: CO₂ chemical foam, powder. Water if no alternative.

Special exposure hazards: Product may give off toxic fumes in a fire. Wear breathing apparatus. Excessive heat and contamination with water should be avoided.

Protective Equipment: Breathing apparatus. Decomposition products could include Isocyanate and Hydrogen Cyanide.

Special Precautions: Pressure build up with possible rupture of closed containers. Increased vapour concentration of Isocyanate constituents.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Avoid contact with skin and eyes.

Environmental precautions: Do not release to the environment. Prevent from spreading and entering drains and sewers. Absorb and neutralise by recommended procedure.

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Methods for cleaning: Absorb spillages in sand or any suitable absorbent material. Transfer to a controlled area and add approximately 5% of Decontaminant (supplied by Adhesives & Sealants Ltd). Allow to react and form a solid mass and dispose of in accordance with local regulations.

7. HANDLING AND STORAGE

Handling: Do not breathe fumes/vapour/spray. In case of insufficient ventilation, wear suitable respiratory equipment. If spraying use mask and gloves as advised in section 8. Persons with a history of skin sensitisation problems should not be employed in a situation where skin contact with this product could occur, nor should those with asthma or similar disorders be exposed to the vapour or spray mist. Good standards of industrial and personal hygiene should be observed.

Storage: Store between 5°C and 25°C. Shelf life is 6 months. Keep away from frost. Containers should always be kept upright and tightly sealed to avoid leaking. Open only when ready for use and reseal part used containers after use. Store in a well labeled container preferably the original container. Keep containers cool, tightly closed and away from sources of ignition.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure controls: Tin compounds (organic) 8 hour TWA OES 0.1mg/m³ 10 min TWA OES 0.2mg/m³ Organic tin compound can be absorbed through the skin.

Ingredient: Xylene 441mg/m³
2-(3-heptyl)-N-Butyl-1,3 oxazolane , 8 hour ppm, TWA mg/m³, 15 min ppm, STEL mg/m³
Biological monitoring guidance values.

Personal Protection: Avoid contact with skin and eyes. Do not breathe vapour. Use only in well-ventilated areas.

Respiratory Protection: Normal conditions of ventilation are usually adequate. Wear a fine particle mask or use local exhaust ventilation as necessary when using in confined areas with inadequate ventilation or whenever there is any risk of the exposure limits being exceeded. This applies not only to the user, but to all people who cannot be vacated from the work area.

Hand Protection: Use protective gloves. Suitable types are PVC, neoprene or nitrile. Other types may be available and used, avoid those which soak up the product and lead to skin contact. If in doubt seek advice from a reputable manufacturer. Barrier creams may help to protect exposed areas but are not substitutes for full physical protection. They should not be applied once exposure has occurred. Gloves may degrade or be damaged according to different circumstances of use. Always ensure the gloves you are using are in good condition.

Eye Protection: Eye protection designed to protect against liquid splashes should be worn, e.g. complete enclosure of the eyes to conform to EN 166 Chemical Grade.

Skin Protection: Cotton or cotton/synthetic overall or coveralls are normally suitable. Grossly contaminated clothing should be removed and the skin washed with soap and water to proprietary skin cleaner.

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9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Yellowish
Odour:	Oily
Boiling point:	127°C
Flash point:	Flash point 25°C
Solubility:	Immiscible with water but possible reaction with liberation of CO ₂ gas.
Viscosity at 23°C:	Liquid
Specify Gravity:	1.01g/cm ³

10. STABILITY AND REACTIVITY

Stability:	Stable in closed containers at normal temperatures and pressures.
Conditions to avoid:	Excessive heat
Materials to avoid:	Water
Hazardous decomposition products:	Products formed in the event of fire include hydrochloric acid, isocyanates, traces of phosgene and hydrogen cyanide.

