



**ANBIO**

# **BIODEGRADABLE MATERIALS**





## ANBIO INTRODUCTION

Anbio Joint Stock Company is a member of An Phat Holdings - a leading group in the field of hi-tech and environmentally friendly plastic production. Building on over 20 years of development, our products have been recognized and exported to more than 50 countries around the world.

Catching up with the new global consumption trend of shifting from conventional plastics to environmentally friendly products, An Phat Holdings aims to deliver innovative products that combine impressive performance with strong sustainability credentials to protect human's health. We are passionate in producing a wide range of high-performance biodegradable products that meet our customers' demands for both environmental and end-of-life performance. To do that, we have built a core R&D team with considerable experience in natural polymer chemistry and product performance.

Our development mission is to be at the forefront of biodegradable polymer innovation, producing materials that can challenge the dominance of conventional plastics and ultimately replace them completely.

Our environmentally friendly products have attained certifications such as OK compost by TUV, DIN Certo Compostable for EU market and BPI Compostable certificate of the US.

*Let's protect the planet with us.*







## WORLDWIDE MARKET





## BG1000

- 100% PBAT
- High molecular weight substance
- Low acid value
- Good processability, sustainable strength & degradability vs time
- **Shelf life:** 12 months
- **Applications:** can be processed on conventional blow-molding machines (e.g machines for LDPE and others biodegradable polymer including PLA, PHA, TPS, etc.), blending process



### PHYSICAL/ MECHANICAL PROPERTIES

ITEM	CONDITIONS	METHOD	UNIT	VALUE
Density	25°C	ASTM D792	g/ml	1.25
MFI	190°C/2.16kg	ASTM 1238	g/10min	2-5
Melt Temperature	-	ASTM 3418	°C	125
Tensile Strength (MD/TD)	25°C	ASTM D638	kgf/cm <sup>2</sup>	> 400/500
Elongation (MD/TD)	25°C	ASTM D638	%	> 500/600
Tear Strength (MD)	25°C	ASTM D1004	kgf/cm	400/1600

\* Thickness 30µm

## BG1070

- 100% PBAT
- Stronger tensile strength and tear resistance
- Certified Compostable and Biodegradable
- Good processability, weldable and printable
- Suitable for food contact
- **Shelf life:** 12 months
- **Applications:** Blending with other biodegradable materials to make compostable compounds, processing on conventional blowing film machines (for polyethylene)



### PHYSICAL/ MECHANICAL PROPERTIES

ITEM	CONDITIONS	METHOD	UNIT	VALUE
Density	-	ASTM D792	g/ml	1.25
MFI	190°C/2.16kg	ASTM D1238	g/10min	2~5
Melt Temperature	-	ASTM 3418	°C	125
Tensile Strength (MD/TD)	-	ASTM D638	kgf/cm <sup>2</sup>	>180
Elongation (MD/TD)	-	ASTM D638	%	>300
Tear Strength (MD)	-	ASTM D1004	kgf/cm	>100

\* Thickness 30µm

## BG4400

- Compound made from PLA and additives
- Certified Compostable and Biodegradable
- High biobased content
- Suitable for food contact
- Optimal balance of stiffness and toughness
- Easy processing
- **High temperature resistance:** 100-115°C
- **Shelf life:** 12 months
- **Applications:** Can be used in producing food container, cutlery, usable on conventional plastics injection molding machines.



### PHYSICAL/ MECHANICAL PROPERTIES

ITEM	CONDITIONS	METHOD	UNIT	VALUE
Density	-	ASTM D792	g/ml	1.4
MFI	190°C/2.16kg	ASTM D1238	g/10min	5~12
HDT	-	ASTM D648	°C	100~120
Tensile Yield Strength	-	ASTM D638	kgf/cm <sup>2</sup>	300~400
Tensile Elongation	-	ASTM D638	%	<20

## BG4800

- Made from polylactic acid resin (PLA), impact modifier
- Certified Compostable and Biodegradable
- Strong impact resistance
- **Shelf life:** 12 months
- **Applications:** Can be used in producing 3D filaments.



