

MATERIAL SAFETY DATA SHEET (MSDS)

PBAT (BG-2000)

1. Identification of the substance and of the supplier

1.1 Product identifiers

Product Name : PBAT (BG-2000)
Grade Name : BG-2000

1.2 Relevant identified uses of the substance or mixture and uses advised against

Relevant Identified uses : Polymer
Recommended use : For industrial processing only

1.3 Details of the supplier of the safety data sheet

Company name: ANKOR Bioplastics
Address: 216, Munmakgongdan-gil, Munmak-eup, Wonju-si, Gangwon-do, Republic of Korea
Tel: +82 (0) 33-731-5845
Fax: +82 (0) 33-731-5846

2. Hazards Identification

**Not a hazardous substance or mixture according to Notification of Ministry of Industry,
Subject: Chemical Hazard Classification and Chemical Hazard Communication.B.E.2555)**

2.1 Classification of the substance

No need for classification according to GHS criteria for this product.

2.2 Label element

The product does not require a hazard warning label in accordance with GHS criteria.

2.3 Other hazards

None

3. Composition/Information on Ingredients

3.1 Substance or mixture: Substance

3.2 Chemical name (or Nonproprietary name): Aliphatic Polyester
Content: 99 - 100%

3.3 Chemical name and CAS No.

BDO: CAS No 110-63-4
TPA : CAS No 100-21-0
Succinic Acid: CAS No 110-15-6

4. First Aid Measures

4.1 Description of first aid measures

Inhalation:

Move person to fresh air. If patient is not breathing or breathing irregular, provide artificial respiration. Obtain medical attention by physician if symptoms persist.

Skin contact:

Remove pellets and dusts from skin, clothes, shoes, etc. If molten matter comes into contact with skin, pour plenty of water on the clothes in order to cool the affected skin sufficiently. Take off the clothes and cover the affected skin with clean gauze. Consult a specialist as soon as possible.

Eye contact:

Rinse the eyes with plenty of clean water for at least 15 minutes with fingers to let the water reach all the portions of the eye if easy to do. Then, consult an ophthalmologist.

Ingestion:

Wash the mouth thoroughly with water.

4.2 Most important symptoms and effects, both acute and delayed

Molten polymer may cause burn. Dust contact with the eyes can lead to irritation.

4.3 Indication of any immediate medical attention and special treatment needed:

Treatment is symptomatic and supportive.

5. Fire Fighting Measures

5.1 Extinguishing media

Water spray; Carbon dioxide; foam; dry chemical powder

5.2 Special hazards arising from the substance

Carbon monoxide, Carbon dioxide.

5.3 Special protective equipment and precautions for fire-fighters

Wear self-contained breathing apparatus for firefighting if necessary.

6. Accidental Release Measure

6.1 Personal precautions, protective equipment and emergency procedures

If material remains on the floor or ground, it may make the surface slippery. Remove pellets frequently. Avoid generating dust. When working, wear appropriate protective equipment and avoid breathing dust. Eliminate all sources of ignition near the area of the leak. Use proper personal protection equipment as indicated in section 8.

6.2 Environmental precautions

To avoid affecting the environment, prevent spilled material from entering rivers or other aquatic environments.

6.3 Methods and materials for containment and cleaning up

Sweep up dispersed material and place it in an empty container that can be tightly closed. If possible, first moisten dispersed material to prevent dust from rising.

7. Handling and Storage

7.1 Precautions for safe handling

Handle in well-ventilated places.
Avoid contact with skin and eyes.
Avoid breathing dust, vapor, as all types of polymers may develop dust during transporting or grinding of granules.
Do not use hook for handling bag, stack correctly.

7.2 Conditions for safe storage, including any incompatibilities

Storage stability:

Store in a dry place.
Protect against moisture.
Store away from excessive heat. No direct sunlight.

General Advice :

Keep container tightly closed. Avoid position of dust.

8. Exposure Controls/Personal Protection

8.1 Control parameters

Not established

8.2 Appropriate engineering controls

Use local exhaust ventilation

8.3 Personal protective equipment

Respiratory protection	:	Dust respirator
Hand protection	:	Safety gloves
Eye protection	:	Safety glasses
Skin and body protection	:	Safety clothes (with long sleeves), safety shoes

8.4 Work / Hygienic Practices

Eating, drinking and smoking in work areas is prohibited.
Wash hands after use.
Remove contaminated clothing and protective equipment before entering eating areas.