11. TOXICOLOGICAL INFORMATION

Inhalation: Solvent:	Dizziness, nausea, and eventual loss of consciousness
Isocyanate:	Irritation sensitisation with asthmatic symptoms
Ingestion:	Rapid evaporation of solvent with aspiration into lungs. Irritation and possible solidification due to reaction with moisture.
Skin contact:	Defatting. Irritation and possible dermatitis.
Eye contact:	Irritation and possible serious damage.
Long term effects:	No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity:	Do not release to the environment without neutralizing. This material is not hazardous.
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13. DISPOSAL CONSIDERATIONS (Applicable to both resin and hardener)

Dispose in accordance with local and state regulations.

14. TRANSPORT INFORMATION (Applicable to both resin and hardener)

Haz Class:	Xn Harmful
UN. No	2810
ADR / RID Class:	6.1 ADR It 25c
IATA Class:	N/A
Packing Group:	III
IMO Class:	
IMDG Code:	6.1
"Marine Pollutant":	
"Proper Shipping Name":	Diphenylmethane – 4,4'-Diisocyanate Solution
Additional information	

15. REGULATORY INFORMATION

Classification:	R10; Xn; R20/21 Xi; R36/37/38 Xn; R42/43
Risk Phrases:	R10: Flammable
	R20/21: Harmful by inhalation and in contact with skin.
	R36/37/38: Irritating to eyes, respiratory system and skin
	R42/43: May cause sensitisation by inhalation and skin contact.

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Safety phrases:	P4:	Contains isocyanates. See information supplied by the manufacturer.
	S23:	Do not breathe vapour.
	S24/25:	Avoid contact with skin and eyes.
	S26:	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
	S36/37:	Wear protective clothing and gloves.
	S38:	In case of insufficient ventilation, wear suitable respiratory equipment.
	S45:	In case of accident or if you feel unwell, seek medical advice immediately, (show label where possible).
	S60:	This material and its container must be disposed of as hazardous waste.

Non-EEC Countries:

16. OTHER INFORMATION

This Material Safety Data Sheet conforms to EC Directives 91/155/EEC and 93/112/EC.
The information given here is to the best of our knowledge true and accurate and is provided solely for making safety assessments. It is not a sales specification or an indication of suitability for a particular use.

MATERIAL SAFETY DATA SHEET**1. IDENTIFICATION OF PRODUCT AND COMPANY**

Product: Ronadeck Resin Bound Surfacing Resin Part B
Company: Ronacrete (Far East) Ltd., 16/F, No. 3 Lockhart Rd,
Wanchai, Hong Kong SAR
Tel/Fax: +852 2865 5872 / +852 2865 5568

2. COMPOSITION

Chemical name: Hexamethylene diisocyanate oligomers (*)
Synonyms: Aliphatic polyisocyanate.
Hexamethylene diisocyanate homopolymer (*)
Further data: EC N° :500-060-2 (*)
CAS number: 28182-81-2 (*)
Hazardous impurities: Hexamethylene diisocyanate (CAS:822-06-0): - (EC N°:
212-485-8): < 0.2% - EC Classification: T – R 23-36/37/38-42/43 (*)

3. HAZARDS IDENTIFICATION

Adverse human health effects: May cause eye irritation
May cause sensitization by skin contact
Environmental effects: Presents no particular risk to the environment, provided the disposal requirements and national or local regulations are complied with. (*)
Physical and chemical hazards:
Fire or explosion: Combustible liquid.
Further hazards:
On contact with water: Carbon dioxide is released.
Hazardous reactions occur on contact with many common products.
(Refer to the list of incompatible materials section 9: "Stability-Reactivity").
Classification/specific hazards: According to EC criteria, this product is classified as – Sensitizing.

4. FIRST AID MEASURES

Inhalation: Vapours or aerosols: Move the affected person away from the contaminated area. Make the affected person rest. If breathing difficulties persist, give oxygen (by authorized personnel). Place under medical observation.
Skin contact: Remove contaminated clothing and footwear. Wash immediately with plenty of soap and water.
Eye contact: Immediately rinse with water for a prolonged period whilst keeping the eyes wide open. Always refer to an eye specialist, even if there are no immediate symptoms.
Ingestion: If the person is fully conscious, try to induce vomiting. Call a doctor who will decide whether a stomach wash-out is necessary.

