

SAFETY DATA SHEET

Regulation (EC) No 1907/2006 (REACH), Annex II
(COMMISSION REGULATION (EU) No 453/2010)

Version 1

Product Name PBAT modified starch--Ecoworld@FS-0330

Issue Date 04-Sep-2014

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

1.1. Product identifier

Product Name PBAT modified starch--Ecoworld@FS-0330

REACH registration number No information available

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

Recommended Use Biodegradable resin

Uses advised against No information available

1.3. Details of the supplier of the safety data sheet

Supplier JINHUI ZHAOLONG NEW TECHNOLOGY CO.,LTD

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1.4. Emergency telephone number

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SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Not classified

Classification according to Directive 67/548/EEC or 1999/45/EC

Not classified

2.2. Label elements

Symbols/Pictograms None

Signal word None

Hazard Statements Not applicable

Precautionary Statements Not applicable

2.3. Other hazards

No information available

SECTION 3: Composition/information on ingredients**3.1. Polymer**

Chemical Name	EC No	CAS No	Weight-%	Classification according to Directive 67/548/EEC or 1999/45/EC	Classification according to Regulation (EC) No. 1272/2008 [CLP]
BDO	203-786-5	110-63-4	-	Xn;R22 R67	Acute Tox. 4 (H302) STOT SE 3 (H336)
TPA	202-830-0	100-21-0	-	Not classified	Not classified
Adipic acid	204-673-3	124-04-9	-	Xi; R36	Eye Irrit. 2 (H319)
Starch	232-679-6	9005-25-8	-	Not classified	Not classified

SECTION 4: First aid measures**4.1. Description of first aid measures****General advice**

Remove contaminated clothing and shoes. If symptoms persist, call a physician.

Inhalation

Not an expected route of exposure. If inhale dust, get medical advice/attention immediately.

Skin Contact

Product is not irritating to skin. Wash off with soap and water after handling.

Eye contact

Not an expected route of exposure. No first aid measures needed.

Ingestion

Not an expected route of exposure. If swallowed by mistake. Get medical attention immediately

4.2. Most important symptoms and effects, both acute and delayed

No information available.

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

Treat symptomatically.

SECTION 5: Firefighting measures**5.1. Extinguishing media****Suitable extinguishing media**

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media

No information available

5.2. Special hazards arising from the substance or mixture

Thermal decomposition can lead to release of irritating and toxic gases and vapors

5.3. Advice for firefighters

Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Evacuate personnel to safe areas
Ensure adequate ventilation, especially in confined areas
Remove all sources of ignition
Avoid contact with skin, eyes and inhalation of vapors
Use personal protection recommended in Section 8

6.2. Environmental precautions

Prevent entry into waterways, sewers, basements or confined areas

6.3. Methods and material for containment and cleaning up

Collect in suitable containers for disposal according to local / national regulations (see Section 13)

6.4. Reference to other sections

See Section 7 for more information
See section 8 for more information
See section 13 for more information

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Handle in accordance with good industrial hygiene and safety practice
Ensure adequate ventilation, especially in confined areas
Avoid generation of dust
Use personal protection recommended in Section 8

7.2. Conditions for safe storage, including any incompatibilities

Keep away from heat
Keep locked up and out of reach of children
Store in accordance with local regulations

7.3. Specific end use(s)

Apart from the uses mentioned in SECTION 1.2 no other specific uses are stipulated.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Chemical Name	Australia	Austria	Belgium	Denmark	European Union
Adipic acid (CAS #: 124-04-9)	-	-	-	TWA: 5 mg/m ³	-
TPA (CAS #: 100-21-0)	-	-	-	TWA: 10 mg/m ³	-
BDO (CAS #: 110-63-4)	-	STEL 200 ppm STEL 800 mg/m ³ TWA: 50 ppm TWA: 200 mg/m ³	-	-	-

Chemical Name	Latvia	France	Finland	Germany	Italy
Adipic acid (CAS #: 124-04-9)	TWA: 4 mg/m ³	-	TWA: 5 mg/m ³	-	-

Chemical Name	Poland	Portugal	Spain	Switzerland	Netherlands
Adipic acid (CAS #: 124-04-9)	STEL: 10 mg/m ³ TWA: 5 mg/m ³	TWA: 5 mg/m ³	TWA: 5 mg/m ³	-	-

Chemical Name	Norway	United Kingdom	ACGIH TLV	OSHA PEL	NIOSH IDLH
Adipic acid (CAS #: 124-04-9)	-	-	TWA: 5 mg/m ³	-	-
TPA (CAS #: 100-21-0)	-	-	TWA: 10 mg/m ³	-	-

Derived No Effect Level (DNEL)

No information available.

Predicted No Effect Concentration (PNEC)

No information available.

8.2. Exposure controls**Engineering Controls**

Use with local exhaust ventilation. Ensure adequate ventilation, especially in confined areas.

Personal protective equipment

Eye/face protection	Wear safety glasses with side shields (or goggles) if necessary
Hand Protection	Wear protective gloves
Skin and body protection	Suitable protective clothing
Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment

Environmental exposure controls

Do not allow into any sewer, on the ground or into any body of water.

