

# MATERIAL SAFETY DATA SHEET



**Biomerics, LLC**  
**Product Safety & Regulatory Affairs**  
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USA

**TRANSPORTATION EMERGENCY**  
CALL CHEMTREC: (800) 424-9300  
INTERNATIONAL: (703) 527-3887

**NON-TRANSPORTATION**  
Emergency Phone: Call Chemtrec  
Information Phone: (888) 874-7787

## 1. Product and Company Identification

**Product Name:** Quadraplast™ AR 100  
**Material Number:** QPLAST-AR-100-009-000  
**Chemical Family:** Rigid Thermoplastic Polyurethane  
**Chemical Name:** Polyurethane

## 2. Hazards Identification

### Emergency Overview

**Color:** Off white      **Form:** Solid Pellets      **Odor:** Mild

Caution: This material has no known health hazards.

See Section 11 for complete health hazard information.

## 3. Composition/Information on Ingredients

### **Hazardous components**

This material has no known hazards under applicable laws.

## 4. First aid measures

### **Eye contact**

In case of contact, flush eyes with plenty of lukewarm water. Get medical attention if irritation develops.

**Skin contact:** Wash with soap and water. Get medical attention if irritation develops. For contact with molten product, do not remove contaminate clothing. Flush skin immediately with large amounts of cold water. Pack with Ice. DO NOT attempt to peel polymer from skin.

**Inhalation:** If inhaled, remove to fresh air

**Ingestion:** Get medical attention

### **Notes to physician**

In the event of possible diisocyanate exposure: Eyes: Stain for evidence of corneal injury. If cornea is burned, instill antibiotic steroid preparation as needed. Workplace vapors could produce reversible corneal epithelial edema impairing vision. Skin: Treat symptomatically as for thermal burn. Ingestion: Treat symptomatically. Inhalation: Treatment is essentially symptomatic. Anyone with a pulmonary sensitization reaction should be removed from exposure to any diisocyanate.

## 5. Fire-fighting measures

**Suitable extinguishing media:** Water, Foam, Dry chemical

### Special Fire Fighting Procedures

Firefighters should be equipped with self-contained breathing apparatus to protect against potentially toxic and irritating fumes.

### Unusual Fire/Explosion Hazards

Toxic and irritating gases/fumes may be given off during burning or thermal decomposition. Solid does not readily release flammable vapors.

## 6. Accidental release measures

### Spill and Leak Procedures

Pick up free solid for recycle and/ or disposal. If molten, allow material to cool and place into an appropriate marked container for disposal.

## 7. Handling and storage

### Storage temperature:

**maximum:** Not determined

**Storage period:** Not established

### Handling/Storage Precautions

Handle in accordance with good industrial hygiene and safety practices. Wash thoroughly after handling. Avoid breathing dust. Containers should be kept tightly closed to prevent contamination. Material is hygroscopic and may absorb small amounts of atmospheric moisture. Store in well ventilated place. Use good housekeeping measures to prevent dust accumulations.

### Handling Procedures

Loading and unloading may cause nuisance dust to form. Conduct any operations emitting fumes or vapors (including heat joining, cutting and or sealing of articles and clean up) under well ventilated conditions. Avoid breathing process vapors. Do not hold product for extended periods of time at elevated temperatures or allow thick masses of hot polymer to accumulate because they can decompose emitting hazardous gasses. Do not taste, swallow, or chew products. Wash thoroughly after processing. Do not store or consume food in processing areas. Fume condensates may include hazardous contaminants from additives. Condensate may be combustible and should be periodically removed from exhaust hoods, ductwork, and other surfaces. Impervious gloves should be worn during cleanup operations to prevent skin contact. Post thermal processing activities necessary to produce molded articles (such as cutting, sanding, sawing, grinding, drilling, or regrinding) may create dust or "fines". Powders, dusts, and/ or fines may pose a dust explosion hazard. Electrostatic buildup may occur when pouring or transferring this product from its container. The spark produced may be sufficient to ignite vapors of flammable liquids. Always transfer product by means which void static buildup. Avoid pouring product directly from its container into combustible or flammable solvent. The major off-gasses from normal melt processing are expected to be water vapor and carbon dioxide. Other trace volatile organic components may also be emitted. Wash thoroughly after handling.

