

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product name: **THERMALBOND 4951 A**
Product Use/Class: **Epoxy Resin**
Reference: Also sold as Circalok 6037 Green

Manufactured for Aavid Thermalloy, LLC

1 Aavid Circle
Laconia, NH 03246

Telephone: 603 528-3400
ChemTel 24 Hr Emergency
800 225-3924

EFFECTIVE DATE: 05/29/2015

2. HAZARDS IDENTIFICATION**GHS CLASSIFICATION:**

Acute toxicity Dermal Category 4 - 97.9% of the mixture consists of ingredient(s) of unknown toxicity.
Skin corrosion/irritation Category 2
Serious eye damage/eye irritation Category 2A
Skin sensitization Category 1
Respiratory sensitization Category 1
Germ cell mutagenicity Category 2
Carcinogenicity Category 2
Reproductive toxicity Category 2
Specific target organ systemic toxicity (single exposure) Category 3
Specific target organ systemic toxicity (repeated exposure) Category 2 Blood, brain, Hematopoietic System, Kidney, Liver
Specific target organ systemic toxicity (repeated exposure) Category 1 Lungs, Respiratory system
Hazardous to the aquatic environment - acute hazard Category 1
Hazardous to the aquatic environment - chronic hazard Category 2

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

DANGER

Hazard Statements

Harmful in contact with skin.
Causes skin irritation.
Causes serious eye irritation.
May cause an allergic skin reaction.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Suspected of causing genetic defects.
Suspected of causing cancer.
Suspected of damaging fertility or the unborn child.
May cause respiratory irritation.
May cause damage to organs through prolonged or repeated exposure in contact with skin.(Blood, brain, Hematopoietic System, Kidney, Liver)
Causes damage to organs through prolonged or repeated exposure.(Lungs, Respiratory system)

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Very toxic to aquatic life.
Toxic to aquatic life with long lasting effects.

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.
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.
Avoid release to the environment.

Response

Call a POISON CENTER or doctor/physician if you feel unwell.
Specific treatment (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 experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
IF ON SKIN: Wash with plenty of soap and water.
If skin irritation or rash occurs: Get medical advice/attention.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
Continue rinsing.
Take off contaminated clothing and wash before reuse.
Collect spillage.

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

<u>Chemical Name</u>	<u>CAS Number</u>	<u>Range</u>
Epoxy resin	PROPRIETARY	20 - 25 %
Titanium dioxide	13463-67-7	1 - 5 %
N-Butyl glycidyl ether	2426-08-6	1 - 5 %
Chromium oxide	1308-38-9	0.1 - 0.9 %

Any "PROPRIETARY" component(s) in the above table is considered trade secret, thus the specific chemical and its exact concentration is being withheld.

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 appropriate respiratory protection for large spills or spills in confined area.

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 SDS 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. 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: Amines, acids, water, hydroxyl, or active hydrogen compounds.

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>
Epoxy resin	N.E.	N.E.	N.E.	N.E.	N.A.
Titanium dioxide	10 mg/m3	N.E.	15 mg/m3	N.E.	N.A.
N-Butyl glycidyl ether	3 ppm	N.E.	270 mg/m3	N.E.	S

			50 ppm		
Chromium oxide	0.5 mg/m3	N.E.	0.5 mg/m3	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: Use disposable or impervious clothing if work clothing contamination is likely. 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:	No	VAPOR PRESSURE:	N.D.
APPEARANCE:	Green	VAPOR DENSITY:	Heavier than Air
PHYSICAL STATE:	Viscous liquid	LOWER EXPLOSIVE LIMIT:	Not Applicable
FLASH POINT:	≥ 201 °F, 93 °C	UPPER EXPLOSIVE LIMIT:	Not Applicable
	Setaflash Closed Cup	EVAPORATION RATE:	Slower than n-butyl-acetate
BOILING RANGE:	N.A.	DENSITY:	2.4 g/cm3 - 19.97 lb/gal
AUTOIGNITION TEMPERATURE:	N.D.	VISCOSITY, DYNAMIC:	N.D.
DECOMPOSITION TEMPERATURE:	N.D.	VISCOSITY, KINEMATIC:	N.D.
ODOR THRESHOLD:	N.D.	VOLATILE BY WEIGHT:	0.00 %
SOLUBILITY IN H2O:	Insoluble	VOLATILE BY VOLUME:	0.00 %
pH:	N.A.	VOC CALCULATED:	0 lb/gal, 0 g/l
FREEZE POINT:	N.D.		
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: Amines, acids, water, hydroxyl, or active hydrogen compounds.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, aldehydes

