



MID (China) Composite Company Limited

米德(中国)复合材料有限公司

编号: EAD1807b1~4A

PRODUCT NAME: 1807 II

DESCRIPTION:

1807 II adhesive is a high strength, two component, Epoxy Resin system designed primarily for core bonding and composite to composite bonding of large laminates. It is ideally suited for the bonding of main load bearing structures in Wind Turbine Blade assembly. It is available in different curing speeds allowing processing over a large range of ambient temperatures.

APPEARANCE:

1807 II - AB (Epoxy Resin)

| | |
|-----------------------------------|------------------------------|
| Viscosity at 20 °c (ISO 12058-1B) | 40,000 – 60,000 mPa s |
| Density at 20 °c (ISO 1675) | 1.1 – 1.18 g/cm ³ |
| Flash Point (ISO 2719) | > 120 °c |

1807 II -AHA (Adhesive Hardener)

| | |
|-----------------------------------|-------------------------------|
| Viscosity at 20 °c (ISO 12058-1B) | 20,000 – 40,000 mPa s |
| Density at 20 °c (ISO 1675) | 1.22 – 1.26 g/cm ³ |
| Flash Point (ISO 2719) | > 120 °c |

APPLICATION DATA: Mixing

| | |
|------------------------|--|
| Mixing Ratio by weight | 100 Parts 1807 II resin to 50 Parts 1807 II hardener |
| Mixing Ratio by Volume | not recommended |

The components should be mechanically mixed thoroughly at medium speed ensuring that no unnecessary air is entrained. Both sides and bottom of container should be scraped during mixing process.

APPLICATION DATA:

Working Temperature

Geltime /Peak Exotherm 20 mm Glue Line

| | | 15 °c | 20 °c | 28 °c | 35 °c | 40 °c |
|---------------------|-------------|---------------|--------------|--------------|--------------|--------------|
| Hardener EAD1807b1A | 13 °C~20 °C | 110 min/25 °c | 60 min/40 °c | | | |
| Hardener EAD1807b2A | 20 °C~28 °C | | 90 min/27 °c | 65 min/70 °c | | |
| Hardener EAD1807b3A | 28 °C~37 °C | | | 95 min/31 °c | 50 min/80 °c | |
| Hardener EAD1807b4A | 35 °C~45 °C | | | | | 90 min/80 °c |

PHYSICAL PROPERTIES: 16 Hours 40 °c

Tensile Test (ISO 527)

| | |
|---------------------|------------------------|
| Strength | 45 N/mm ² |
| Modulus | 2150 N/mm ² |
| Ultimate Elongation | 9.20% |

Flexural Test (ISO 178)

| | |
|---------------------|-------------------------|
| Strength | 82.70 N/mm ² |
| Modulus | 2150 N/mm ² |
| Ultimate Elongation | 5.90% |

DSC (ISO 11357)

| | |
|---------------------|-------|
| Enthalpy Relaxation | 54 °c |
| Tg | 61 °c |

Date of Printing: 2008-7-2 supersedes all previous issues

IMPORTANT NOTE:

The specification listed above is given to the best of our knowledge, however, it is given without any warranty expressed or implied. The specification is subject to change without notice. Consult QUALITY CONTROL REPORT available for each Batch for actual results. Consult MATERIAL SAFETY DATA SHEET for handling of material.



MATERIAL SAFETY DATA SHEET

Section 1 – Identification of Chemical Product

Product Name: 1807 II -AB

Product Use: In conjunction with epoxy hardeners for adhesive Civil Engineering.

