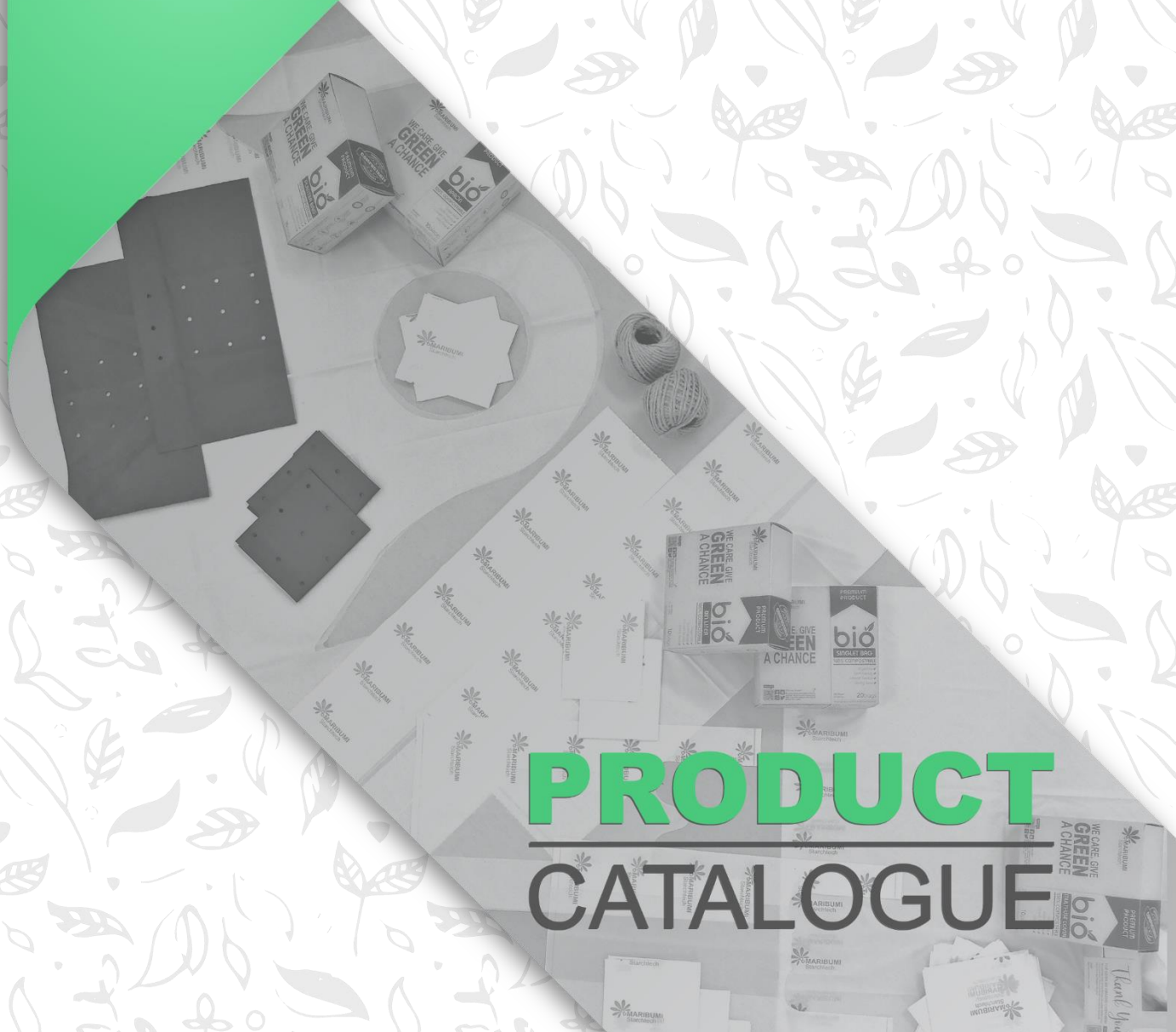




100% COMPOSTABLE
PRODUCT MANUFACTURER

WE CARE. GIVE
GREEN
A CHANCE



PRODUCT
CATALOGUE

YOUR **100% COMPOSTABLE** PRODUCT MANUFACTURER

General Enquiry: enquiry@maribumistarchtech.com | Sales Enquiry: sales@maribumistarchtech.com | Tel (Factory): +603 8723 1997 | Tel (HQ): +603 7958 5857



MARIBUMI STARCHTECH **SDN. BHD.**

was established in 12th August 2009. We are among of Malaysia's most innovative companies that strive to be difference makers in continuously generating sustainable impact for the environment, involved in core activities centred in manufacturing 100% compostable products.

Positioned for growth at both local and global levels, we have brought together expertise comprising researchers, production team and marketers for the development and innovation of a new range of compostable plant-based products. Together, the team has shared commitment to the vision of greener alternatives for the future generation.





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MARIBUMI STARCHTECH SDN. BHD. considered one of the most innovative companies in Malaysia that involved in core activities centred in manufacturing 100% **compostable products**.

OUR VISION is to become an industry leader in fostering sustainable environment by producing 100% Compostable Products derived from natural resources that complies with International Standard in support to **Zero-Plastic Waste** initiative worldwide. We strive to promote environmentally friendly business practices at every stage of our product lifecycle, from research and development and production to customer use and disposal.

OUR MISSIONS are:

- ✱ To inspire positive environmental change through actions and products that foster a more sustainable living for future generation.
- ✱ To continuously empower communities and organization to ignite initiative that can generate sustainable impact for the environment and reach sustainability goals. Together we will create a sustainable world.
- ✱ To provide affordable, high quality of functional strength and long shelf-life of compostable products for multi-purpose application.
- ✱ To support better solid waste management by shifting focus towards the use of biodegradable and compostable products.

Moving towards zero single-use plastics are possible by pushing the limits for better, greener, and sustainable standards of living with proper awareness, education, and continuous effort in promoting the availability of eco-friendly alternatives.





OUR RAW MATERIAL

Our products are formulated from **Bio-Resin**, a raw material that derived from renewable resources, **natural plant-based** which is an annually renewable resource. Our raw material is certified as compostable that meet international standards for compostability as below: -

Our certified raw materials:

- ✱ Australia Standard AS 4736 - "Biodegradable Plastics suitable for composting and other microbial treatment", certified by Australasian Bioplastics Association (ABA), Australia.
- ✱ Europe Standard EN 13432-2000 "Requirements for packaging recoverable through composting and biodegradation". certified by Din Certco, Germany.
- ✱ USA Standard ASTM D 6400:2012-01 - "Standard Specification for Compostable Plastics", certified by Biodegradable Products Institute (BPI), USA.
- ✱ ISO1708:2012 Specifications for compostable plastics



Our certified finished products:

- ✱ SIRIM Eco 001:2018 - License No.: EL000197. – Manufactured products that complies to environmentally friendly criteria and quality processes but have also been tested against a pre-set green criterion (Malaysia National Eco Labelling Scheme).
- ✱ MyHIJAU Mark; Certificate No.: MyHP00125/22.- Malaysia's official green recognition scheme endorsed by Government of Malaysia.



