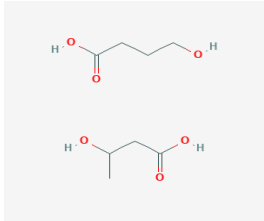


## Safety Data Sheet

## PHACT

**Section 1 – Identification of the substance and of the company/undertaking****1.1 Product identifier**

Trade name	: PHACT A1000P
Substance name	: Poly(3-hydroxybutyrate-co-4-hydroxybutyrate)
CAS No.	: 125495-90-1
Chemical structure	

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

- 1.2.1 Relevant identified uses : Applications requiring bio content and/or degradability
- 1.2.2 No additional information available  
No additional information available

**1.3 Details of the supplier of the safety data sheet**

Manufacturer	CJ CHEILJEDANG CORPORATION 330, Dongho-ro, Jung-Gu, Seoul - Korea
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**1.4 Emergency telephone number**

Emergency number	: 82-31-8099-2353
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**Section 2 – Hazards identification****2.1 Hazards****2.1.1 Classification of the substance or mixture**

- Flammability GHS Category 4-Slight hazard
- Not considered a hazards substance or mixture
- Not considered hazardous according to OSHA
- Not considered hazardous according to EC Directives 67/548EEC or 1999/45/EC and their valid adaptation and derived national regulation

## 2.1.2 GHS Label elements, including precautionary statements

Not relative as material in not a hazardous substance or mixture

## 2.1.3 Hazards not otherwise classified(HNOC) or not covered by GHS

Will not ignite by friction

Slightly flammable if subjected to open flame (see sec. 16, additional information)

## 2.2 Potential Health Effects

**Eye** : May cause eye irritation

**Skin** : May cause skin irritation. Under normal processing conditions at elevated temperature, contact with molten material can cause thermal burns

**Ingestion** : May be harmful if swallowed

**Inhalation** : Dust from processing may cause irritation of the respiratory system

## Section3 – Composition, Information on Ingredients

95-100% Polyhydroxyalkanoate(P3HB4HB) CAS#125495-90-1

## Section4 – First Aid Measures

**Eye** :Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid

**Skin** :Wash off with soap and water

**Ingestion** :Get medical aid immediately. Do not induce vomiting without medical advice

**Inhalation** :Heating resin above the recommended processing range, or 220 °C (392 °F) will produce toxic fumes. Remove the victim from exposure area to fresh air immediately. Give oxygen if breathing is difficult. Get medical aid. Give artificial respiration if not breathing.

**Notes to Physician** :Treat symptomatically and supportively.

## Section5– Fire Fighting Measure

**Extinguishing Media** :Use water spray, dry chemical, carbon dioxide, or chemical foam

**Flash Point** :Not determined

**Auto-ignition Temp.** :Not determined

**Hazardous Combustion Product**

: carbon dioxide, carbon monoxide

### **Special Protective Actions for fire-fighters**

:Wear a self-contained breathing apparatus in pressure-demand mode, MSHA/NIOSH (approved or equivalent), and full protective gear

## **Section 6 – Accidental Release Measures**

### **Non-emergency personnel**

:Use personal protective equipment as indicated in Section 8. Ventilate area

### **Spills / Leaks**

:Sweep up pellets. Vacuum fines, or dusts, using a combustible-dust vacuum

### **For emergency responders**

:Some as above for non-emergency personals

## **Section 7 – Handling and Storage**

### **Handling**

:Good industrial practices in housekeeping and personal hygiene should be followed. Minimize dust. Maintain operating temperature within the recommended processing range. Avoid contact with molten material and provide adequate ventilation during processing. When mechanical energy is used to process, or transfer, the materials, fines or dust can be generated. Systems and procedures should be designed to minimize the generation and accumulation of dust from the handling and processing of PHA resin. Refer to NFPA pamphlet 654: Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, processing, handling of Combustible Particulate Solids.

### **Storage**

:PHACTI Resins have good storage stability, but extremes of temperature and humidity should be avoided to prevent property deterioration. Resin should be stored in original shipping package. Keep the resin dry and sealed to exclude moisture. Store below 30 °C (86 °F) to maximize product shelf life.

## Section8– Exposure controls /Personal Protection

### 8.1 Control Parameters

#### OSHA Vacated PELs

:No OSHA Vacated PELs are listed for this chemical

#### Engineering Controls

:Provided good general ventilation with additional local ventilation where the hot polymer may reside for long periods (leak areas, above the nozzle or die, in screen changers, in vent ports, etc.). Heating resin above recommended processing conditions or 200 °C (392 °F) will produce toxic fumes.

### 8.2 Personal Protective Equipment

#### Eyes

:Wear appropriate protective eyeglasses described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166

#### Skin

:Hot polymers can cause thermal burns. Wear impervious clothing and insulated gloves where exposure to molten polymer is possible.