### PHYSICAL/ MECHANICAL PROPERTIES

ITEM	CONDITIONS	METHOD	UNIT	VALUE
Density	-	ASTM D792	-	1.15~1.2
MFI	190°C/2.16kg	ASTM D1238	g/10min	5~10
HDT	-	ASTM D648	°C	50
Tensile Yield Strength	-	ASTM D638	Mpa	>38
Tensile Elongation	-	ASTM D638	%	>5
Notched Izod impact	Notched	ASTM D256	J/m	>200
Flexural Strength	-	ASTM D790	Mpa	>40

## BG5000J

- 100% PBS
- Certified Compostable and Biodegradable
- Suitable for food contact
- High MI
- **Shelf life:** 12 months
- **Applications:** Can be processed for coating, injection molding (fishing gear), production of diverse disposable products





## PHYSICAL/ MECHANICAL PROPERTIES

ITEM	CONDITIONS	METHOD	UNIT	VALUE
Density	-	ASTM D792	-	1.3
MFI	190°C/2.16kg	ASTM D1238	g/10min	15~25
Melt Temperature	-	ASTM 3418	°C	115~118
Tensile Strength	-	ASTM D638	Mpa	>370
Elongation	-	ASTM D638	%	>10
HDT	-	JIS K7207	°C	92

### BG5000M

- 100% PBS
- Certified Compostable and Biodegradable
- Low MI
- **Shelf life:** 12 months
- **Applications:** Can be mainly used for extrusion to produce sheet, film, fiber (fishing net)



## PHYSICAL/ MECHANICAL PROPERTIES

ITEM	CONDITIONS	METHOD	UNIT	VALUE
Density	-	ASTM D792	-	1.25~1.27
MFI	190°C/2.16kg	ASTM D1238	g/10min	2~5
Melt Temperature	-	ASTM 3418	°C	115~118
Tensile Strength	-	ASTM D638	kgf/cm <sup>2</sup>	>370
Elongation	-	ASTM D638	%	>100
HDT	-	JIS K7207	°C	93

### BG8800

- Compound made from PBAT, PLA with slip and anti-block agent
- Certified Compostable and Biodegradable
- High tensile strength and excellent failure energy
- Easy processing
- Low melting index (MI)
- Low acid value
- **Shelf life:** 12 months
- **Applications:** can be used in producing general thin film.



## PHYSICAL/ MECHANICAL PROPERTIES

ITEM	CONDITIONS	METHOD	UNIT	VALUE
Density	-	ASTM D792	-	1.29~1.32
MFI	190°C/2.16kg	ASTM D1238	g/10min	2~5
Melt Temperature	-	ASTM 3418	°C	110~130, 150~180
Tensile Strength (MD/TD)	-	ASTM D638	kgf/cm <sup>2</sup>	>320
Elongation (MD/TD)	-	ASTM D638	%	>450
Tear Strength (MD)	-	ASTM D1004	kgf/cm	>110

\* Thickness 20μm

## CTR02-A

- Made from PLA and PBAT kinds of Biodegradable resin
- Compound for transparent film blowing applications
- Low MI
- **Shelf life:** 12 months



### PHYSICAL/ MECHANICAL PROPERTIES

ITEM	CONDITIONS	METHOD	UNIT	VALUE
Density	25°C	ISO 1183	g/cm <sup>3</sup>	1.25-1.27
MFI	190°C/2.16kg	ASTM 1238	g/10min	2-4
Melt temperature	-	DSC	°C	160
Tensile strength (MD/TD)	25°C	ISO527-3	Mpa	30/13
Elongation (MD/TD)	25°C	ISO527-3	Mpa	120/300
Tear Strength (MD/TD)	25°C	ISO 6383-2	mN	100/600

\*Thickness 14μm

## CTR02-B

- Made from PLA and PBAT kinds of Biodegradable resin
- Compound for translucent film blowing applications
- Low MI
- **Shelf life:** 12 months



