

SAFETY DATA SHEET

Mace Armorthane NT 9187-Z

Revision Date 8/28/2015

Version: 1.0.0

SECTION 1: Identification of the substance/ mixture and of the company/ undertaking

Trade name: Mace Armorthane NT 9187-Z
Description: Water-borne polyurethane dispersion
Supplier: Mace Polymers & Additives Inc.
Street: 38 Roberts Road
P.O. Box: PO Box 1517
Postal code/city: Dudley, MA 01571
Country: USA
Telephone: (508) 943-9052
Fax: (508) 943-6527
E-mail (competent person): egulla@maceco.com
Emergency telephone number: CHEMTREC (800) 424-9300 (US)

SECTION 2: Hazards identification

OSHA/HCS status This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Classification of the Substance or mixture: SKIN IRRITATION – Category 2
EYE IRRITATION – Category 2A
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) - Category 3

GHS label elements



Hazard pictograms:

Signal word: WARNING

Hazard statements: H303 May be harmful if swallowed
H313 May be harmful in contact with skin
H315 Causes skin irritation
H319 Causes serious eye irritation
H333 May be harmful if inhaled
H335 May cause respiratory irritation

General: P101 If medical advice is needed, have product container or label at hand
P102 Keep out of reach of children
P103 Read label before use

Precautionary statements: P201 Obtain special instructions before use
P202 Do not handle until all safety precautions have been read and understood
P261 Avoid breathing vapors
P264 Wash skin thoroughly after handling
P271 Use only outdoors or in a well-ventilated area
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection

SECTION 3: Composition/ information on ingredients

Substance/ Mixture Mixture
Other means of identification Not available

SAFETY DATA SHEET

Mace Armorthane NT 9187-Z

Revision Date 8/28/2015

Version: 1.0.0

CAS number/ other identifiers

<i>Ingredient name</i>	<i>% by weight</i>	<i>CAS numbers</i>
Dipropylene glycol dimethyl ether (DMM)	5-8	111109-77-4
Dipropylene glycol n-butyl ether (DPnB)	1-4	29911-28-2
Triethylamine	1	121-44-8

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

SECTION 4: First aid measures

Description of necessary first aid measures:

Eye contact: Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact: Flush contaminated skin with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion: Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/ affects, acute and delayed

Potential acute health affects

Eye contact Causes serious eye irritation

Inhalation Exposure to decomposition products may cause a health hazard.
Serious effects may be delayed following exposure

Skin contact No known significant effects or critical hazards.

Ingestion May be irritating to mouth, throat and stomach.

SAFETY DATA SHEET

Mace Armorthane NT 9187-Z

Revision Date 8/28/2015

Version: 1.0.0

SECTION 5: Firefighting measures

Extinguishing media

Suitable extinguishing media Use an extinguishing agent suitable for the surrounding fire

Unsuitable extinguishing None known

Specific hazards arising from the chemical: In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous thermal decomposition products: Decomposition products may include the following materials:
Carbon dioxide, carbon monoxide and nitrogen oxides

Advice for firefighters Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel: No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

Emergency responders: If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For nonemergency personnel".

Environmental precautions: Avoid dispersal of spilled material and runoff and contact with soil, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spills: Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13). Keep in suitable, closed containers for disposal.

Large spills: Stop leak if without risk. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

SECTION 7: Handling and Storage

Precautions for safe handling

Protective measures Avoid contact with skin and eyes. Avoid inhalation of vapor or mist.

Advice on general occupational hygiene

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking and at the end of workday. Remove contaminated

SAFETY DATA SHEET

Mace Armorthane NT 9187-Z

Revision Date 8/28/2015

Version: 1.0.0

clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

SECTION 8: Exposure controls/personal protection

Control parameters/ Occupational exposure limits

<i>Ingredient name</i>	<i>Exposure limits</i>
Dipropylene glycol dimethyl ether (DMM)	Dow IHG TWA: 20 ppm
Dipropylene glycol n-butyl ether (DPnB)	Dow IHG TWA TWA: 10 mg/m ³
Triethylamine	ACGIH TLV TWA: 1 ppm STEL: 3 ppm OSHA PEL (Vacated) TWA: 10 ppm (Vacated) TWA: 40 mg/m ³ (Vacated) STEL: 15 ppm (Vacated) STEL: 60 mg/m ³ TWA: 25 ppm TWA: 100 mg/m ³ NIOSH IDLH IDLH: 200 ppm