### Further Information on Storage Conditions

Protect equipment (e.g. storage bins, conveyors, dust collectors) with explosion vents.

## 8. Exposure controls/personal protection

### Industrial Hygiene/Ventilation Measures

During normal processing, use general dilution and local exhaust as necessary to control airborne vapors, mists, dusts, and thermal decomposition products below appropriate airborne concentration standards / guidelines. Special ventilation and Personal Protective Equipment (PPE) is required to control exposure to potentially harmful decomposition products whenever a TPU is heated to temperatures above its decomposition temperature. Examples would include hot knife cutting, grinding, or sawing.

### Respiratory protection

In the absence of sufficient general dilution or local exhaust ventilation a NIOSH approved air-supplied respirator may be needed during die cleaning, high temperature processing, purging or when thermal decomposition is suspected.

**Hand protection:** Wear heat resistant gloves when handling molten material.

**Eye protection** Safety glasses with side shields

**Skin and body protection:** A long sleeve shirt is recommended.

### Additional Protective Measures

Employees should wash their hands and face before eating, drinking, or using tobacco products. Educate and train employees in the safe use and handling of this product.

## 9. Physical and chemical properties

<b>Form:</b>	Solid
<b>Appearance:</b>	Granulate
<b>Color:</b>	Off white
<b>Odor:</b>	Mild/None
<b>pH:</b>	Not determined
<b>Melting Point:</b>	Not determined
<b>Flash point:</b>	Material does not have explosive properties
<b>Lower explosion limit:</b>	Material does not have explosive properties
<b>Upper explosion limit:</b>	Not determined
<b>Specific Gravity:</b>	1.2
<b>Solubility in Water:</b>	insoluble
<b>Auto ignition temperature:</b>	Not determined
<b>Decomposition temperature:</b>	>230° C
<b>Softening point:</b>	Not determined
<b>Bulk density:</b>	Not determined

## 10. Stability and reactivity

**Hazardous Reactions:** Hazardous polymerization does not occur

**Stability:** Stable

### Materials to avoid

None known.

**Conditions to avoid:** None Known

### Hazardous decomposition products

By Fire and Thermal Decomposition: Carbon Dioxide; hydrogen cyanide; diisocyanate; aldehydes, carbon monoxide, amines, nitriles, nitrogen oxides (NOx), hydrocarbons

## 11. Toxicological information

Toxicity Data for Quadraplast™ AR 100

Toxicity Note: No data available for this product

### Potential Health Effects

Primary Routes of Entry: Inhalation, Skin Contact, Eye Contact

Medical Conditions Aggravated by Exposure: Respiratory disorders

### HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE

#### Inhalation

**Acute Inhalation For Product:** Quadraplast™ AR 100

Thermoplastic Polyurethane (TPU) is generally non-hazardous under ambient conditions. However, when the product is heated (i.e., during processing or thermal decomposition conditions), there is a potential for the release of diisocyanate vapors. Diisocyanate vapors or mist at concentrations above the TLV or PEL can irritate (burning sensation) the mucous membranes in the respiratory tract (nose, throat, lungs) causing runny nose, sore throat, coughing, chest discomfort, shortness of breath and reduced lung function (breathing obstruction). Persons with a preexisting, nonspecific bronchial hyper reactivity can respond to concentrations below the TLV or PEL with similar symptoms as well as asthma attack or asthma-like symptoms. Exposure well above the TLV or PEL may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). Chemical or hypersensitivity pneumonitis, with flu-like symptoms (e.g., fever, chills), has also been reported. These symptoms can be delayed up to several hours after exposure. These effects are usually reversible.