### PHYSICAL/ MECHANICAL PROPERTIES

ITEM	CONDITIONS	METHOD	UNIT	VALUE
Density	25°C	ISO 1183	g/cm <sup>3</sup>	1.25-1.27
MFI	190°C/2.16kg	ASTM 1238	g/10min	5-7
Melt temperature	-	DSC	°C	155
Tensile strength (MD/TD)	25°C	ISO527-3	Mpa	30/14
Elongation (MD/TD)	25°C	ISO527-3	Mpa	200/500
Tear Strength (MD/TD)	25°C	ISO 6383-2	mN	300/1800

\*Thickness 11μm

## CTR02-C

- Made from PBAT and CaCO<sub>3</sub> kinds of Biodegradable resin
- Compound for Rollbag, Compost bag, Carrier bag etc
- **Shelf life:** 12 months



### PHYSICAL/ MECHANICAL PROPERTIES

ITEM	CONDITIONS	METHOD	UNIT	VALUE
Density	25°C	ISO 1183	g/cm <sup>3</sup>	1.33
MFI	190°C/2.16kg	ASTM 1238	g/10min	2-3
Melt temperature	-	DSC	°C	155
Tensile strength (MD/TD)	25°C	ISO527-3	Mpa	25/9
Elongation (MD/TD)	25°C	ISO527-3	Mpa	80/250
Tear Strength (MD/TD)	25°C	ISO 6383-2	mN	500/1500

\*Thickness 25μm

## CTR02-D

- Made from PLA + PBAT and Starch kinds of Biodegradable resin
- Compound for Rollbag, Compost bag, Carrier bag etc
- **Shelf life:** 12 months



### PHYSICAL/ MECHANICAL PROPERTIES

ITEM	CONDITIONS	METHOD	UNIT	VALUE
Density	25°C	ISO 1183	g/cm <sup>3</sup>	1.23-1.25
MFI	190°C/2.16kg	ASTM 1238	g/10min	3-5
Melt temperature	-	DSC	°C	135
Tensile strength (MD/TD)	25°C	ISO527-3	Mpa	18/9
Elongation (MD/TD)	25°C	ISO527-3	Mpa	200/500
Tear Strength (MD/TD)	25°C	ISO 6383-2	mN	350/1800

\*Thickness 14µm

## CTR02-E

- Made from PBAT and CaCO<sub>3</sub> kinds of Biodegradable resin
- Compound for Shopping bags, Garbage bags, T-shirt bags, Roll bags, Die-cut bags and more
- **Shelf life:** 12 months



### PHYSICAL/ MECHANICAL PROPERTIES

ITEM	CONDITIONS	METHOD	UNIT	VALUE
Density	25°C	ISO 1183	g/cm <sup>3</sup>	1.45-1.47
MFI	190°C/2.16kg	ASTM 1238	g/10min	2-3
Melt temperature	-	DSC	°C	155
Tensile strength (MD/TD)	25°C	ISO527-3	Mpa	14/8
Elongation (MD/TD)	25°C	ISO527-3	Mpa	200/350
Tear Strength (MD/TD)	25°C	ISO 6383-2	mN	400/1600

\*Thickness 14µm

## ANBIO S3

- Made from PLA and PBAT kinds of Biodegradable resin
- High bio-based percentage
- Mainly used for extrusion. Finished products: straight and bendy straws
- **Shelf life:** 12 months



### PHYSICAL/ MECHANICAL PROPERTIES

ITEM	CONDITIONS	METHOD	UNIT	VALUE
Density	25°C	ISO 1183	g/cm <sup>3</sup>	1.263
MFI	190°C/2.16kg	ASTM 1238	g/10min	2-5
Melt temperature	-	DSC	°C	155
Apperance	25°C	-	-	White





## CERTIFICATIONS & COMPOSTABILITY TEST

### CERTIFICATIONS



\* According to EU and FDA standards

### COMPOSTABILITY TEST

MATERIALS	0 week	2 weeks	1 month	3 months	6 months	12 months
Compostable						
Polyethylene						





## **ANBIO JOINT STOCK COMPANY**



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