

TIANAN BIOLOGIC MATERIALS CO. LTD.

Product Name: ENMAT PHBV Resin
Product Code: Y1000, Y1000P

Revision number: 5

Revision date: 03/27/2009

Material Safety Data Sheet

OSHA/ANSI Z400.1 - 2004 Compliant

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

Product name: PHBV resin
Product code: Y1000, Y1000P
Product use: A thermoplastic resin with a variety of uses.

Supplier TIANAN BIOLOGIC MATERIAL COMPANY LTD.
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Customer service
+86-574-86895240

Emergency 24-hour
+86-13336636366 (china) / 612-380-2918(USA)
Health/Environmental Phone
+86-13336636366

2. HAZARDS IDENTIFICATION

Emergency Overview

CAUTION! May cause eye/skin irritation. Burning produces obnoxious and toxic fumes. Avoid contact with skin and eyes. Avoid formation of dust and aerosols.

Color:	Off white to pale yellow
Appearance:	Powder/pellets
State of matter:	Solid
Odor:	Odorless to slightly sourish
Health:	This product may be an eye, skin and respiratory irritant because it may release small quantities of crotonic acid at elevated processing temperatures.

Physical/Chemical hazards:	None Expected
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Potential health effects:

Primary routes of entry:	Ingestion, Skin, Inhalation, Eyes
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Potential environmental effects:

The aquatic toxicity of this product has not been fully assessed.
Releases to the environment are to be avoided.

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3. COMPOSITION/INFORMATION ON INGREDIENTS

<u>Chemical name</u>	<u>CAS Number</u>	<u>Content (Weight)</u>	<u>Hazardous</u>
Petanoic acid ,3-hydroxy-, (3 R)-,polymer with (3R)-3- hydroxybutanoic acid from cupriavidus necator fermentation of D- Glucose and propionic acid	1039549-27-3	> 98%	No

This material is classified as not hazardous under OSHA regulations.

4. FIRST-AID MEASURES

Inhalation: Remove to fresh air, if not breathing give artificial respiration. If breathing is difficult, give oxygen and get immediate medical attention.

Skin: If clothing is contaminated, remove and launder before reuse. After contact with skin, wash immediately with plenty of water and soap. Get medical attention if irritation occurs.

Eyes: Rinse immediately with plenty of water for at least 10 minutes taking care to wash under the eyelids. Seek medical attention.

Ingestion: Do not induce vomiting. If vomiting occurs naturally, have casualty lean forward to reduce the risk of aspiration. Seek medical attention immediately.

Notes to physician: Treat symptomatically

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media: Carbon dioxide, dry powder, foam.

Hazardous combustion products: Burning may produce toxic combustion products, carbon monoxide(CO), carbon dioxide(CO2), crotonic acid.

Hazards during fire-fighting: Standard procedure for chemical fires.

Protective equipment for fire-fighting: Wear self-containing breathing apparatus and chemical-protective clothing.

6. ACCIDENTAL RELEASE MEASURES

Cleanup:

Personal Precautions: Use personal protective equipment. (See Section 8.) Remove all sources of

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ignition. Avoid dust formation. Avoid contact with skin and eyes. Sweep up to prevent slipping hazard.

6. ACCIDENTAL RELEASE MEASURES (cont.)

Environmental precautions:

Do not flush into surface water or sanitary sewer system.
Do not allow material to contaminate ground water system.

Methods for cleaning up: Shovel into suitable container for disposal.

7. HANDLING AND STORAGE

Safe handling advice:

Avoid contact with skin and eyes. Avoid dust formation. Workers should be protected from the possibility of contact with molten material during fabrication. Low hazard for usual industrial or commercial handling. Use personal protective equipment. *(See Section 8.)*

Protection against fire and explosion:

No physical hazards determined at this time. Handle with care and follow standard industrial practices.