Description: Modified Epoxy Resin

Manufacturer's Code: F419

Section 2 – Hazards Identification

This product is classified as: Hazardous according to criteria of Worksafe Australia

U.N. Number: None

Hazchem Code: Not applicable

Poisons Schedule: 5

Dangerous Goods Class: None

Risk: Irritant



| | | |
|----------------------|--------|--|
| RISK PHRASES: | R20/22 | Harmful by inhalation, and if swallowed. |
| | R36/38 | Irritating to eyes and skin |
| | R43 | May cause sensitisation by skin contact |

| | | |
|------------------------|--------|---|
| SAFETY PHRASES: | 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. |
| | S28 | Do not breathe vapour |
| | S37/39 | Wear suitable protective gloves and eye/face protection. |

Section 3 – Composition / Information on Ingredients

HAZARDOUS INGREDIENTS

| Chemical Entity | C.A.S. No. | Haz | R-phrases | Concentration |
|---|-------------|-----|------------|---------------|
| Epoxy resin | 025085-99-8 | Xi | R36/38-R43 | >60% |
| Butanediol Diglycidyl ether | 002425-79-8 | Xi | R20/22 | 10% - 30% |
| Non hazardous ingredients or those below cut off limits | | | | too 100% |

Section 4 – First Aid Measures

Inhalation: If effects occur, remove to fresh air. Seek Medical attention.

Skin Contact: Wash skin thoroughly with soap and flowing water for 15 minutes. **DO NOT** use solvents to remove product from skin. It is recommended to remove contaminated clothing immediately. Wash clothing thoroughly before re-use. Discard contaminated footwear.

Eye Contact: Hold eyes open and wash thoroughly with flowing water for 15 minutes. Seek prompt medical attention by a doctor.

Swallowed: Do **NOT** induce vomiting. Give glass of water. Call a doctor and/or transport to a hospital promptly.

ADVICE TO DOCTOR

No specific antidote. Supportive care. Treatment based on the judgement of the doctor in response to the reactions of the patient. Skin contact may cause dermatitis; treat as any contact dermatitis.



Section 5 – Fire Fighting Measures

FLAMMABILITY

Non-Flammable liquid. Will support combustion.

Flash Point: > 120 Deg C PMCC

Flammability Limits: N/A

Hazchem Code: Not

FIRE/EXPLOSION HAZARD

Extinguish with foam, water, dry chemical or carbon dioxide. Drums may rupture when exposed to fire conditions. Wear positive pressure self-contained breathing apparatus. Decomposition products include phenolics, carbon monoxide and water.

Section 6 – Accidental Release Measures

SPILLS AND DISPOSAL

Soak up in an absorbent material, such as sand, sawdust or absorbent clay. Place in secure container for disposal. Burn in an adequate incinerator or bury in an approved landfill in accordance with State and/or Local government regulations.

Section 7 – Handling & Storage

HANDLING

Refer to Section 8 of this MSDS for details of personal protection measures.

STORAGE

Store in cool place away from heat and ignition sources. Keep partially used product containers closed. Store away from foodstuffs, clothing and keep out of reach of children. Store away from amines.

Section 8 – Exposure Controls / Personal Protection

EXPOSURE LIMITS: Not established for product or individual components.

VENTILATION: Provide general and / or local exhaust Ventilation, depending on type of operations, to control airborne exposures.

PERSONAL PROTECTIVE EQUIPMENT

Respiratory: Not required for normal operations. For emergency conditions, use an approved positive pressure self-contained breathing apparatus.

Hands: Wear body-covering clothing. Protect hands with impervious gloves when handling or using this product. Wear boots.

Eyes: Wear chemical goggles. Eye wash facilities should be located in the immediate work area. Selection and the use of personal protective equipment should be in accordance with the recommendations in one or more of the relevant Australian Standards, including:

- | | |
|--------------|---|
| AS 1336: | Recommended practices for eye protection in the industrial environment. |
| AS/NZS 1337: | Eye protectors for industrial application. |
| AS/NZS 1715: | Selection, use and maintenance of respiratory protective devices. |
| AS 2161: | Industrial safety gloves and mittens (excluding electrical and medical gloves). |
| AS/NZS 2210: | Occupational protective footwear. |
| AS 2919: | Industrial clothing. |