Appropriate engineering controls:

If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits

Environmental exposure controls:

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels

Individual protection measures:

Wash hands, forearms and face thoroughly after handling chemical Hygiene measures: products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection

Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

SAFETY DATA SHEET

Mace Armorthane NT 9187-Z

Revision Date 8/28/2015

Version: 1.0.0

- Skin protection Hand protection: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
- Body protection: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product
- Other skin protection: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

SECTION 9: Physical and chemical properties

Appearance/Form:	Milky gray dispersion	(Values are not product specifications)
Odor:	Mild amine (no threshold data)	
Boiling Point:	100°C (212°F)	
Freeze Point:	0°C (32°F)	
pH	8.00 +/-	
Density	8.5 lbs./gal. (theoretical)	Specific Gravity: 1.02
Solids Content	35%	Volatiles: 65%
Bulk Density:	No data	Solubility in Water: Dispersible
Vapor Pressure:	No data	Vapor Density: > 1 (air = 1)
Melting point:	No data	Partition coefficient n-octanol/water: No data
Flash Point:	Not applicable in liquid state, solid material may support combustion after water removed.	

SECTION 10: Stability and reactivity

- Reactivity No specific test data related to reactivity for this product or its ingredients.
- Chemical stability The product is stable.
- Possibility of hazardous reactions: Under normal conditions of storage and use, hazardous reactions will not occur.
- Conditions to avoid No specific data
- Incompatible materials No specific data.
- Hazardous decomposition products: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

SAFETY DATA SHEET

Mace Armorthane NT 9187-Z

Revision Date 8/28/2015

Version: 1.0.0

Information on toxicological effects

Acute toxicity

Material	Results	Dose	Species
Dipropylene glycol dimethyl ether (DMM)	LD50 Oral LD50 Dermal LC50 Inhalation	3300 mg/kg 2000 mg/kg 5.25 mg/l No deaths occurred at this concentration	Rat Rat Rat
Dipropylene glycol n-butyl ether (DPnB)	LD50 Oral LD50 Dermal LC50 Inhalation	3700 mg/kg 2000 mg/kg 2.04 mg/ l	Rat Rat Rat
Triethylamine	LD50 Oral LD50 Dermal LC50 Inhalation	460 mg/kg 415 mg/kg 1250 ppm	Rat Rabbit Rat

Irritation/Corrosion

Material	Results
Dipropylene glycol dimethyl ether (DMM)	Prolonged exposure not likely to cause significant skin irritation. May cause slight eye irritation. Corneal injury is unlikely
Dipropylene glycol n-butyl ether (DPnB)	Prolonged contact may cause slight skin irritation with local redness.
Triethylamine	Not available

Carcinogenicity: Not available
 Reproductive toxicity: Not available
 Teratogenicity: Not available

Specific target organ toxicity (single exposure)

Material	Category	Route of exposure	Target organs
Dipropylene glycol dimethyl ether (DMM)	Evaluation of available data suggests that this material is not an STOT-SE toxicant		
Dipropylene glycol n-butyl ether (DPnB)	Evaluation of available data suggests that this material is not an STOT-SE toxicant		
Triethylamine	Category 3	Not applicable.	Respiratory system, Central nervous system (CNS)

Specific target organ toxicity (repeated exposure)

Material	Category	Route of exposure	Target organs
Dipropylene glycol dimethyl ether (DMM)	Not determined	Not determined	Adrenal gland
Dipropylene glycol n-butyl ether (DPnB)	Not determined	Not determined	Kidney effects unlikely to occur in humans

SAFETY DATA SHEET

Mace Armorthane NT 9187-Z

Revision Date 8/28/2015

Version: 1.0.0

Triethylamine	Category 2	Not determined	Liver, Kidney
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Aspiration hazard

