

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product name: **THERMALBOND 4951 B**

Product Use/Class: **EPOXY HARDENER**

Reference: Also sold as Circalok 6252

Manufactured for Aavid Thermalloy, LLC

67 Primrose Drive
Laconia, NH 03246

Telephone: 603 224-9988
ChemTel 24 Hr Emergency
800 225-3924

EFFECTIVE DATE: 12/04/2013

2. HAZARDS IDENTIFICATION**GHS CLASSIFICATION:**

Acute toxicity Oral Category 4

Acute toxicity Dermal Category 3 - 47.0% of the mixture consists of ingredient(s) of unknown toxicity.

Acute toxicity Inhalation - Vapours Category 2 - 97.2% of the mixture consists of ingredient(s) of unknown toxicity.

Skin corrosion/irritation Category 2

Serious eye damage/eye irritation Category 1

Skin sensitization Category 1

Respiratory sensitization Category 1

Reproductive toxicity Category 2

Specific target organ systemic toxicity (single exposure) Category 2 Nervous system

Specific target organ systemic toxicity (single exposure) Category 1 Respiratory system

Specific target organ systemic toxicity (repeated exposure) Category 2 Kidney, Liver

Specific target organ systemic toxicity (repeated exposure) Category 1 Nervous system, Respiratory system

GHS LABEL ELEMENTS:**Symbol(s)****Signal Word**

DANGER

Hazard Statements

Harmful if swallowed.

Toxic in contact with skin.

Fatal if inhaled.

Causes skin irritation.

Causes serious eye damage.

May cause an allergic skin reaction.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Suspected of damaging fertility or the unborn child.
May cause damage to organs.(Nervous system)
Causes damage to organs.(Respiratory system)
May cause damage to organs through prolonged or repeated exposure.(Kidney, Liver)
Causes damage to organs through prolonged or repeated exposure.(Nervous system, Respiratory system)

Precautionary Statements

Prevention

Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Wear protective gloves/protective clothing/eye protection/face protection.
Use personal protective equipment as required.
Wear respiratory protection.
In case of inadequate ventilation wear respiratory protection.
Do not breathe dust/fume/gas/mist/vapors/spray.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing should not be allowed out of the workplace.

Response

Immediately call a POISON CENTER or doctor/physician.
Specific treatment is urgent (see supplemental first aid instructions on this label).
IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
IF ON SKIN: Wash with plenty of soap and water.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
Continue rinsing.
Rinse mouth.
Remove/Take off immediately all contaminated clothing.
Wash contaminated clothing before reuse.

Storage

Store in a well-ventilated place. Keep container tightly closed.
Store locked up.

Disposal:

Dispose of contents/container in accordance with waste/disposal laws and regulations of your country or particular locality.

Other Hazards:

This product contains component(s) which have the following warnings; however based on the GHS classification criteria of your country or locale, the product mixture may be outside the respective category(s).

Acute: May be absorbed through the skin in harmful amounts. Significant overexposure to n-butyl glycidyl ether by the inhalation route is unlikely under most ambient conditions due to its low volatility. However, vapors, aerosols, and mists may be formed during some applications such as heating or applications of uncured material on large surface areas. Harmful if swallowed. Ingestion is not an expected route of entry in industrial or commercial uses.

Chronic: Prolonged or repeated contact may result in dermatitis. IARC has designated titanium dioxide (TiO₂) as Group 2B – possibly carcinogenic to humans in dust form. However, a number of long term animal studies and human epidemiology studies evaluating TiO₂ and workplace exposure show insufficient evidence for carcinogenic affects. EPA, NTP and OSHA do not designate TiO₂ as a carcinogen and ACGIH designates TiO₂

as A4 - not classifiable as a human carcinogen. TiO₂ is not present in this product as a dust and no airborne exposure is expected during application.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	Weight % Less Than
Polyoxypropylenediamine	9046-10-0	50.0 %
Amine compound	PROPRIETARY	45.0 %
Triethanolamine	102-71-6	10.0 %
Amine compound	PROPRIETARY	5.0 %
Piperazine	110-85-0	5.0 %
Amine curing agent	31326-29-1	5.0 %
Bisphenol A	80-05-7	5.0 %

4. FIRST AID MEASURES

FIRST AID - EYE CONTACT: Flush eyes immediately with large amount of water for at least 15 minutes holding eyelids open while flushing. Get prompt medical attention.