#### Respirators

:Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if there is potential for exposure to dust or toxic fumes, or if irritation or other symptoms are experienced.

## Section9– Physical and Chemical Properties

Appearance	:Off-white solid pellets
Odor	:mild
Odor threshold	:not determined
pH	:not applicable
Melting Point	:100°C-190 °C (212 °F to 374 °F)
Freezing Point	:not applicable
Boiling Point	:not applicable
Flash Point	:not determined
Evaporation rate	:not determined
Vapor Pressure	:not determined
Vapor Density	:not determined

Viscosity	:not available
Flammability	:data not available
Vapor Pressure	:not determined
Vapor Density	:not determined
Density	:1.1-1.3 g/cm <sup>3</sup>
Solubility	:soluble in chloroform, methylene chloride,
Partition coefficient	:not determined
Auto-ignition Temperature	:not determined
Decomposition Temperature	:above 200 °C (392 °F)
Viscosity	:not applicable-solid
Molecular Weight	:approximately >100,000 (by GPC)

## Section10– Stability and Reactivity

Reactivity	:not known to be reactive
Chemical Stability	:stable under recommended storage conditions. See section 7
Possibility of Hazardous Reaction	:hazardous polymerization will not occur
Conditions to Avoid	:incompatible materials, excess heat, flames, ignition sources
Incompatible materials	:strong oxidizing agents, strong acids
Hazardous Decomposition	:carbon monoxide, carbon dioxide, crotonic acid

## Section11– Toxicological Information

Acute toxicity	:no information available
Skin Corrosion / irritation	:no information available
Serious Eye Damage / irritation	:no information available
Respiratory or Skin Sensitization	:no information available
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

## Section12 – Ecological Information

### Toxicity

:not considered toxic in marine, fresh water, or soil environments

### Persistence and degradability

:PHACT PHA resin has the following certifications for biodegradability:

TÜV, Vincotte- certified as “OK Biodegradable Marine” for seawater environments according to ASTM D6691

TÜV, Vincotte - certified as “OK Biodegradable Soil” for natural soil environments according to ISO 17556

TÜV, Vincotte - certified as “OK Compost” for biodegradability in industrial composting units according to ISO16929 and EN13432

TÜV, Vincotte - certified as “OK Compost Home” for biodegradability in home composting system. Meet the U.S. standard for non-floating biodegradable plastics in marine environments according to ISO20200

TÜV, Vincotte – certified as “OK BioBased” for class 4, meaning 80% ≤ Biobased Carbon Content of PHACT™ PHA

DinCertco – certified as Biobased Products–DIN Gerprüft

**Bioaccumulative potential** :does not bioaccumulate

**Mobility in soil** :inherently biodegradable in soil

## Section13 – Disposable Considerations

There are no special requirements. Observe all environmental regulations. Non-hazardous, biobased and biodegradable PHACT biopolymer resin is not designed to biodegrade in conventional landfills and is not part of the conventional plastics recycling stream.

## Section14 – Transport Information

DOT	:not regulated
TDG	:not regulated
IATA	:not regulated
IMDG	:not regulated

## Section 15 – Regulatory Information

### Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List

### Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule

### Section 12b

None of the chemicals are listed under TSCA Section 12b

### TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA

### CERCLA Hazardous Substance and Corresponding RQs

Not available

### SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPO

### Section 313

No chemicals are reportable under Section 313

### Clean Air Act:

This material does not contain any hazardous air pollutants

### Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substance under the CWA

None of the chemicals in this product are listed as Priority Pollutants under the CWA

None of the chemicals in this product are listed as Toxic Pollutants under the CWA

### OSHA

None of the chemicals in this product are considered highly hazardous by OSHA

### California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

### EUROPEAN UNION

Not considered hazardous according to EC Directives 67/548/EEC or 1999/45/EC and their valid adaptations and derived national regulations

European labeling in Accordance with EC Directives

## Safety Phrases:

S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice

S 39 Wear eye/face protection

## CANADIAN REGULATIONS

Canada -DSL

CAS# 125495-90-1

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the SDS contains all of the information required by those regulations.

## Section 16 – Additional Information

SDS Original Creation Date: 03/23/2012

### HMIS Classification (estimated)

Health hazard: 0

Physical hazards: 0

### NFPA Rating (estimated)

Health hazard: 0

Fire: 1

Reactivity: 0

NOTICE: Customer assumes all risk with respect to its use and handling of this resin and its marketing, sale and use of products made with CJ CHEILJEDANG biopolymers. CJ CHEILJEDANG liability for breach of warranty, negligence, or other claims is limited to the purchase price of materials purchased. CJ CHEILJEDANG will not be responsible for any indirect, consequential, special, or incidental damages. The information contained herein is believed to be reliable, but CJ CHEILJEDANG makes NO REPRESENTATIONS, GUARANTEES, OR WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.