

## BG1000 - TECHNICAL DATA SHEET

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### PRODUCT DESCRIPTION

BG1000 is a biodegradable, aliphatic-aromatic copolyester based on the monomers 1,4-butanediol, adipic acid and terephthalic acid in the polymer chain. BG1000 has properties similar to PE-LD because of its high molecular weight and its long chain branched molecular structure. BG1000 is chain extended grade with Mn 45000~ 80000

A biodegradable plastic resin is a plastic that maintains the same properties as a conventional plastic with regard to its use, but which can be completely degraded into the water and carbon dioxide by naturally occurring microorganisms such as bacteria fungi and algae when disposed of in the natural environment.

BG1000 shows excellent performances as below.

- High molecular weight substance
- Stronger tensile and tear strength
- Sustainable strength & degradability vs time
- Semi-crystalline structure
- Melting point: 125°C
- Great processability (at general machinery)
- M.F.I. (190°C 2.16kg/10min.): 2.0 ~ 5.0
- Good printability without pretreatment & Good weldability
- Color: white pellet

### APPLICATION:

- BG1000 is designed for flexible packaging films to be extruded through blown or cast processes.
- BG1000 is compatible with another biodegradable polymers like PLA, PBS, TPS... To prevent air oxidation of PBAT, a suitable antioxidant was usually prescribed in compound process about 0.1 ~ 0.2wt%

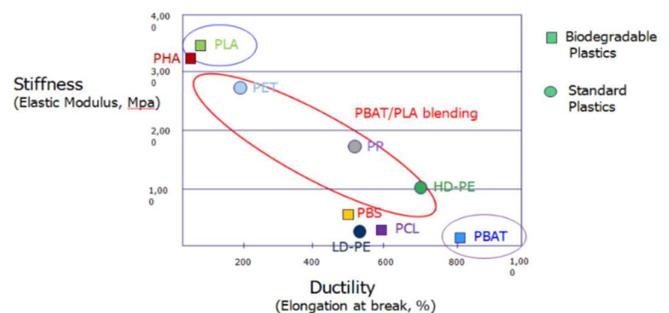


Figure 1 Blending PBAT and PBS with other

### STRENGTH OF BG1000

- ① BG1000 is printable, weldable and can be mechanically recycled
- ② High molecular weight substance (Mn: 45 000~ 80 000)
- ③ When incinerated, BG1000 does not generate any noxious side-products and hazardous gases.
- ④ BG1000 is highly compatible with natural materials like PLA, PBS, TPS...

- ⑤ BG1000 has low Acid value
- ⑥ We can supply to a customer grade that satisfies the individual customer's need
- ⑦ Shelf life: 12 months

### PROCESSING INFORMATION:

In-line drying is recommended for BG1000 resins. A moisture content of less than 0.25% (25 ppm) is recommended to prevent viscosity degradation. Polymer is supplied in foil lined boxes or bags dried to <0.25% when packaged. The resin should not be exposed to atmospheric conditions after drying.

Item	Unit	Value
Cylinder	°C	130~150
Head	°C	150~160
Dies	°C	160~170

Keep the package sealed until ready to use and promptly dry and reseal any unused material. The drying curves for both amorphous and crystalline resins are shown to the right. It is important to consider accurate initial moisture, when calculating necessary drying time.

### AVERAGE PHYSICAL AND MECHANICAL PROPERTIES

Item	Conditions	Method	Unit	Value
Density	-	ASTM D792	g/ml	1.22~1.25
MFI	190°C/2.16kg	ASTM D1238	g/10min	2~5
Melt Temperature	-	ASTM 3418	°C	125
Tensile Strength (MD)	-	ASTM D638	kgf/cm <sup>2</sup>	>250
Tensile Strength (TD)	-	ASTM D638	kgf/cm <sup>2</sup>	>200
Elongation (MD)	-	ASTM D638	%	>350
Elongation (TD)	-	ASTM D638	%	>400
Tear Strength (MD)	-	ASTM D1004	kgf/cm	>110

\* Thickness 30 μm

### FOOD PACKAGING STATUS

**US status:** On 2020 August 07, BG1000 is passed US FDA CFR 175.300 (Resinous and Polymeric Coatings) – Determination of Amount of Extractives

SGS Test report No: *VNHL2007015119HG*

Extractants	Test Condition	Result (mg/inch <sup>2</sup> )	Reporting Limit (mg/inch <sup>2</sup> )	Permissible Limit (mg/inch <sup>2</sup> )
		1		
Distilled Water	150°F for 2 hours	ND	0.1	0.5
8% Alcohol	150°F for 2 hours	ND	0.1	0.5
n-Heptane	100°F for 30 minutes	ND	0.1	0.5
<b>Comment</b>	--	<b>PASS</b>	--	--

Figure 2: US FDA CFR 175.300



BG1000 is safely used as the food-contact surface of articles intended for use in producing, manufacturing, packing, processing, preparing, treating, packaging, transporting, or holding food

**European Status:** On 2020 August 07, BG1000 is food contact grade, comply to EU10/2011:

Commission Regulation (EU) No 10/2011

- a) Plastic- Overall Migration
- b) Plastic- Specific Migration of Heavy Metals

And European Regulation (EC) No. 1907/2006 (REACH) Annex XVII and its amendments:

Polycyclic Aromatic Hydrocarbons (PAHs) content

European Directive 94/62/EC (Pb, Cd, Hg, Cr VI)

Test report No: *VNHL2007015120HG*

No SML's for the above referenced grade exist in Plastics Regulation 10/2011 as amended. Anbio would like to draw your attention to the fact that the EU- Plastics Regulation 10/2011, which applies to all EU-Member States, includes a limit of 10 mg/dm<sup>2</sup> of the overall migration from finished plastic articles into food. In accordance with Plastics Regulation 10/2011 the migration should be measured on finished articles placed into contact with the foodstuff or appropriate food simulants for a period and at a temperature which are chosen by reference to the contact conditions in actual use, according to the rules laid down in Plastics Regulation 10/2011.

### **COMPOSTIBILITY STATUS:**

BG1000 is fulfils the requirements of the European standard DIN EN 13432, the US standard ASTM D 6400 for compostable and biodegradable polymers, because it can be degraded by micro-organisms. The biodegradation process in soil depends on the specific environment (climate, soil quality, population of micro-organisms)

### **BULK STORAGE RECOMMENDATIONS**

The resin silos recommended and used by Anbio are designed to maintain dry air in the silo and to be isolated from the outside air. This design would be in contrast to an open, vented to atmosphere system that we understand to be a typical polystyrene resin silo. Key features that are added to a typical (example: polystyrene) resin silo to achieve this objective include a cyclone and rotary valve loading system and pressure vessel relief valves. The dry air put to the system is sized to the resin flow rate out of the silo. Not too much dry air would be needed and there may be excess instrument air (-30°F dew point) available in the plant to meet the needs for dry air. Our estimate is 10 scfm for a 20,000 lb/hr rate resin usage. Typically, resin manufacturers specify aluminum or stainless steel silos for their own use and avoid epoxy-lined steel.