Storage:

General Advice:

Store in a cool place. Keep at temperatures below 140F (60C).
No special restrictions on storage with other products.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Engineering Controls:

Ensure adequate ventilation to minimize the build-up of dust or vapors.
Work in well ventilated areas. Do not breathe vapors or mist.

Personal protective equipment:

Respiratory protection: Wear a NIOSH-certified respirator if exposed to dust.

Eye protection: Safety glasses with side shields. Goggles.

Body protection: Wear gloves and protective clothing.

General safety and hygiene measures: Avoid contact with skin, eyes and clothing.

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9. PHYSICAL AND CHEMICAL PROPERTIES

Color:	Off white to pale yellow.
Form:	Powder/pellets
State of matter:	Solid
Odor	Odorless to slightly sourish.
pH value:	Not Applicable
Evaporation rate:	Not applicable
Melting point:	Not determined
Boiling point:	Not applicable
Vapor pressure:	Not applicable
Density:	1.25 g/cc
Vapor density:	Not Applicable
Solubility in water:	Insoluble
Solubility in other solvents:	Soluble in chloroform, methylene chloride.
Decomposition temperature:	200°C - The Product degrades above 200 degrees Celsius resulting in release of crotonic acid fumes after prolonged exposure. Crotonic acid is a strong respiratory agent.

10. STABILITY AND REACTIVITY

Stability: Stable under recommended storage temperatures.

Conditions to avoid: Temperatures above 200 Degrees Celsius.

Substances to avoid: Strong acids, strong bases, strong oxidizing agents.

Possibility of Hazardous Reactions: No hazardous reactions known.

Hazardous decomposition products: No decomposition expected under normal storage conditions. Burning produces carbon monoxide(CO), carbon dioxide (CO₂), crotonic acid.

11. TOXICOLOGICAL INFORMATION

Principle routes of exposure: Eye contact. Skin contact. Inhalation. Ingestion.

Local Effects: May cause skin/eye irritation. Product dust may be irritating to the eyes, skin and respiratory system.

Mutagenic effect: No data is available on the product itself.

Reproductive Toxicity: No data is available on the product itself.

Carcinogenic effects: No data is available on the product itself.

Further information: To the best of our knowledge the toxicological properties have not been fully investigated.

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12. ECOLOGICAL INFORMATION

Mobility: No data available.

Bioaccumulation: Does not bioaccumulate. Inherently biodegradable.

Ecotoxicity effect: No information available.

13. DISPOSAL CONSIDERATIONS

Waste disposal of substance/ residues/unused products:

Dispose of in accordance with national, state and local regulations. Do not contaminate ponds, waterways or ditches with chemical or used container. Contact manufacturer.

THE COMPANY HAS NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION 3.
(Composition/Information on Ingredients) .

14. TRANSPORT INFORMATION

U.S. Department of Transportation(DOT):

Proper Shipping Name: None.

Hazard Class: Not regulated

UN-No: None

Packing group: None

Hazardous substances (RQ): None

IMDG:

Proper shipping name: None

Hazard class: Not regulated

UN/Id No.: None

Packing Group: None

ICAO/IATA:

Proper shipping name: None

Hazard class: Not regulated

UN- No.: None

Packing Group: None

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15. REGULATORY INFORMATION

International Regulations

(Not meant to be all inclusive-selected regulations represented.)

NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to the other; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial and local laws and regulations. *(See other sections for Health and Safety information.)*

U.S.: Toxic Substances Control Act (TSCA) Not Listed

Canada: Domestic Substances List (DSL) Not Listed

United States – Regulations

SARA Section 313 Toxic Chemical List Not Listed

International Regulations

Chemical Weapons Convention:

This product does not contain any components listed under the Chemical Weapons Convention Schedule of Chemicals.

16. OTHER INFORMATION

Disclaimer:

The information contained herein is based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to such data or information. The user is responsible for determining whether the product is suitable for its intended conditions of use.

END OF DATA SHEET