BIOLOGICAL LIMIT: No biological limit allocated

Section 9 – Physical & Chemical Properties



Appearance: Clear Paste

Odour: Not available

pH: Not Determined

Vapour Pressure: Not Determined

Vapour Density: Not Determined

Auto Ignition: Not Determined

Percent Volatile: < 1%

Specific Gravity: 1.12

Flammability Limits: N/A

Boiling Point: Not Determined

Flash Point: > 120 Deg C PMCC

Section 10 – Stability & Reactivity

STABILITY / INSTABILITY

Stable under recommended storage conditions. Refer to Section 7 of this MSDS.

Conditions to Avoid: Avoid temperatures above 300°C (572°F) Potentially violent decomposition can occur above 350°C (662°F) Generation of gas during decomposition can cause pressure in closed systems. Pressure build-up can be rapid.

Incompatible Materials: Avoid contact with oxidizing materials. Avoid contact with: Acids, Bases. Avoid unintended contact with amines.

HAZARDOUS POLYMERISATION

Will not occur by itself. Masses of more than one pound (0.5 kg) of product plus an aliphatic amine will cause irreversible polymerization with considerable heat build-up.

THERMAL DECOMPOSITION

Decomposition products depend upon temperature, air supply and the presence of other materials. Gases are released during decomposition. Uncontrolled exothermic reaction of epoxy resins release phenolics, carbon monoxide, and water.

Section 11 – Toxicological Information

Short Term Hazards (Acute Exposure):

Inhaled: Not expected to be an inhalation hazard by this route, due to the low vapour pressures of the components at ambient temperatures.

Skin Contact: A single prolonged exposure is not likely to result in the material being absorbed through the skin in harmful amounts.

Eye Contact: May cause slight transient (temporary) eye irritation. Corneal injury is unlikely.

Swallowed: Acute oral toxicity has not been determined. Acute oral toxicity (rat) for components of this product are each in excess of 2000 mg/kg.

Long Term Hazards (Chronic Exposure):

Inhaled: Prolonged exposure to high concentrations of vapour may affect the central nervous system.

Skin Contact: Product may be a skin sensitizer in some individuals.

Eye Contact: Corneal injury.

Systematic and other effects: Diglycidyl ether of Bisphenol A (Base epoxy resin) that is representative of the current manufacturing process is not believed to be a cancer hazard to humans. Did not cause birth defects or other adverse effects on the foetus when pregnant rabbits were exposed by skin contact, the most likely route of exposure. Results of mutagenicity tests in animals have been negative. Has been shown to be negative in some "in vitro" (test tube) mutagenicity tests and positive in others.

Section 12 – Ecological Information

Movement & Partitioning: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5). Potential for mobility in soil is low (Koc between 500 and 2000).

Persistence and Degradability

Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.

Ecotoxicity: Material is toxic to aquatic organisms (LC50/EC50/IC50 between 1 and 10 mg/L in most sensitive species).



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编号: EAD1807b1~4A

Section 13 – Disposal Considerations

Disposal: Place in secure container for disposal. Burn in an adequate incinerator or bury in an approved landfill in accordance with State and/or Local government regulations.

Section 14 – Transport Information

This product is not classified as a dangerous good in the Australian Dangerous Goods Code by reference to a specific substance name or a generic substance name or group.

U.N. Number: None

Dangerous Goods Class: None

Section 15 – Regulatory Information

AICS: All of the significant ingredients in this formulation are compliant with NICNAS regulations.

Section 16 – Other Information

ACRONYMS

AICS: Australian Inventory of Chemical Substances

CAS Number: Chemical Abstracts Service Registry Number

Hazchem Code: Emergency action code that provides information to emergency services

UN Number: United Nations Number

Date of issue: 2008-7-2

IMPORTANT NOTE:

Data quoted is typical for the product, but does not constitute a specification, and is based on the most accurate information available to MID (Tianjin) at the time of writing. All information contained herein is given in good faith, but is subject to change without notice.