Other certifications by SIRIM QAS International Sdn. Bhd.:

- ✱ ISO 9001:2015 Quality Management System (QMS), Manufacturer of Biodegradable and Compostable Products.
- ✱ The International Certification Network (IQNET), for following scope of Manufacturer of Biodegradable and Compostable Products which fulfills ISO 9001:2015 QMS.

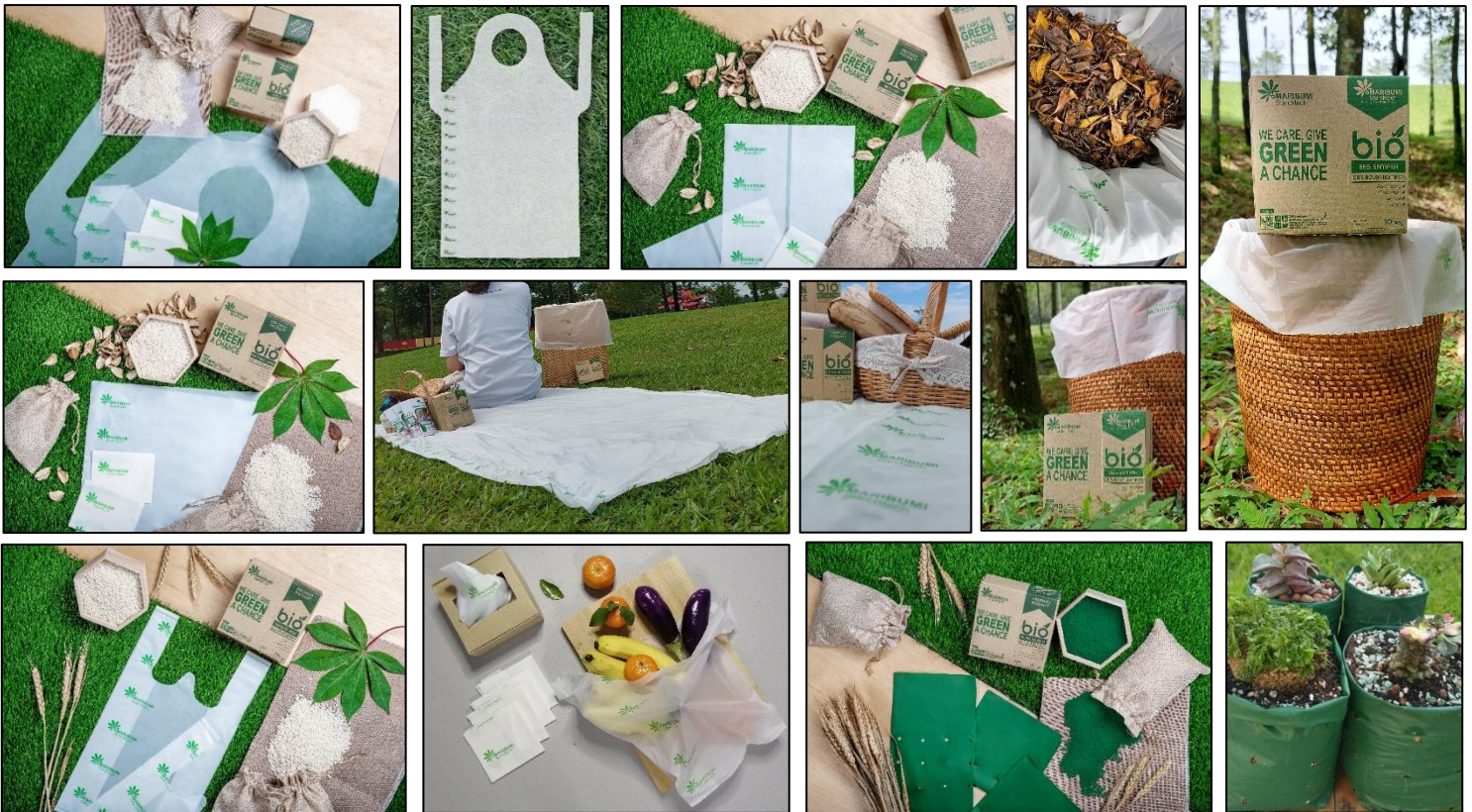


We can cater to customer needs depending on the product requirements requested from the users. Our product applications may include the following: -

- ✿ Customise colours;
- ✿ Customise logo printing and logo design;
- ✿ Customise size and dimension;

Note: Some application may have limits based on the production can run. This solely for maintaining the environment practices.