FIRST AID - SKIN CONTACT: Flush contaminated skin with large amounts of water while removing contaminated clothing. Wash affected skin areas with soap and water. Get medical attention if symptoms occur.

FIRST AID - INHALATION: Move person to fresh air. Restore and support continued breathing. If breathing is difficult, give oxygen. Get immediate medical attention.

FIRST AID - INGESTION: If swallowed, do not induce vomiting. Call a physician or poison control center immediately for further instructions. Never give anything by mouth if victim is rapidly losing consciousness, unconscious or convulsing.

5. FIRE-FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA: Carbon Dioxide, Dry Chemical, Foam, Water Fog

SPECIFIC HAZARDS POSSIBLY ARISING FROM THE CHEMICAL: Keep containers tightly closed. Closed containers may rupture when exposed to extreme heat. Use water spray to keep fire exposed containers cool. During a fire, irritating and/or toxic gases and particulate may be generated by thermal decomposition or combustion.

SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIRE-FIGHTERS: Wear full firefighting protective clothing, including self-contained breathing apparatus (SCBA). If water is used, fog nozzles are preferable.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT, AND EMERGENCY PROCEDURES: Avoid contact. Avoid breathing vapors. Use self-contained breathing equipment.

ENVIRONMENTAL PRECAUTIONS: Do not contaminate bodies of water, waterways, or ditches, with chemical or used container.

METHODS AND MATERIALS FOR CONTAINMENT AND CLEANUP: Keep non-essential personnel a safe distance away from the spill area. Notify appropriate authorities if necessary. Avoid contact. Before attempting cleanup, refer to hazard caution information in other sections of the MSDS form. Scoop spilled material into an appropriate container for proper disposal. (If necessary, use inert absorbent material to aid in containing the spill).

7. HANDLING AND STORAGE

HANDLING: Keep closure tight and container upright to prevent leakage. Avoid skin and eye contact. Wash thoroughly after handling. Avoid breathing of vapor or spray mists. Do not handle until all safety precautions have been read and understood. Empty containers should not be re-used. Use with adequate ventilation.

STORAGE: Store only in well-ventilated areas. Keep container closed when not in use.

INCOMPATIBILITY: Strong acids, bases, and strong oxidizers.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

COMPONENT EXPOSURE LIMIT

<u>Chemical Name</u>	<u>ACGIH TLV-TWA</u>	<u>ACGIH TLV-STEL</u>	<u>OSHA PEL-TWA</u>	<u>OSHA PEL-CEILING</u>	<u>Skin</u>
Polyoxypropylenediamine	N.E.	N.E.	N.E.	N.E.	N.A.
Amine compound	N.E.	N.E.	N.E.	N.E.	N.A.
Triethanolamine	5 mg/m3	N.E.	N.E.	N.E.	N.A.
Amine compound	1 ppm	N.E.	N.E.	N.E.	S
Piperazine	N.E.	N.E.	N.E.	N.E.	N.A.
Amine curing agent	N.E.	N.E.	N.E.	N.E.	N.A.
Bisphenol A	N.E.	N.E.	N.E.	N.E.	N.A.

N.A. - Not Applicable, N.E. - Not Established, S - Skin Designation

Engineering controls: Sufficient ventilation in pattern and volume should be provided in order to maintain air contaminant levels below recommended exposure limits.