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
Epoxy resin	Oral LD50: Rat 11,400 mg/kg
Titanium dioxide	Oral LD50: Rat > 10,000 mg/kg GHS LC50 (vapour): rat 55 mg/l /
N-Butyl glycidyl ether	Oral LD50: Rat 1,660 mg/kg Oral LD50: Rat 2,050 mg/kg Dermal LD50: Rat > 2,150 mg/kg Dermal LD50: Rabbit 2520 µL/kg Dermal LD50: Rabbit 788 mg/kg Inhalation LC50: Rat 2590 ppm/4 h
Chromium oxide	N.D.

Germ cell mutagenicity: Category 2 - Suspected of causing genetic defects.
Components contributing to classification: N-Butyl glycidyl ether.

Carcinogenicity: Category 2 - Suspected of causing cancer.
Components contributing to classification: Titanium dioxide. N-Butyl glycidyl ether.

Reproductive toxicity: Category 2 - Suspected of damaging fertility or the unborn child.
Components contributing to classification: N-Butyl glycidyl ether.

12. ECOLOGICAL INFORMATION

ECOTOXICITY:

Chemical Name	Ecotoxicity
Epoxy resin	N.D.
Titanium dioxide	N.D.
N-Butyl glycidyl ether	N.D.
Chromium oxide	N.D.

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: 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

US DOT Road

DOT Proper Shipping Name: Environmentally hazardous substances, liquid, n.o.s.
DOT Hazard Class: 9
SECONDARY HAZARD: None
DOT UN/NA Number: 3082
Packing Group: III
Emergency Response Guide Number: 171

For US DOT non-bulk road shipments this material may be classified as NOT REGULATED. For the most accurate shipping information, refer to your transportation/compliance department regarding changes in package size, mode of shipment or other regulatory descriptors.

IATA Cargo

PROPER SHIPPING NAME: Environmentally hazardous substance, liquid, n.o.s.
DOT Hazard Class: 9
HAZARD CLASS: None
UN-NUMBER: 3082
PACKING GROUP: III
EMS: 9L

IMDG

PROPER SHIPPING NAME: Environmentally hazardous substance, liquid, n.o.s.
DOT Hazard Class: 9
HAZARD CLASS: None
UN-NUMBER: 3082
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

U.S. FEDERAL REGULATIONS: AS FOLLOWS:

SARA SECTION 313

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372.:

<u>Chemical Name</u>	<u>CAS Number</u>	<u>Weight % Less Than</u>
Chromium oxide	1308-38-9	0.9 %

TOXIC SUBSTANCES CONTROL ACT:

INVENTORY STATUS

The chemical substances in this product are on the TSCA Section 8 Inventory.

EXPORT NOTIFICATION

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(B) if exported from the United States:

NONE

16. OTHER INFORMATION

Under HazCom 2012 it is optional to continue using the HMIS rating system. It is important to ensure employees have been trained to recognize the different numeric ratings associated with the HazCom 2012 and HMIS schemes.

HMIS RATINGS - HEALTH: 2 FLAMMABILITY: 1 PHYSICAL HAZARD: 0

* - Indicates a chronic hazard; see Section 2

Revision: New GHS SDS Format

Effective Date: 05/29/2015

DISCLAIMER

The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by

use of this material. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.