****Please refer our raw material *Technical Data Sheet* at Attachment A**

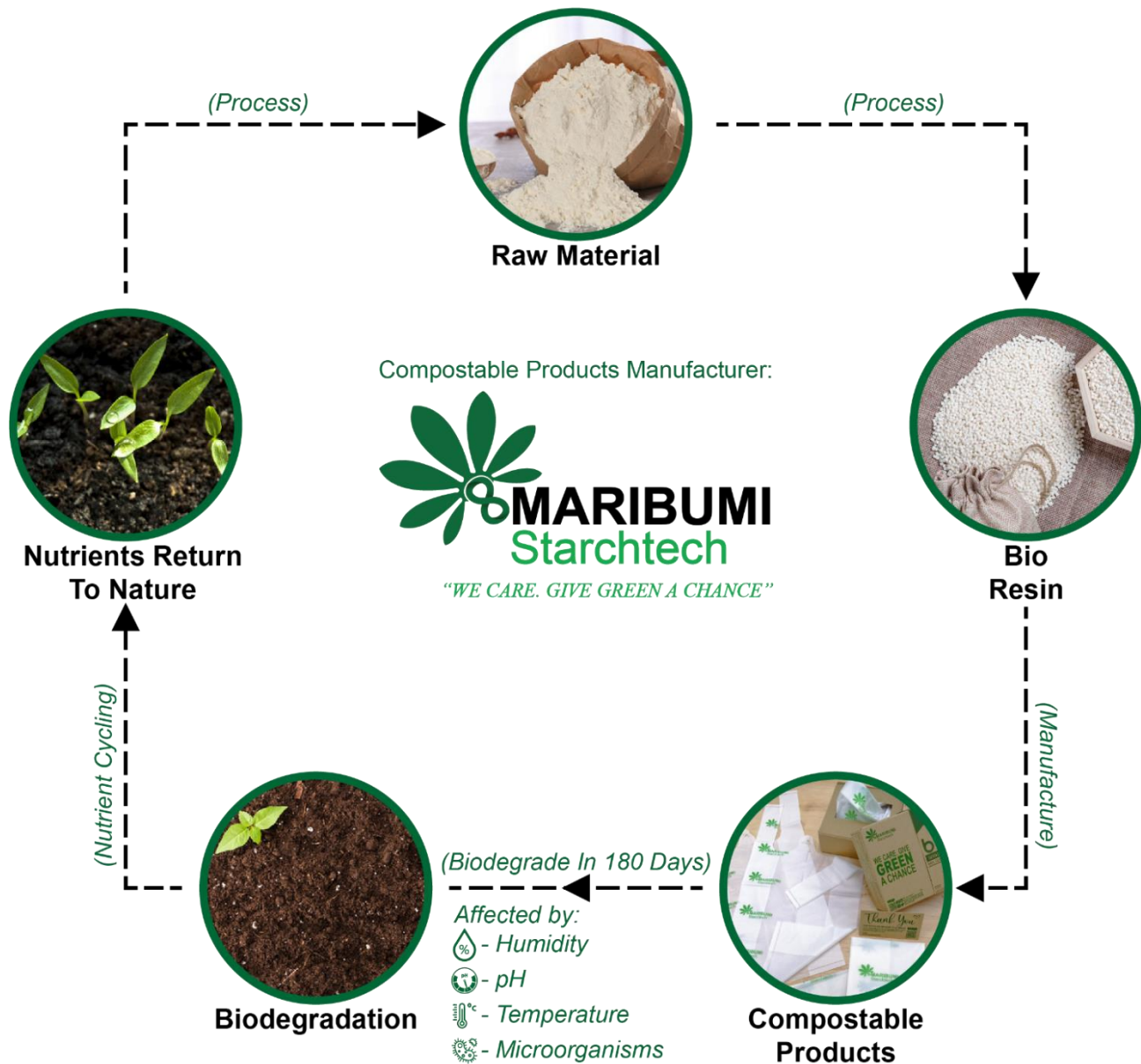


Products: Bio-compostable Apron; Garbage bags, Multi-use cover, Shopping bags, Planter bags, etc.

MARIBUMI STARCHTECH™ brand is a sustainable, affordable and an environmentally friendly alternative to conventional plastic and paper bags. Our breakthrough is its cost-effective technology designed for better environmental protection. With cautious selection of **raw materials** that are renewable resources, we aim to inspire people to leave a greener legacy for our future generations with our products. Our products can **positively influence our environment** as they will take approximately within **180 days** standard to decompose depending on the composting environment without leaving harmful residues. Industrial composting is typically quicker than home composting due to the large-scale composting normally designed to handle a high volume of organic waste and the temperatures of an industrial compost. This compost is very ideal to farms and plant nurseries considering the large-scale normally required. In other words, our products are considered chemically harmless. Nevertheless, our products must be stored in a proper room temperature and best to avoid direct sunlight to maintain a long shelf life.



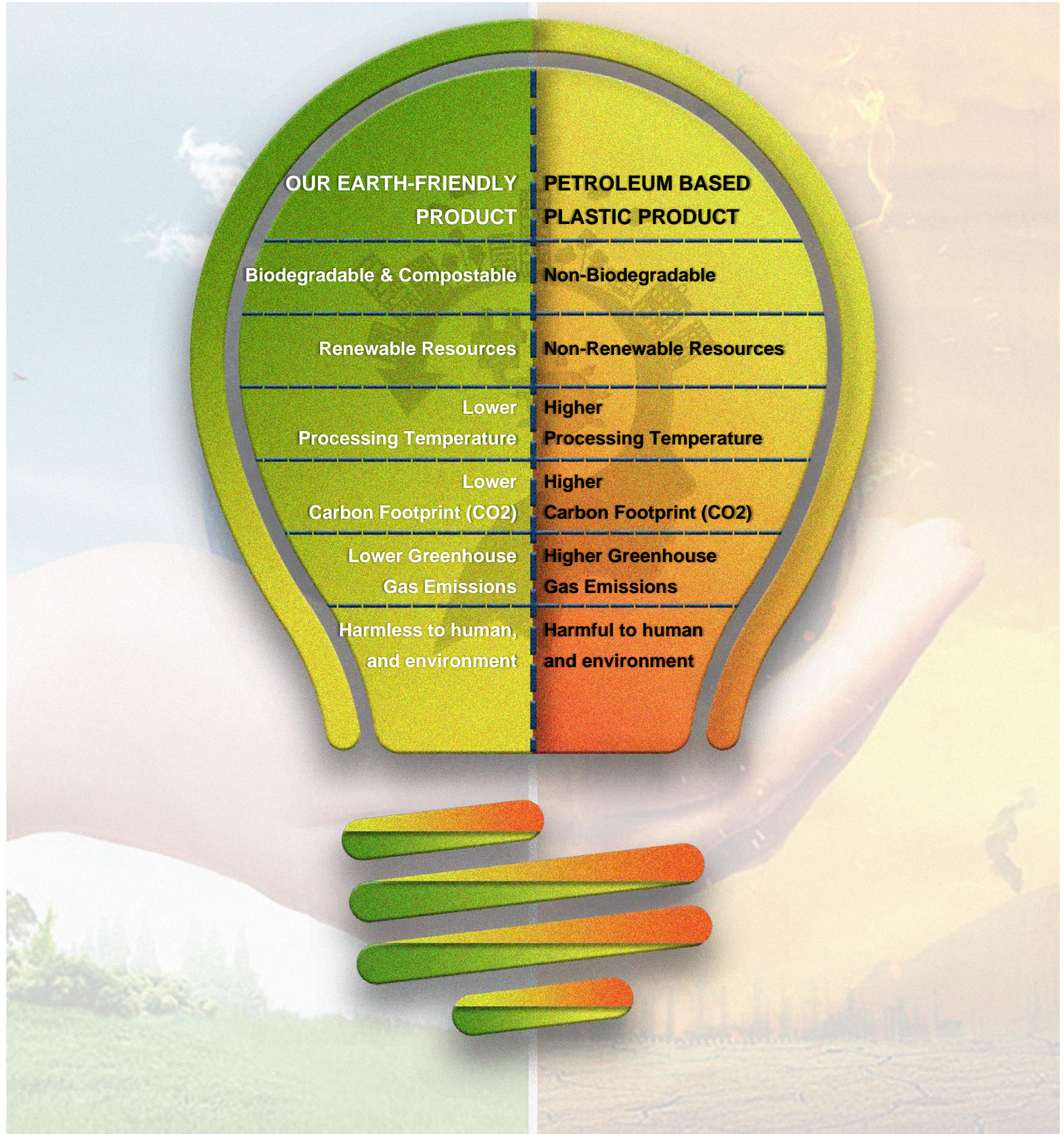
THE LIFE CYCLE OF **MARIBUMI STARCHTECH** COMPOSTABLE PRODUCTS



Our compostable products are great alternatives to most conventional plastic and petroleum plastic that took a thousand years to break down, which does not decompose into nutrients so this will also attract toxic substances that are bad to our environment while our products **biodegrade within 180 days**, depending on the composition and environmental condition our products exposed to. It can also be broken down easily in landfills or open environment, composting naturally without harming the environment which ensure non-toxicity also return back to nature.