**Chronic Inhalation For Product:** Quadraplast™ AR 100

In the event of material decomposition due to exceeding the decomposition temperature of this product, release of isocyanate may occur. As a result of previous repeated overexposures or a single large dose, certain individuals may develop sensitization to diisocyanates (asthma or asthma-like symptoms) that may cause them to react to a later exposure to diisocyanates at levels well below the TLV or PEL. These symptoms, which may include chest tightness, wheezing, cough, shortness of breath or asthmatic attack, could be immediate or delayed up to several hours after exposure. Extreme asthmatic reactions can be life threatening. Similar to many non-specific asthmatic responses, there are reports that once sensitized an individual may experience these symptoms upon exposure to dust, cold air or other irritants. This increased lung sensitivity may persist for weeks and in severe cases for several years. Sensitization can be permanent. Chronic overexposure to diisocyanates has also been reported to cause lung damage (including fibrosis, decrease in lung function) that may be permanent.

#### Skin

**Acute Skin for Product:** Quadraplast™ AR 100

Contact with heated material can cause thermal burns.

#### Eye

**Acute Eye For Product:** Quadraplast™ AR 100

Vapors released from thermal decomposition may cause irritation with symptoms of burning and tearing.

#### Carcinogenicity:

No Carcinogenic substances as defined by IARC, NTP and/or OSHA

## 12. Ecological information

Ecological Data for Quadraplast™ AR 100

Additional Ecotoxicological Remarks: No data available for this product.

## 13. Disposal considerations

### Waste Disposal Method

Waste disposal should be in accordance with existing federal, state and local environmental control laws.

## 14. Transport information

Land transport (DOT): Non-Regulated

Sea transport (IMDG): Non-Regulated

Air transport (ICAO/IATA): Non-Regulated

## 15. Regulatory information

### United States Federal Regulations

OSHA Hazcom Standard Rating:

Non-Hazardous

US. Toxic Substances Control Act:

All ingredients are listed in the TSCA Inventory or are compliant with the TSCA Polymer Exemption Rule.”

### US. EPA CERCLA Hazardous Substances (40 CFR 302):

#### Components

None

### SARA Section 311/312 Hazard Categories:

Non-hazardous under Section 311/312

### US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 302 Extremely Hazardous Substance (40 CFR 355, Appendix A):

Components: None

### US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 313 Toxic Chemicals (40 CFR 372.65) - Supplier Notification Required:

Components: None

### US. EPA Resource Conservation and Recovery Act (RCRA) Composite List of Hazardous Wastes and Appendix VIII Hazardous Constituents (40 CFR 261):

Under RCRA, it is the responsibility of the person who generates a solid waste, as defined in 40 CFR 261.2, to determine if that waste is a hazardous waste.

## State Right-To-Know Information

The following chemicals are specifically listed by individual states; other product specific health and safety data in other sections of the MSDS may also be applicable for state requirements. For details on your regulatory requirements you should contact the appropriate agency in your state.

### Massachusetts, New Jersey or Pennsylvania Right to Know Substance Lists:

This product is not known to contain any substances subject to the right-to-know disclosure requirements of the states of Massachusetts, New Jersey, or Pennsylvania.

### California Prop. 65:

To the best of our knowledge, this product does not contain any of the listed chemicals, which the state of California has found to cause cancer, birth defects or other reproductive harm.

## 16. Other information

### HMIS Rating

Health	0
Flammability	1
Physical Hazard	0

0=Minimal 1=Slight 2=Moderate 3=Serious 4=Severe

\* = Chronic Health Hazard

The method of hazard communication for Biomerics LLC is comprised of Product Labels and Material Safety Data Sheets. HMIS and NFPA ratings are provided by Biomerics LLC as a customer service.

Contact person: Product Safety & Regulatory Affairs

Telephone: 801-355-2705

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