MATERIAL SAFETY DATA SHEET**5. FIRE FIGHTING MEASURES**

Extinguishing media: Suitable:	Foam Powder Carbon dioxide CO ₂
Not suitable:	Water
Special hazards:	Combustible. During combustion toxic vapours are released.
Specific fire fighting methods:	Stay upwind. Evacuate the personnel away from the fumes In case of fire close by: Cool down the containers/equipment exposed to heat with a water spray. Ensure that there is No direct contact between the water and the product.
Protection of fire-fighters:	Self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions:	Avoid contact with skin and eyes. Do not breathe gas.
Personal protection equipment:	- Appropriate gloves - Safety glasses - Suitable protective clothing
Environmental precautions:	Contain the spilled material by bunding.
Methods for cleaning:	Absorb the product onto porous material. Wash contaminated area with large amounts of water. Recover the cleaning water for subsequent disposal. For disposal of solid materials or residues refer to section 12: "Disposal considerations"

7. HANDLING AND STORAGE

Handling Technical measures:	Closed system, ventilation.
Measures:	Avoid contact with water or humidity.
Safe handling advice:	Comply with instructions for use (refer to technical sheet)
Storage: Technical measures:	The floor of the depot should be impermeable
Storage conditions:	To guarantee the quality and properties of the product keep in a cool, well ventilated area. Keep the container tightly closed and dry and only in the original container.
Packaging:	Product must only be kept in the original packaging
Packaging materials: Recommended:	- Aluminium - Steel
Not suitable:	- Copper and its alloys - Tin

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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering measures:	Ensure good ventilation of the work station.
Control parameters Occupational exposure limits:	
Limits (France):	The recommended limits SHOULD NOT be exceeded at any point during exposure. VME: 0.075mg/m ³ (0.01ppm) VLE: 0.15mg/m ³ (0.02ppm) (for HDI). VLE: 1mg/m ³ . (for the HDI prepolymer).
Limits (USA/ACGHI)	TLV (TWA): 0.034mg/m ³ (0.005ppm). (for HDI).
Personal protective equipment Respiratory protection:	When using a spray gun wear self contained breathing apparatus.
Hand protection:	Protective gloves made of rubber.
Eye protection:	Safety glasses.
Skin and body protection:	Protective clothing.
Collective emergency Equipment:	- Safety shower. - Eye fountain
Hygiene measures:	Always take a shower after work. Do not drink, eat or smoke in the workplace. Separate normal clothes from work clothes.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical state:	- Liquid
Form:	- Clear
Colour:	- Colourless to pale yellow
Odour:	- None
pH:	- Not applicable (reacts with water)
Specific temperatures Boiling:	- > 220°C at 1.33 hPa.
Flammability characteristics Flash Point:	166°C (closed cup, according to method ASTM D 93)
Auto-ignition temperature:	460°C (spontaneous ignition temperature)
Oxidizing properties:	Non oxidizing material according to EC criteria.
Specific gravity:	1160kg/m ³ at 25°C
Solubility In water:	Reacts
In organic solvents:	Soluble in: - Ketones - Esters - Chlorinated solvents - Aromatic hydrocarbons

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Octanol/water partition
Coefficient: Not applicable: reacts with water
Dynamic viscosity: Approx 2400 mPa.s at 25°C

10. STABILITY AND REACTIVITY

Stability: Store at room temperature

Hazardous reactions
Materials to avoid: Reacts violently on contact with water, alcohols, amines, bases, protic solvents, water and aqueous solutions. With a great release of CO₂ and hence a risk of a pressure build-up in confined areas. Forms an insoluble solid precipitate.

Hazardous decomposition: On thermal decomposition (pyrolysis) releases:
Toxic gases
(Carbon dioxide (CO₂)).