OUR UNIQUENESS





SUSTAINABLE DEVELOPMENT GOALS

OUR UNIQUENESS

17 GOALS TO TRANSFORM OUR WORLD



- MAIN FOCUS** : SDG 13, SDG 14
- DIRECT CONTRIBUTION** : SDG 9, SDG 12
- INDIRECT CONTRIBUTION** : The other rest of the SDGs



Maribumi Starchtech aligned with the UN Sustainable Development Goals (sdgs.un.org), calling global for actions to protect the planet by aiming to make our current infrastructure more environmentally friendly:



SDG 9: Being the first manufacturer to innovate '*bio-compostable*', originated from being both biodegradable and compostable, Maribumi Starchtech has built a core group of dependable researchers, innovators, marketers and production team that specialise in promoting and developing innovative polymers of bio-compostable products. Our R&D provide their expertise, conducting in-house testing and access to the latest info on bio-compostable whereby offering alternative to conventional plastics.



We are strongly committed to environmentally friendly business practices at every stage of our product lifecycle from research and development, production to customer use and disposal while maintaining high quality, reliable and sustainable products.

SDG 12: At Maribumi Starchtech, the production of bio-compostable products significantly produces zero greenhouse emissions and consume less amount of energy or low electricity consumption of production than conventional plastics hence, reducing the environmental impact.



SDG 13: The contribution to the climate action is heavily dependent on Maribumi Starchtech Green Communities' social commitment in raising public awareness about the plastics pollution and actively organising campaign for cleanup project, as well as gaining support from the local environmental communities. Obtaining SIRIM Eco-Label Mark and testing report from authorised body is a gateway to get local recognition and trust from public to start shifting from conventional plastics to bio-compostable.



SDG 14: The continual global warming such as ocean plastic pollution is an emerging threat and putting risk to coral reefs and marine life. Due to wrong disposal of plastics, this is a major cause of marine pollution. Maribumi Starchtech is determined to run campaigns on the effects of conventional plastics use on the seas and oceans as well as engaging every state to clean up a local river, seaside or an ocean which most polluted with trash and plastic waste.



COMPOSTABLE BIN LINER



PRODUCT DESCRIPTION

In the right environment, our compostable garbage bag is designed to turn into compost within 180 days. They still offer proven strength and tear resistance while remaining earth-friendly.



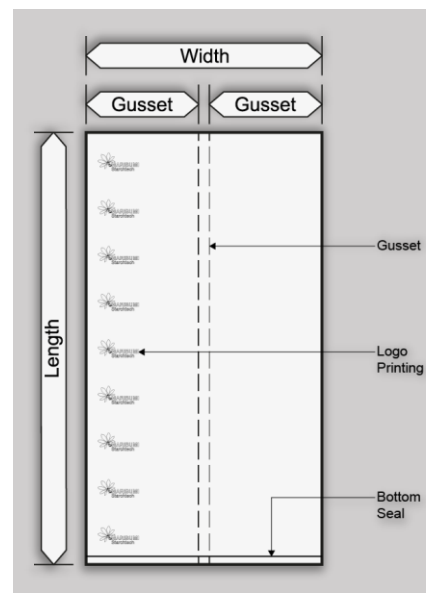
RAW MATERIAL

Bio-resin, derived from renewable resources which can be decomposed within 180 days once exposed to the environment.



SUGGESTED APPLICATION

Residential use, Kitchen, Pantry, Hotel, Bars, Restaurant, School, Food & Beverage Industry, Public Places, Office, Industrial use, or Government Use



TECHNICAL SPECIFICATION FOR COMPOSTABLE BIN LINER

Size	S	M	L
Model No.	BL 1334	BL 1354	BL 1455
Dimension (mm / inches) **(Width x Length)	455mm x 535mm (18inch x 21inch)	560mm x 840mm (22inch x 33inch)	710mm x 915mm (28inch x 36inch)
Gusset (mm / inches)	230mm (9.0inch)	280mm (11.0inch)	350mm (14.0inch)
***Thickness (microns)	30	30	40
Packaging (per pack)	Subject to customer's demand		
Product Type	Bio-compostable Product		
Product Colour	Natural / Orange / Brown / Blue / Black (We accept customized; according to customer's demand)		
Printing	Subject to customer's demand (Specified model number above is applicable to the standard printing design)		
Shelf Life	12-24 months from the manufacturing date, provided proper handling and storage at a suitable temperature. Once the packaging is opened, degradation may commence within 180 days.		
Storage	Store the products in a dry environment (temperature below 40°C, humidity below 60%), and avoid direct sunlight. It is advisable to utilise the products within 1 year for optimal quality. Always store the products in the box with the included silica gel.		

*The product illustration is for reference purpose only; actual product may vary due to product enhancement.

**The product dimension may be varied about ± 0.5 inch for width, length, and gusset.

*** The product thickness may be varied about ± 3.0 microns.



COMPOSTABLE SINGLET BAG



PRODUCT DESCRIPTION

Our compostable singlet bag has good tear resistance, good moisture barrier properties, strong and sturdy, stores and works well, and stronger seal at bottom.



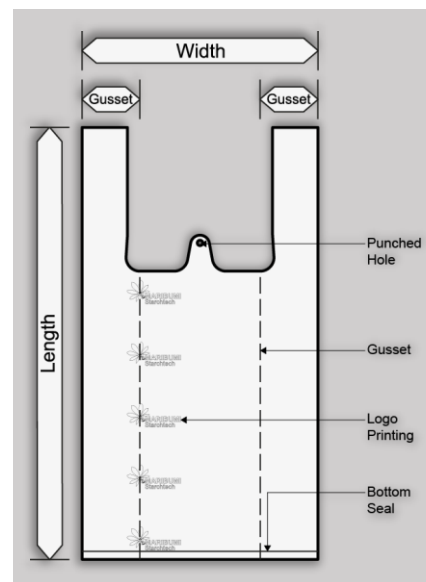
RAW MATERIAL

Bio-resin, derived from renewable resources which can be decomposed within 180 days once exposed to the environment.



SUGGESTED APPLICATION

Commercial use; Supermarket, Hypermarket, Grocery, Restaurant, Hawker stall, Café, or Food takeaways.