PERSONAL PROTECTION MEASURES/EQUIPMENT:

RESPIRATORY PROTECTION: Use a NIOSH approved air-purifying organic vapor respirator if occupational limits are exceeded. For emergency situations, confined space use, or other conditions where exposure limits may be greatly exceeded, use an approved air-supplied respirator. Observe OSHA regulations (29CFR 1910.134) for respirator use.

SKIN PROTECTION: Use neoprene, nitrile, or rubber gloves to prevent skin contact.

EYE PROTECTION: Use safety eyewear including safety glasses with side shields and chemical goggles where splashing may occur.

OTHER PROTECTIVE EQUIPMENT: Remove and wash contaminated clothing before reuse.

HYGIENIC PRACTICES: Wash hands before eating, smoking, or using toilet facility. Food or beverages should not be consumed anywhere this product is handled or stored. Wash thoroughly after handling.

9. PHYSICAL AND CHEMICAL PROPERTIES

Typical values, not to be used for specification purposes.

ODOR:	Ammonia	VAPOR PRESSURE:	N.D.
APPEARANCE:	Amber	VAPOR DENSITY:	Heavier than Air
PHYSICAL STATE:	Liquid	LOWER EXPLOSIVE LIMIT:	Not Applicable
FLASH POINT:	≥ 201 °F, 93 °C	UPPER EXPLOSIVE LIMIT:	Not Applicable
	Setaflash Closed Cup		
BOILING RANGE:	143 - 360 °C	EVAPORATION RATE:	Not Applicable
AUTOIGNITION TEMPERATURE:	N.D.	DENSITY:	0.99 g/cm3
DECOMPOSITION TEMPERATURE:	N.D.	VISCOSITY, DYNAMIC:	N.D.
ODOR THRESHOLD:	N.D.	VISCOSITY, KINEMATIC:	N.D.
SOLUBILITY IN H2O:	Insoluble	VOLATILE BY WEIGHT:	0.00 %
pH:	N.A.	VOLATILE BY VOLUME:	0.00 %
FREEZE POINT:	N.D.	VOC CALCULATED:	0 lb/gal, 0 g/l
COEFFICIENT OF WATER/OIL DISTRIBUTION:	N.D.		

LEGEND: N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined

10. STABILITY AND REACTIVITY

HAZARDOUS POLYMERIZATION: Hazardous polymerization will not occur under normal conditions.

STABILITY: Product is stable under normal storage conditions.

CONDITIONS TO AVOID: High temperatures.

INCOMPATIBILITY: Strong acids, bases, and strong oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, organic or inorganic nitrogen compounds including traces of hydrogen cyanide

11. TOXICOLOGICAL INFORMATION

EXPOSURE PATH: Refer to section 2 of this SDS.

SYMPTOMS: Refer to section 2 of this SDS.

TOXICITY MEASURES:

Chemical Name	LD50/LC50
Polyoxypropylenediamine	Oral LD50: Rat 242 mg/kg Dermal LD50: Rabbit 360 mg/kg
Amine compound	Oral LD50: Rat 4290 µL/kg Dermal LD50: Rabbit 2500 µL/kg
Triethanolamine	Oral LD50: Rat 4,190 mg/kg Dermal LD50: Rabbit >20 mL/kg
Amine compound	Oral LD50: Rat 819 mg/kg Dermal LD50: Rabbit 672 mg/kg
Piperazine	Oral LD50: Rat 1,900 mg/kg

	Dermal LD50: Rabbit 4 mL/kg
Amine curing agent	Oral LD50: Rat 540 mg/kg Dermal LD50: Rabbit 1,494 mg/kg
Bisphenol A	Oral LD50: Rat 3,200 mg/kg Dermal LD50: Rabbit 3 mL/kg

12. ECOLOGICAL INFORMATION

ECOTOXICITY:

<u>Chemical Name</u>	<u>Ecotoxicity</u>
Polyoxypropylenediamine	N.D.
Amine compound	N.D.
Triethanolamine	<u>Fish</u> : Pimephales promelas 10,600 - 13,000 mg/196 h flow-through Pimephales promelas > 1,000 mg/196 h Static Lepomis macrochirus 450 - 1,000 mg/196 h Static <u>Invertebrates</u> : Daphnia magna 1,386 mg/124 h <u>Plants</u> : Desmodemus subspicatus 216 mg/172 h Desmodemus subspicatus 169 mg/196 h
Amine compound	<u>Fish</u> : Leuciscus idus 430 mg/196 h semi-static Poecilia reticulata 248 mg/196 h Static Poecilia reticulata 1,014 mg/196 h semi-static <u>Invertebrates</u> : Daphnia magna 37 mg/124 h Daphnia magna 16 mg/148 h <u>Plants</u> : Pseudokirchneriella subcapitata 1,164 mg/172 h Pseudokirchneriella subcapitata 345.6 mg/196 h Desmodemus subspicatus 592 mg/196 h
Piperazine	<u>Fish</u> : Lepomis macrochirus > 10,000 mg/196 h Static <u>Invertebrates</u> : water flea 6,915 mg/196 h
Amine curing agent	N.D.
Bisphenol A	<u>Fish</u> : Pimephales promelas 3.6 - 5.4 mg/196 h flow-through Pimephales promelas 4.0 - 5.5 mg/196 h Static Oncorhynchus mykiss 4 mg/196 h Brachydanio rerio 9.9 mg/196 h Static <u>Invertebrates</u> : Daphnia magna 10.2 mg/148 h Daphnia magna 3.9 mg/148 h Daphnia magna 9.2 - 11.4 mg/148 h Static <u>Plants</u> : Pseudokirchneriella subcapitata 2.5 mg/196 h

PERSISTENCE AND DEGRADABILITY: Not determined for this product.

BIOACCUMULATIVE: Not determined for this product.

MOBILITY IN SOIL: Not determined for this product.

OTHER ADVERSE EFFECTS: Not determined for this product.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Dispose of contents/container in accordance with waste/disposal laws and regulations of your country or particular locality. Disposal should be done in accordance with Federal (40CFR Part 261), state and local environmental control regulations. If waste is determined to be hazardous, use licensed hazardous waste transporter and disposal facility.

14. TRANSPORT INFORMATION

IATA Cargo

PROPER SHIPPING NAME: Amines, liquid, corrosive, n.o.s.
DOT HAZARD CLASS: 8
HAZARD CLASS: None
UN-NUMBER: 2735
PACKING GROUP: III
EMS: 8L

IMDG

PROPER SHIPPING NAME: Amines, liquid, corrosive, n.o.s.
DOT HAZARD CLASS: 8
HAZARD CLASS: None
UN-NUMBER: 2735
PACKING GROUP: III
EMS: F-A

The listed transportation classification applies to IATA Cargo and IMDG non-bulk shipments. It does not address regulatory variations due to changes in package size, mode of shipment or other regulatory descriptors for your country or particular locality. For the most accurate shipping information, refer to your transportation/compliance department.

15. REGULATORY INFORMATION

INVENTORIES

Australia Inventory of Existing Chemical Substances (AICS)	YES
Chinese Inventory of Existing Chemical Substances (IECSC)	YES
Japan Existing and New Chemical Substances (ENCS)	YES
Korean Inventory of Existing and Evaluated Chemical Substances (KECI)	YES
Philippines Inventory of Chemicals and Chemical Substances (PICCS)	YES
US Toxic Substances Control Act (TSCA)	YES

16. OTHER INFORMATION

HMIS RATINGS - HEALTH: 3* **FLAMMABILITY:** 1 **PHYSICAL HAZARD:** 1
* - Indicates a chronic hazard; see Section 3

Effective Date: 12/04/2013

DISCLAIMER

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