Name	Result
Dipropylene glycol dimethyl ether (DMM)	Based on physical properties, not likely to be an aspiration hazard
Dipropylene glycol n-butyl ether (DPnB)	No information available
Triethylamine	No information available

Information on the likely Routes of exposure: Not available

Potential acute health affects

Eye contact	Causes serious eye irritation
Inhalation:	Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure
Skin contact:	No known significant effects or critical hazards
Ingestion:	May be Irritating to mouth, throat and stomach.
Symptoms related to the physical, chemical and toxicological characteristics	
Eye contact:	Causes eye irritation
Inhalation	Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure
Skin contact	No known significant effects or critical hazards
Ingestion:	May be irritating to mouth, throat and stomach
Delayed and immediate effects and also chronic effects from short and long term exposure	
Potential immediate:	Not available
Potential delayed effects	Not available
Long term exposure	
Potential Immediate:	Not available
Potential delayed effects	Not available
Potential chronic health effects: Not available	
General:	May cause damage to organs through prolonged or repeated exposure.
Carcinogenicity	No known significant effects or critical hazards
Teratogenicity	No known significant effects or critical hazards
Developmental effects	No known significant effects or critical hazards
Fertility effects	No known significant effects or critical hazards

SECTION 12: Ecological information

Numerical measures of toxicity Acute toxicity estimates

Product/ingredient name	Result	Species	Exposure
Dipropylene glycol dimethyl ether (DMM)	LC50 > 1,000 mg/l	Poecilia reticulata (guppy)	96 Hour
	NOEC sublethal > 300 mg/l	Oncorhynchus mykiss (rainbow trout)	14 Hour
	LC50, >1000 mg/l	Daphnia magna (Water flea)	24 Hour
Dipropylene glycol n-butyl ether (DPnB)	Acute LC50 > 841 mg/L	Poecilia reticulata (guppy),	96 hour
	Acute LC50 > 1,000 mg/l	Daphnia magna (Water flea)	48 hour

SAFETY DATA SHEET

Mace Armorthane NT 9187-Z

Revision Date 8/28/2015

Version: 1.0.0

Triethylamine	Not available	Not available	Not available
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Persistence and degradability

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Dipropylene glycol dimethyl ether (DMM)	-	-	Readily
Dipropylene glycol n-butyl ether (DPnB)	-	-	Readily
Triethylamine	-	-	Readily

Bioaccumulative potential: Not available.

Mobility in soil

Soil water partition Coefficient (K_{oc}): Not available.

Other adverse effect No known significant effects or critical hazards

SECTION 13: Disposal considerations

Disposal methods: The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewer.

SECTION 14: Transport information

Not regulated by the US DOT.

Special precautions for users: Multi-modal shipping descriptions are provided for informational purposes and do not consider container sizes. The presence of a shipping description for a particular mode of transport (sea, air, etc.), does not indicate that the product is packaged suitably for that mode of transport. All packaging must be reviewed for suitability prior to shipment, and compliance with the applicable regulations is the sole responsibility of the person offering the product for transport. People loading and unloading dangerous goods must be trained on all of the risks deriving from the substances and on all actions in case of emergency situations.

SECTION 15: Regulatory information

EPA Sara Title III Section 313 (EPCRA) and 40 CFR 372: This product contains the following chemicals subject to the reporting requirements of the above regulations: Triethylamine

California Prop. 65: This product does not contain chemicals known to the state of California to cause cancer and birth defects or other reproductive harm.

SECTION 16: Other information

Hazardous Material Information System (U.S.A.)

SAFETY DATA SHEET

Mace Armorthane NT 9187-Z

Revision Date 8/28/2015

Version: 1.0.0

HEALTH	1
FIRE	0
REACTIVITY	0
PERSONAL PROTECTION	H

HMIS/ NFPA Definitions:			
0	Least	3	High
1	Slight	4	Extreme
2	Moderate		

Hazard rating and rating systems: This information is intended solely for the use of individuals trained in the particular system.

The information contained herein is based on our state of knowledge at the above-specified date. It refers solely to the product indicated and constitutes no guarantee of particular quality. It is the duty of the user to ensure that this information is appropriate and complete with respect to the specific use intended.