TECHNICAL SPECIFICATION FOR COMPOSTABLE SINGLET BAG

Size	S	M	L
Model No.	SB 1323	SB 1333	SB 1434
Dimension (mm / inches) **(Width x Length)	305mm x 380mm (12inch x 15inch)	380mm x 455mm (15inch x 18inch)	455mm x 535mm (18inch x 21inch)
Gusset (mm / inches)	150mm (6.0inch)	200mm (8.0inch)	250mm (10.0inch)
***Thickness (microns)	30	30	40
Packaging (per pack)	Subject to customer's demand		
Product Type	Bio-compostable Product		
Product Colour	Natural (We accept customized; according to customer's demand)		
Printing	Subject to customer's demand (Specified model number above is applicable to the standard printing design)		
Shelf Life	12-24 months from the manufacturing date, provided proper handling and storage at a suitable temperature. Once the packaging is opened, degradation may commence within 180 days.		
Storage	Store the products in a dry environment (temperature below 40°C, humidity below 60%), and avoid direct sunlight. It is advisable to utilise the products within 1 year for optimal quality. Always store the products in the box with the included silica gel.		

*The product illustration is for reference purpose only; actual product may vary due to product enhancement.

**The product dimension may be varied about ± 0.5 inch for width, length, and gusset.

*** The product thickness may be varied about ± 3.0 microns.



COMPOSTABLE MERCHANDISE BAG



PRODUCT DESCRIPTION

Our compostable merchandise bag can be customized according to your plastic bag requirements. Choose the size, colour and printing to create the image you want for your retail store.



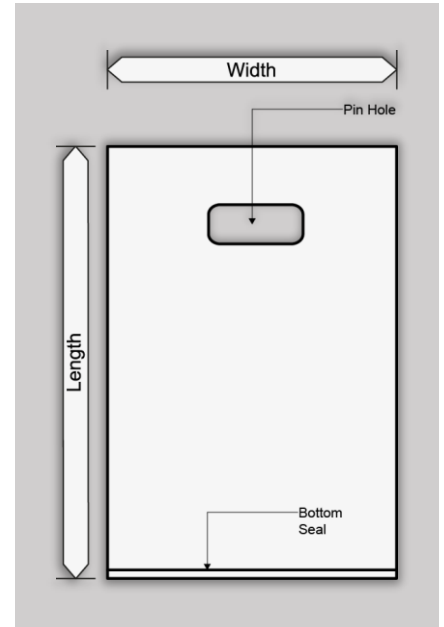
RAW MATERIAL

Bio-resin, derived from renewable resources which can be decomposed within 180 days once exposed to the environment.



SUGGESTED APPLICATION

Perfect for lightweight items; Stationary, Candies / Treats, Presents, Gifts, Jewellery, Clothing, Fashion, Accessories, Personal use.



TECHNICAL SPECIFICATION FOR COMPOSTABLE MERCHANDISE BAG

Size	S	M	L
Model No.	MB 4323	MB 4333	MB 4434
Dimension (mm / inches) **(Width x Length)	305mm x 380mm (12inch x 15inch)	380mm x 455mm (15inch x 18inch)	455mm x 535mm (18inch x 21inch)
Gusset (mm / inches)	-	-	-
***Thickness (microns)	30	30	40
Packaging (per pack)	Subject to customer's demand		
Product Type	Bio-compostable Product		
Product Colour	Natural (We accept customized; according to customer's demand)		
Printing	Subject to customer's demand (Specified model number above is applicable to the standard printing design)		
Shelf Life	12-24 months from the manufacturing date, provided proper handling and storage at a suitable temperature. Once the packaging is opened, degradation may commence within 180 days.		
Storage	Store the products in a dry environment (temperature below 40°C, humidity below 60%), and avoid direct sunlight. It is advisable to utilise the products within 1 year for optimal quality. Always store the products in the box with the included silica gel.		

*The product illustration is for reference purpose only; actual product may vary due to product enhancement.

**The product dimension may be varied about ± 0.5 inch for width, length, and gusset.

*** The product thickness may be varied about ± 3.0 microns.



COMPOSTABLE LAUNDRY BAG



PRODUCT DESCRIPTION

These earth friendly laundry bags can be customized in sizes, colours and printing logo depending on customer's requirements.



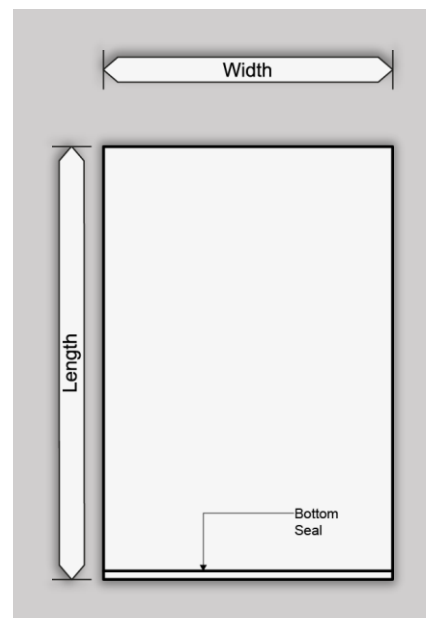
RAW MATERIAL

Bio-resin, derived from renewable resources which can be decomposed within 180 days once exposed to the environment.



SUGGESTED APPLICATION

Residential use, Hotel, Bars, Restaurant, School, Food & Beverage Industry, Public Places, Industrial use, or Government Use



TECHNICAL SPECIFICATION FOR COMPOSTABLE LAUNDRY BAG

Size	S	L
Model No.	LB 4553	LB 4654
Dimension (mm / inches) **(Width x Length)	560mm x 840mm (22inch x 33inch)	560mm x 915mm (22inch x 36inch)
Gusset (mm / inches)	-	-
***Thickness (microns)	45	55
Packaging (per pack)	Subject to customer's demand	
Product Type	Bio-compostable Product	
Product Colour	Natural (We accept customized; according to customer's demand)	
Printing	Subject to customer's demand	
Shelf Life	12-24 months from the manufacturing date, provided proper handling and storage at a suitable temperature. Once the packaging is opened, degradation may commence within 180 days.	
Storage	Store the products in a dry environment (temperature below 40°C, humidity below 60%), and avoid direct sunlight. It is advisable to utilise the products within 1 year for optimal quality. Always store the products in the box with the included silica gel.	

*The product illustration is for reference purpose only; actual product may vary due to product enhancement.

**The product dimension may be varied about ± 0.5 inch for width, length, and gusset.

*** The product thickness may be varied about ± 3.0 microns.



COMPOSTABLE GARMENT BAG



PRODUCT DESCRIPTION

Our compostable garment bag can stand the effects of tearing, flexible, clear, protect clothes from dust, dirt, and smells by hanging the inside with hanger.