9. Physical and Chemical Properties

APPEARANCE: Opaque off-white

ODOR: Mild

PHYSICAL STATE: Pellets

BOILING POINT: Not determined.

SPECIFIC GRAVITY: 1.25 g/cc ASTM D1505

BULK DENSITY: 0.8 g/cc ASTM D1895 (Poured)

SOLUBILITY IN WATER: Not determined.

pH: Not currently available.

VAPOR PRESSURE: Not applicable.

VAPOR DENSITY: Not applicable.

FREEZING POINT: Not determined.

MELTING POINT: 120 - 125 C

10. Stability and Reactivity

10.1 Reactivity

No hazardous reactions if stored and handled as prescribed/indicated.

10.2 Chemical stability

The product is stable if stored and handled as prescribed/indicated.

10.3 Possibility of hazardous reactions

The product is stable if stored and handled as prescribed/indicated.

10.4 Conditions to avoid

High moisture and temperature

10.5 Incompatible material

No data available

10.6 Hazardous decomposition products

Carbon monoxide, Carbon dioxide, Hydrocarbons and other oxides.

10.5 Incompatible material

No data available

10.6 Hazardous decomposition products

Carbon monoxide, Carbon dioxide, Hydrocarbons and other oxides.

11. Toxicological Information

11.1 Information on the likely routes of exposure

Inhalation	:	May affect to respiratory tract in case of the material is in powder state.
Skin contact	:	May cause skin irritation. Molten polymer may cause thermal burns.
Eye contact	:	Dust or powder contact with the eyes can lead to mechanical irritation.
Ingestion	:	With ingestion, nausea, vomiting, and diarrhea are common

11.2 Delayed and immediate effects and also chronic effects from short and long term exposure;

Immediate effect: May cause skin irritation. Mechanical eye irritation is possible.

After inhalation of process fumes and vapor may causes in the nose and throat, cough and wheezing are common.

Chronic effects: No data available

11.3 Numerical measures of toxicity

Acute toxicity: LD50 oral rat > 5000 mg/kg

12. Ecological Information

12.1 Eco toxicity

Acute aquatic toxicity : No data available

12.2 Persistence and degradability : No data available

12.3 Bio accumulative potential : No data available

12.4 Mobility in soil : No data available

12.5 Other adverse effects

Do not dump or discharge the material into aquatic environments, so as to prevent marine organisms from ingesting material.

13. Disposal Considerations

13.1 Waste treatment methods

Disposal must be according to applicable Federal, State and Local regulations

13.2 Contaminated packaging

Disposal must be according to applicable Federal, State and Local regulations

14. Transport Information

14.1 UN number : None

14.2 UN proper shipping name : None

14.3 Transport hazard class(es) : None

14.4 Packaging group : None

14.5 Environmental hazards : None

14.6 Transport in bulk : None

14.7 Special precautions for user : No data available

15. Regulatory Information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Europe:

Registration, Evaluation, Authorization and Restriction of Chemical (REACH)

Regulation (EC) No. 1907/2006:

The ingredients in this product are in compliance

Japan:

Laws and Regulation in Japan (ENCS):

Chemical Substances Control Law

Classification

: Existing

Class Reference No. in The Gazette list

: 7-708

Fire Service Law:

Classified in inflammables under Article 34 of the Fire Prevention Regulations in Japan.

Korea:

Korean Existing Chemical Inventory (KECI) : KE No. 2010-3-4234

Not a hazardous substance

Toxic Substances Control Act Inventory (TSCA)

The ingredients in this product are in compliance

15.2 Chemical Safety Assessment

No data available

16. Other Information

To the best of our knowledge, the information contained herein is corrected and reliable as of the date of publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, and disposal. The information relates only to the specific material designated and not valid for such material used in combination with any other material or in any process. It is the customer's responsibility to inspect and test our products in order to satisfy itself as to the suitability of the products for the customer's particular purpose. Ankor Bioplastics makes no warranties which extend beyond the description contained herein. Nothing herein shall constitute any implied warranty of merchantability or fitness for a particular purpose.