This MSDS has been prepared in alignment with the NOHSC document *National Code of Practice for the Preparation of Material Safety Data Sheets 2nd Edition* [NOHSC: 2011(2003)]



MATERIAL SAFETY DATA SHEET

Section 1 – Identification of Chemical Product & Company

Product Name: 1807 II -AHA
Product Use: Curing agent for Epoxy Resin Adhesives
Description: Formulated polyamine
Manufacturer's Code: F529

Section 2 – Hazards Identification

This product is classified as: Hazardous according to criteria of Worksafe Australia

U.N. Number: 1760
Hazchem Code: 2X
Poisons Schedule: 5

Dangerous Goods Class: 8
Subsidiary Risk: None



| | | |
|------------------------|--|---|
| RISK PHRASES: | R21/22 R34 R43 | Harmful by contact with skin and if swallowed. Causes burns May cause sensitisation by skin contact |
| SAFETY PHRASES: | S24/25 S26 S36/37/39 S38 S45 | Avoid contact with skin and eyes. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing, gloves and eye face protection. In case of insufficient ventilation, wear suitable respiratory equipment. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible) |

Section 3 – Composition / Information on Ingredients

HAZARDOUS INGREDIENTS

| Chemical Entity | C.A.S. No. | Haz | R-phrases | Concentration |
|---|-------------|-----|----------------|---------------|
| Triethylenetetramine | 000112-24-3 | C | R21/22-R34-R43 | 10% - 30% |
| Polyoxyalkyleneamine | 009046-10-0 | C | R34 | 10% - 30% |
| Non hazardous ingredients or those below cut off limits | | | | to 100% |

Section 4 – First Aid Measures

Inhaled: If effects occur, remove to fresh air. Seek Medical attention.

Skin Contact: Wash skin thoroughly with soap and flowing water for 15 minutes. **DO NOT** use solvents to remove product from skin. It is recommended to remove contaminated clothing immediately. Wash clothing thoroughly before re-use. Discard contaminated footwear. Obtain medical attention promptly.

Eye Contact: Hold eyes open and wash thoroughly with flowing water for 15 minutes. Seek prompt medical attention by a doctor.

Swallowed: Do **NOT** induce vomiting. Give glass of water. Call a doctor and/or transport to a hospital promptly.



ADVICE TO DOCTOR

Main ingredient of this formulation is corrosive to tissue. If product in eyes, check for corneal injury.

The decision of whether to induce vomiting should be made by the attending physician. If burn present, suggest treatment as a thermal burn after decontamination. Human effects not established for this product. No specific antidote. Treatment based on the sound judgement of the physician and the individual reactions of the patient.

Section 5 – Fire Fighting Measures

FLAMMABILITY

Non-Flammable liquid. Will support combustion.

Flash Point: 120 Deg C PMCC

Hazchem Code: 2X

Flammability Limits: Not. Determined

FIRE/EXPLOSION HAZARD

Extinguish with foam, water, dry chemical or carbon dioxide. Drums may rupture when exposed to fire conditions. Ammonia is a product of decomposition. Wear positive pressure self-contained breathing apparatus. The amine type component of this product will decompose at temperatures above 260 Deg C and generate ammonia.

Section 6 – Accidental Release Measures

SPILLS AND DISPOSAL

Soak up in an absorbent material, such as sand, sawdust or absorbent clay. Place in secure container for disposal. Burn in an adequate incinerator or bury in an approved landfill in accordance with State and/or Local government regulations.

Section 7 – Handling & Storage

HANDLING

Refer to Section 8 of this MSDS for details of personal protection measures.

STORAGE

Store in cool place away from heat and ignition sources. Keep partially used product containers closed. Store away from foodstuffs, clothing and keep out of reach of children.