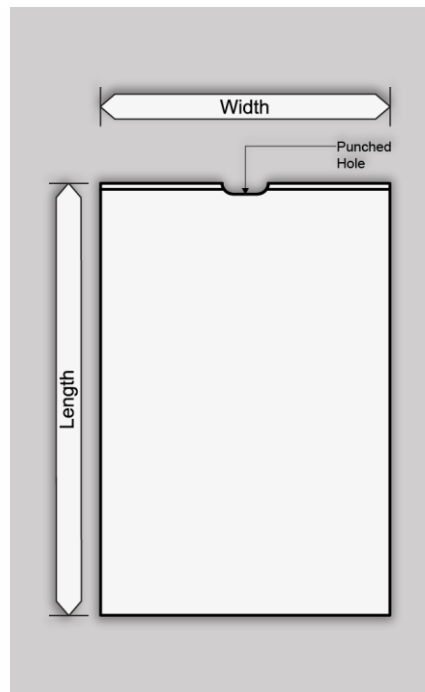
RAW MATERIAL

Bio-resin, derived from renewable resources which can be decomposed within 180 days once exposed to the environment.



SUGGESTED APPLICATION

These earth-friendly garment bag is developed to protect freshly washed clothes from dust, dirt, and unwanted odors. They provide protection that comes with high flexibility with added convenience. General use: Hotel, hostel, laundry services and household.



TECHNICAL SPECIFICATION FOR COMPOSTABLE GARMENT BAG

Size	S	M	L
Model No.	GB 4244	GB 4354	GB 4384
Dimension (mm / inches) **(Width x Length)	508mm x 785mm (20.0inch x 31.0inch)	508mm x 990mm (20.0inch x 39.0inch)	508mm x 1,495mm (20.0inch x 59.0inch)
Gusset (mm / inches)	-	-	-
***Thickness (microns)	20	25	25
Packaging (per pack)	Subject to customer's demand		
Product Type	Bio-compostable Product		
Product Colour	Natural (We accept customized; according to customer's demand)		
Printing	Subject to customer's demand		
Shelf Life	12-24 months from the manufacturing date, provided proper handling and storage at a suitable temperature. Once the packaging is opened, degradation may commence within 180 days.		
Storage	Store the products in a dry environment (temperature below 40°C, humidity below 60%), and avoid direct sunlight. It is advisable to utilise the products within 1 year for optimal quality. Always store the products in the box with the included silica gel.		

*The product illustration is for reference purpose only; actual product may vary due to product enhancement.

**The product dimension may be varied about ± 0.5 inch for width, length, and gusset.

*** The product thickness may be varied about ± 3.0 microns.



COMPOSTABLE PLANTER BAG



PRODUCT DESCRIPTION

Our bio-planter bag makes the planting job done so quickly; It may not necessarily require to remove the bag, placing a new layer make it easier since they are compostable. A sustainable alternative to plastic nursery bags which ensure non-toxicity to the environment.



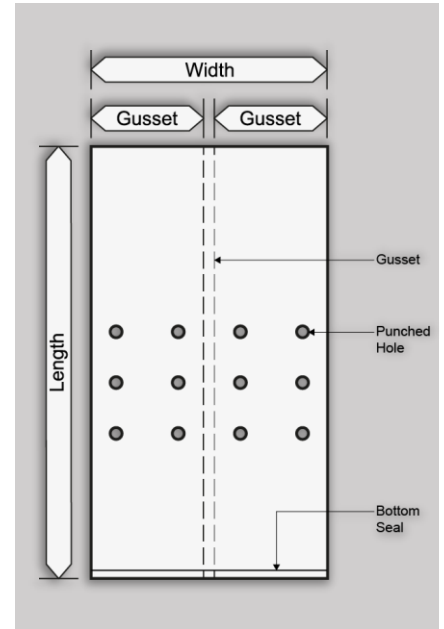
RAW MATERIAL

Bio-resin, derived from renewable resources which can be decomposed within 180 days once exposed to the environment.



SUGGESTED APPLICATION

- * Seedling Bag for Pre-Nursery Stage
- * Cultivation of vegetables.
- * Indoor and outdoor specifically for small plants



TECHNICAL SPECIFICATION FOR COMPOSTABLE PLANTER BAG

Size	XS		S	M	L
Model No.	-	NB 2822-5A	NB 2822-5	-	-
Dimension (mm / inches) **(Width x Length)	-	165 x 228 (6.5” x 9”)	203 x 203 (8” x 8”)	Coming soon	Coming soon
Gusset (mm / inches)	-	88.9mm (3.5inch)	76mm (3.0 inch)	-	-
***Thickness (microns)	-	80	80	-	-
Product Colour	Dark Green	Dark Green (We accept customized; according to customer’s demand)			
Packaging (per pack)	Subject to customer’s demand				
Product Type	Bio-compostable Product				
Printing	Subject to customer’s demand				
Shelf Life	12-24 months from the manufacturing date, provided proper handling and storage at a suitable temperature. Once the packaging is opened, degradation may commence within 180 days.				
Storage	Store the products in a dry environment (temperature below 40°C, humidity below 60%), and avoid direct sunlight. It is advisable to utilise the products within 1 year for optimal quality. Always store the products in the box with the included silica gel.				

*The product illustration is for reference purpose only; actual product may vary due to product enhancement.

**The product dimension may be varied about ± 0.5 inch for width, length, and gusset.

*** The product thickness may be varied about ± 3.0 microns.



COMPOSTABLE SLEEVELESS APRON



PRODUCT DESCRIPTION

Our compostable sleeveless apron is ideally for economical way to prevent body and clothing from contact with dust particles, dirt, and liquid.



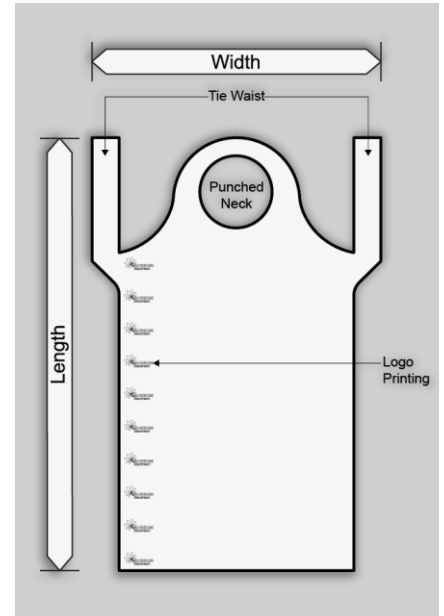
RAW MATERIAL

Bio-resin, derived from renewable resources which can be decomposed within 180 days once exposed to the environment.



SUGGESTED APPLICATION

Kitchen use, Barbecue, Barber / Hair Salon, Massage Centre, Pedicure / Manicure Salon, Clinic / Lab / Healthcare, Hospitality, Gardening, Food Industry, Housekeeping.