11. TOXICOLOGICAL INFORMATION

Acute toxicity: LD50 (Oral, Rat) :> 5000mg/kg
(Unpublished reports) (*)

Local effects: At high concentrations, the vapours can be irritating to the respiratory system.
Repeated or prolonged contact may cause slight irritation to the skin.
May cause irritation to the eyes.

Sensitisation: Cutaneous sensitizer for guinea-pigs, when tested using the Magnusson and Klingman method.
No pulmonary sensitisation was observed in guinea-pigs after either intradermal injection or inhalation induction with HDI polyisocyanates.
(unpublished reports)

12. ECOLOGICAL INFORMATION

Mobility: Expected behaviour of the product: Ultimate destination of the product: SOIL and SEDIMENT.

Biodegradability:
Ultimate aerobic
biodegradability: Not biodegradable (internal evaluation) (*)

Bioaccumulation:
Bioconcentration factor: Not bioaccumulable. (internal evaluation) (*)

Ecotoxicity:
Effects on the aquatic
environment: EC50 (Daphnia: Daphnia magna) / 24h : > 100% saturated aqueous solution. (unpublished internal reports)
The product does not have any known adverse effects on the aquatic organisms tested. (*)

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13. DISPOSAL CONSIDERATIONS (Applicable to both resin and hardener)

Waste from residues: Prohibition:	Discharging waste into rivers and drains is forbidden.
Destruction/Disposal:	Neutralize with a mixture of ammonia solution (190g/l), water and ethanol (5%, 50% and 45%). Incinerate at a licensed installation.
Contaminated packaging: Decontamination/cleaning:	Allow it to drain thoroughly.
Destruction/disposal:	Incinerate drums and bottles at licensed site.
Note:	The users attention is drawn to the possible existence of local regulations regarding disposal.

14. TRANSPORT INFORMATION (Applicable to both resin and hardener)

International regulations: Land:	
- Rail/road (RID/ADR):	Not restricted
Sea (IMO/IMDG):	Not restricted
Air (ICAO-IATA):	Not restricted

15. REGULATORY INFORMATION

Labelling: EC regulations:	Mandatory labelling (self-classification) of hazardous substances: Applicable.
Identification of hazardous product:	Ronadeck Tree Pit Resin UV Part B Hexamethylene diisocyanate oligomers EC No. : 500-060-2. (*)
Classifications/symbols:	IRRITANT (Xi)
R phrases: S phrases:	R 43: May cause sensitization by skin contact. S 7/8: Keep container tightly closed and dry. S 24: Avoid contact with skin. S 37: Wear suitable gloves.
Further regulations: France:	> Maladies professionnelles: concerné Tableau n° 62
Note:	The regulatory information given above only indicates the principle regulations specifically applicable to the product described in the Safety Data Sheet. The users attention is drawn to the possible existence of additional provisions which complete these regulations. Refer to all applicable national, international and local regulations or provisions.

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16. OTHER INFORMATION

Uses: This product is used mainly as a hardener in coating materials or adhesives. The handling of coating materials or adhesives containing reactive polyisocyanates and residual monomeric HDI requires appropriate protective measures referred to in this safety data sheet. These products may therefore be used only in industrial or trade applications.
They are not suitable for use in homemaker (DIY) applications (*)

Chemical formula: (C8 H12 N2 O0)x

R phrases of § 2 & 3: R 23: Toxic by inhalation
R 36/37/38: Irritating to eyes, respiratory system and skin.
R 42/43: May cause sensitisation by inhalation and skin contact. (*)

* Update: This sheet was updated on 10/07/07.
Subheadings and text which have been modified since the previous version are indicated with an asterisk (*).

Health and Safety at Work Act 1974.

HSE Occupational Exposure Criteria Document Summaries 1993 Edition (ISBN 0118821202).

Control of Substances Hazardous to Health (Regulations) 1988.

HSE Guidance Note EH26 (Occupational Skin Diseases - Health and Safety Precautions - HMSO 1981).

HSE Guidance Note EH40 (Occupational Exposure Limits).

Ronadeck Resin Bound Surfacing contains chemical additives in such small concentrations they are not considered hazardous to health.