SECTION 9: Physical and chemical properties**9.1. Information on basic physical and chemical properties**

Appearance	Solid
Color	White
Odor	Odorless
Odor Threshold	No information available
pH	No information available

Melting point/freezing point	20°C(BDO) 151°C(Adipic acid)
Boiling point / boiling range	230°C(BDO) ca. 330 °C(Adipic acid)
Flash point	130°C(BDO) 260°C(TPA) 196°C(Adipic acid)
Evaporation rate	No information available
Flammability (solid, gas)	Not flammable
Flammability Limit in Air	No information available
Vapor Pressure	<1mbar(20°C)(BDO)
Vapor density	No information available
Density	1.26(g/cm ³)(polymer)
Relative density	1.26
Bulk density	No information available
Specific gravity	No information available
Water solubility	Mixable(BDO) 15 mg/l(20 °C)(TPA) 15 g/l(20 °C)(Adipic acid) 50 g/l(90 °C)(Starch)
Partition coefficient	-0.83(BDO) 2(TPA) 0.081(Adipic acid)
Autoignition temperature	370°C(BDO) 496°C(TPA) 420°C(Adipic acid) Ca.400°C(Starch)
Decomposition temperature	>300°C(TPA) Ca.200°C(Starch)
Kinematic viscosity	Not applicable
Dynamic viscosity	71.5mPa · s(25°C)(BDO)
Explosive properties	Not an explosive
Oxidizing properties	No information available

9.2. Other information

No information available

SECTION 10: Stability and reactivity**10.1. Reactivity**

No information available.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

None under normal processing.

10.4. Conditions to avoid

Heat, flames and sparks

10.5. Incompatible materials

Strong oxidizing agents. Strong acids. Strong bases.

10.6. Hazardous decomposition products

None under normal use conditions

SECTION 11: Toxicological information**11.1. Information on toxicological effects****Acute toxicity**

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
BDO(CAS #: 110-63-4)	1530 mg/kg bw(rat)	-	-
TPA(CAS #: 100-21-0)	>6400 mg/kg bw(rat)	-	-
Adipic acid (CAS #: 124-04-9)	5560 mg/kg bw(rat)	-	> 7.7 mg/L (Rat) 4 h > 31 mg/L (Rat) 1 h

Skin corrosion/irritation

Non-irritating to the skin.

Serious eye damage/eye irritation

No eye irritation.

Sensitization

No sensitization responses were observed.

Germ cell mutagenicity

No information available.

Carcinogenicity

No information available.

Reproductive toxicity

No information available.

STOT - single exposure

No information available.

STOT - repeated exposure

No information available.

Aspiration hazard

No information available.

SECTION 12: Ecological information**12.1. Toxicity**

Chemical Name	Algae/aquatic plants EC50	Fish LC50	Crustacea EC50
BDO(CAS #: 110-63-4)	500: 72 h Desmodesmus subspicatus mg/L EC50	-	-
Adipic acid (CAS #: 124-04-9)	31.3: 72 h Desmodesmus subspicatus mg/L EC50 26.6: 96 h Desmodesmus subspicatus mg/L EC50	97: 96 h Pimephales promelas mg/L LC50 static 230: 96 h Leuciscus idus mg/L LC50 static	85.7: 48 h Daphnia magna mg/L EC50

12.2. Persistence and degradability

No information available.

12.3. Bioaccumulative potential

Chemical Name	Partition coefficient
Adipic acid (CAS #: 124-04-9)	0.081

12.4. Mobility in soil

No information available

12.5. Results of PBT and vPvB assessment

PBT/vPvB assessment information is not available as chemical safety assessment not conducted.

12.6. Other adverse effects

No information available

SECTION 13: Disposal considerations**13.1. Waste treatment methods**

Waste from residues/unused products	Disposal should be in accordance with applicable regional, national and local laws and regulations
Contaminated packaging	Disposal should be in accordance with applicable regional, national and local laws and regulations

SECTION 14: Transport information

14.1 UN Number	Not regulated
14.2 Proper shipping name	Not regulated
14.3 Hazard Class	Not regulated
14.4 Packing Group	Not regulated
14.5 Environmental hazards	Not applicable
14.6 Special precautions	No information available
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable

SECTION 15: Regulatory information**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture****European Union**

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work

Take note of Directive 94/33/EC on the protection of young people at work

Take note of Directive 92/85/EC on the protection of pregnant and breastfeeding women at work

International Inventories

Component	TSCA	DSL/NDSL	EINECS/EL INCS	ENCS	IECSC	KECL	PICCS	AICS
BDO 110-63-4	X	X	X	X	X	X	X	X
TPA 100-21-0	X	X	X	X	X	X	X	X
Adipic acid 124-04-9	X	X	X	X	X	X	X	X
Starch 9005-25-8	X	X	X	X	X	X	X	X

"-" Not Listed

"X" Listed

15.2. Chemical safety assessment

No information available

SECTION 16: Other information

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006

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Key or legend to abbreviations and acronyms used in the safety data sheet

TWA - TWA (time-weighted average)

STEL - STEL (Short Term Exposure Limit)

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

ENCS - Japan Existing and New Chemical Substances

IECSC - China Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

AICS - Australian Inventory of Chemical Substances

Full text of H-Statements referred to under section 3

H302- Harmful if swallowed.

H319- Causes serious eye irritation.

H336- May cause drowsiness or dizziness.

Full text of R-phrases referred to under sections 2 and 3

R22- Harmful if swallowed.

R36- Irritating to eyes.

R67- Vapours may cause drowsiness and dizziness.

Disclaimer

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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