TECHNICAL SPECIFICATION FOR COMPOSTABLE SLEEVELESS APRON

Size	S		M		L	
Type	Light Duty	Heavy Duty	Light Duty	Heavy Duty	Light Duty	Heavy Duty
Model No.	AP-LD-3366	AP-HD-3476	AP-LD-3376	AP-HD-3486	AP-LD-3377	AP-HD-3487
Dimension (mm / inches) **(Width x Length)	760 x 1200 (30" x 47")	760 x 1400 (30" x 55")	860 x 1300 (34" x 51")	860 x 1500 (34" x 59")	960 x 1400 (38" x 55")	960 x 1600 (38" x 63")
***Thickness (microns)	30	40	30	40	30	40
Packaging (per pack)	Subject to customer's demand					
Product Type	Bio-compostable Product					
Product Colour	Natural (We accept customized; according to customer's demand)					
Printing	Subject to customer's demand (Specified model number above is applicable to the standard printing design)					
Shelf Life	12-24 months from the manufacturing date, provided proper handling and storage at a suitable temperature. Once the packaging is opened, degradation may commence within 180 days.					
Storage	Store the products in a dry environment (temperature below 40°C, humidity below 60%), and avoid direct sunlight. It is advisable to utilise the products within 1 year for optimal quality. Always store the products in the box with the included silica gel.					

*The product illustration is for reference purpose only; actual product may vary due to product enhancement.

**The product dimension may be varied about ± 0.5 inch for width, length, and gusset.

*** The product thickness may be varied about ± 3.0 microns.



COMPOSTABLE CLINICAL WASTE BAG



PRODUCT DESCRIPTION

This bio-product is applicable for infectious waste, including medicine contaminated infectious waste. This waste must be sent for incineration (with energy from waste).



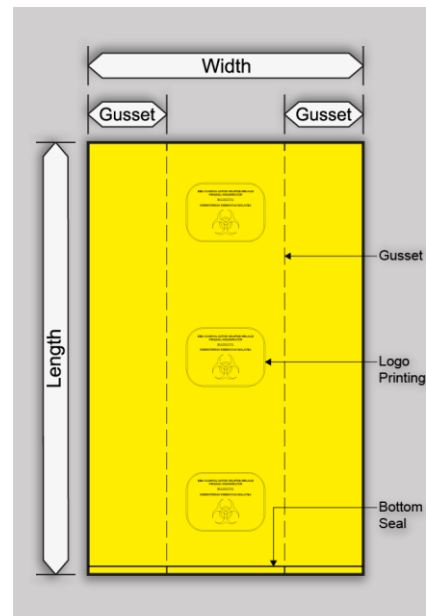
RAW MATERIAL

Bio-resin, derived from renewable resources which can be decomposed within 180 days once exposed to the environment.



SUGGESTED APPLICATION

Suitable for clinical waste; PPE, wipes, dressings, plasters and bandages, incontinence waste, empty saline or glucose IV bags, lines, and tubing (no active medicines added).



TECHNICAL SPECIFICATION FOR COMPOSTABLE CLINICAL WASTE BAG

Size	L
Model No.	CW 1244-4
Dimension (mm / inches) **(Width x Length)	705mm x 705mm (27.5inch x 27.5inch)
Gusset (mm / inches)	230mm (9.0inch)
***Thickness (microns)	55, 65
Packaging (per pack)	Subject to customer's demand
Product Type	Bio-compostable Product
Product Colour	Standard Yellow Colour (We accept customized; according to customer's demand)
Printing	Bio-Hazard Symbol with information of waste disposal method. (Additional printing info can be customized according to customer's demand)
Shelf Life	12-24 months from the manufacturing date, provided proper handling and storage at a suitable temperature. Once the packaging is opened, degradation may commence within 180 days.
Storage	Store the products in a dry environment (temperature below 40°C, humidity below 60%), and avoid direct sunlight. It is advisable to utilise the products within 1 year for optimal quality. Always store the products in the box with the included silica gel.

*The product illustration is for reference purpose only; actual product may vary due to product enhancement.

**The product dimension may be varied about ± 0.5 inch for width, length, and gusset.

*** The product thickness may be varied about ± 3.0 microns.



COMPOSTABLE MULTI USE COVER



PRODUCT DESCRIPTION

Our earth-friendly multi-use covers are good tear resistance, transparent, good moisture barrier, flexible material, smooth texture, and noiseless.



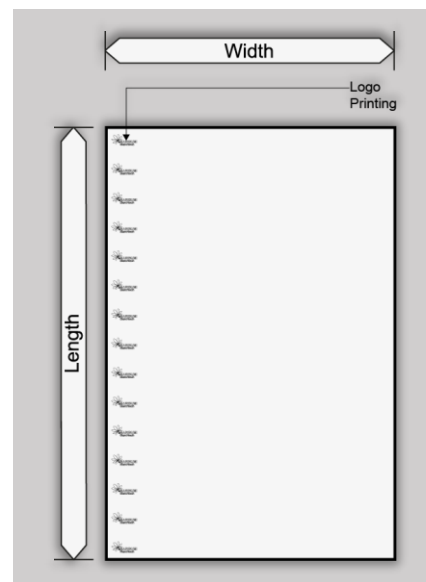
RAW MATERIAL

Bio-resin, derived from renewable resources which can be decomposed within 180 days once exposed to the environment.



SUGGESTED APPLICATION

Suitable for covering for hotel buffet table, outdoor meal, camping or picnicking on the beach, or furniture / machine / equipment protection covering.



TECHNICAL SPECIFICATION FOR COMPOSTABLE MULTI USE COVER

Size	U
Model No.	MUC 3397
Dimension (mm / inches) **(Width x Length)	1000mm x 1800mm (39.5inch x 71.0inch)
Gusset (mm / inches)	-
***Thickness (microns)	25
Packaging (per pack)	Subject to customer's demand
Product Type	Bio-compostable Product
Product Colour	Natural (We accept customized; according to customer's demand)
Printing	Subject to customer's demand (Specified model number above is applicable to the standard printing design)
Shelf Life	12-24 months from the manufacturing date, provided proper handling and storage at a suitable temperature. Once the packaging is opened, degradation may commence within 180 days.
Storage	Store the products in a dry environment (temperature below 40°C, humidity below 60%), and avoid direct sunlight. It is advisable to utilise the products within 1 year for optimal quality. Always store the products in the box with the included silica gel.

*The product illustration is for reference purpose only; actual product may vary due to product enhancement.