Section 8 – Exposure Controls / Personal Protection

EXPOSURE LIMITS: Not established for product or individual components.

VENTILATION: Provide general and / or local exhaust ventilation, depending on type of operations, to control airborne exposures.

PERSONAL PROTECTIVE EQUIPMENT

Respiratory: Not required for normal operations. For emergency conditions, use an approved positive pressure self-contained breathing apparatus.

Hands: Wear body-covering clothing. Protect hands with impervious gloves when handling or using this product. Wear boots.

Eyes: Wear chemical goggles. Eye wash facilities should be located in the immediate work area.



Selection and the use of personal protective equipment should be in accordance with the recommendations in one or more of the relevant Australian Standards, including:

| | |
|--------------|---|
| AS 1336: | Recommended practices for eye protection in the industrial environment. |
| AS/NZS 1337: | Eye protectors for industrial application. |
| AS/NZS 1715: | Selection, use and maintenance of respiratory protective devices. |
| AS 2161: | Industrial safety gloves and mittens (excluding electrical and medical gloves). |
| AS/NZS 2210: | Occupational protective footwear. |
| AS 2919: | Industrial clothing. |

BIOLOGICAL LIMIT: No biological limit allocated

Section 9 – Physical & Chemical Properties

| | |
|--|--|
| Appearance: Opaque Paste | Percent Volatile: < 1% |
| Odour: Slightly ammoniacal | Specific Gravity: 1.20 - 1.25 |
| pH: Not Determined | Flammability Limits: Not Determined |
| Vapour Pressure: Not Determined | Boiling Point: Not Determined |
| Vapour Density: Not Determined | Flash Point: > 120 Deg C PMCC |
| Auto Ignition: Not Determined | |

Section 10 – Stability & Reactivity

Chemical Stability: This product is unlikely to react or decompose under normal storage conditions.
Hazardous decomposition products: The amine type component of this product will decompose at temperatures above 260 Deg C and generate ammonia.

Section 11 – Toxicological Information

Short Term Hazards (Acute Exposure):

Inhaled: Not expected to be an inhalation hazard by this route, due to the low vapour pressures of the components at ambient temperatures.

Skin Contact: May cause severe irritation and possibly burns.

Eye Contact: Based on data available for the components of this product, eye contact may result in severe eye irritation and corneal injury, which may be permanent.

Swallowed: Single dose oral toxicity has not been determined for this formulation. Single dose oral toxicity is expected to be low, based on information available for each item.

Long Term Hazards (Chronic Exposure):

Inhaled: Prolonged exposure to high concentrations of vapour may affect the central nervous system.

Skin Contact: Product will cause severe irritation and burns. Product may be a skin sensitizer in some individuals.

Eye Contact: Corneal injury.

Swallowed: Product may cause severe irritation and burns to the digestive tract.

Section 12 – Ecological Information

LC50 (24h) Daphnae: 42 mg/L.

LD50 (48h) Leuciscus idus: 185 mg/L.

NOEC (21day) Daphnia magna: 3 mg/L

EC10 (16hr) Pseudomonas putida: 1120 mg/L

Persistence/Biodegradability: 42% (DOC, OECD 303A)

8.0% (DOC, Die away test -9/69/EEC)

Section 13 – Disposal Considerations

Disposal: Place in secure container for disposal. Burn in an adequate incinerator or bury in an approved landfill in accordance with State and/or Local government regulations.



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编号: EAD1807b1~4A

Section 14 – Transport Information

Substance Name: CORROSIVE LIQUID n.o.s.

U.N. Number: 1760

Dangerous Goods Class: 8

Hazchem Code: 2X

Packing Group: III EPG8

Section 15 – Regulatory Information

AICS: All of the significant ingredients in this formulation are compliant with NICNAS regulations.

Section 16 – Other Information

ACRONYMS

AICS: Australian Inventory of Chemical Substances

CAS Number: Chemical Abstracts Service Registry Number

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