**The product dimension may be varied about ± 0.5 inch for width, length, and gusset.

*** The product thickness may be varied about ± 3.0 microns.



COMPOSTABLE HAIRDRESSING CLOTH COVER



PRODUCT DESCRIPTION

Our earth-friendly hairdressing cloth cover only available in universal size. This product is water and tear resistant, with one punched neck opening, flexible and easy to stretch.



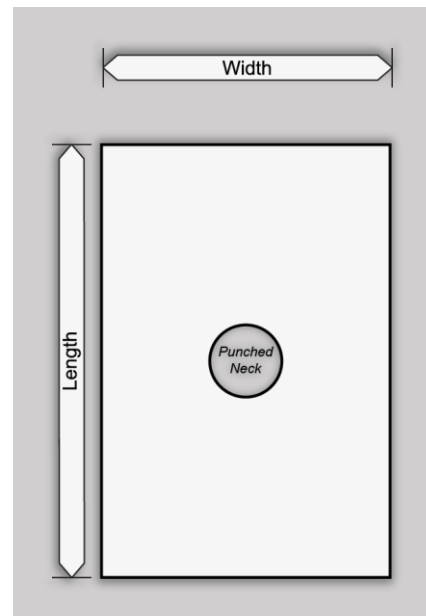
RAW MATERIAL

Bio-resin, derived from renewable resources which can be decomposed within 180 days once exposed to the environment.



SUGGESTED APPLICATION

Salon Hair Cut, Beauty Salon, Hairdressing Barber Shop, Home use, Camping, Barbeque, and any other purposes extensive.



TECHNICAL SPECIFICATION FOR COMPOSTABLE HAIRDRESSING CLOTH

Size	U
Model No.	HCC 4397
Dimension (mm / inches) **(Width x Length)	1000mm x 1800mm (39.5inch x 71.0inch)
Gusset (mm / inches)	-
***Thickness (microns)	25
Packaging (per pack)	Subject to customer's demand
Product Type	Bio-compostable Product
Product Colour	Natural (We accept customized; according to customer's demand)
Printing	Subject to customer's demand (Specified model number above is applicable to the standard printing design)
Shelf Life	12-24 months from the manufacturing date, provided proper handling and storage at a suitable temperature. Once the packaging is opened, degradation may commence within 180 days.
Storage	Store the products in a dry environment (temperature below 40°C, humidity below 60%), and avoid direct sunlight. It is advisable to utilise the products within 1 year for optimal quality. Always store the products in the box with the included silica gel.

*The product illustration is for reference purpose only; actual product may vary due to product enhancement.



**The product dimension may be varied about ± 0.5 inch for width, length, and gusset.

*** The product thickness may be varied about ± 3.0 microns.



ATTACHMENT A (STANDARD TEST)

RAW MATERIAL TECHNICAL DATA SHEET (TDS)

Cardia Compostable B-F02

Blown Film Resin
Biodegradable during Composting in Professionally Managed Facilities

Description
Cardia Compostable B-F02 is a biodegradable and compostable resin based on a blend of thermoplastic starch (TPS), biodegradable polyesters and natural plasticizers. This grade of resin is optimised to offer a high level of mechanical strength, outstanding elongation properties and toughness. The resin is derived from renewable resources including non-GMO corn starch.




Application Examples

- Compostable bags
- Shopping bags/Check-out bags
- Garbage bags
- Leaf litter bags
- Produce and meat liners
- Overwrap Packaging
- Mulch film
- Green bin liners

Specifications and Compliances
Cardia Compostable B-F02 resin is biodegradable and certified compostable in professionally managed / industrial composting facilities for film and bag applications up to a maximum thickness of 192 microns.

Cardia Compostable B-F02 complies with:

- European Standard EN13432:2000 "Requirements for packaging recoverable through composting and biodegradation", certified by Din Certco, Germany
- USA Standard ASTM D6400:2012-01 – "Standard Specification for Compostable Plastics", certified by Biodegradable Products Institute (BPI), USA
- Australian Standard AS 4736 – "Biodegradable Plastics suitable for composting and other microbial treatment", certified by Australasian Bioplastics Association (ABA), Australia
- ISO17065:2012 Specifications for compostable plastics


Physical Properties of Cardia Compostable B-F02

Properties	Test Method	Typical Value*	Unit
Melt Flow Index	ASTM D-1238	1.3 – 3.8	g/ 10 min (190 °C / 2.61 kg)
Density	ASTM D-792	1.2	g/cm ³
Melting Temperature Range	ASTM D-3418	85 - 98	deg. C
Moisture Content	Internal Standard	<0.5	%
Tensile Strength, MD	ASTM D-882	> 25	MPa
Tensile Strength, TD	ASTM D-882	> 15	MPa
Elongation at Break, MD	ASTM D-882	> 270	%
Elongation at Break, TD	ASTM D-882	> 490	%
Elastic Modulus, MD	ASTM D882	>90	N/mm ²
Elastic Modulus, TD	ASTM D882	>75	g
Impact Resistance-Dart Test	ASTM D-1709	>290	J
Tear propagation, MD	ASTM D-1922	1.2	Newton
Tear propagation, TD	ASTM D-1922	3.1	Newton

* Typical values based on a blown film of 20 µm tested in standard lab conditions of 23 °C and 50% RH

200729 CBP TDS - Cardia Compostable B-F02 V3.8.doc

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Packaging
Cardia Compostable B-F02 resin is available in 25kg bags and in 1 ton bulk packs (gaylords). The resin is packed in Al lined bags to protect it from absorption of moisture.

Colours and Additives
Cardia Compostable B-F02 is available in natural, black, white, purple, brown and green colours. Processing additives like anti-block and slip agent master batches are also available. All colours and additive master batches are certified compliant to the relevant standards for compostability.

Transport, Storage and Handling
Cardia Compostable B-F02 resin and products should be transported, stored and handled in cool and dry environments without exposure to direct sunlight. A detailed transport, storage and handling guideline is available through your Cardia Bioplastics™ sales representative.

Safety
A Safety Data Sheets (SDS) is available. Please contact your Cardia Bioplastics™ sales representative.

Processing Conditions
Cardia Compostable B-F materials can be processed on standard plastic processing equipment. Processing guidelines are unique to this material and are available on request from your Cardia Bioplastics™ sales representative.

Cardia Bioplastics
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Hawthorn, VIC 3122 Australia
Tel: +61 3 9596 8800
Email: info@cardiabio.com
Website: www.cardiabio.com

Disclaimer
This information is offered solely for your consideration and verification and should not be construed as a warranty of representation for which Cardia Bioplastics assumes legal liability, except to the extent that such liability is imposed by legislation and cannot be excluded. Values quoted are the results of tests on representative samples and the product supplied may not conform in all respects. Cardia Bioplastics reserves the right to make any improvements or amendments to the composition or any grade or product without alteration to the product code. In using Cardia Bioplastics' products you must establish for yourself the most suitable formulation, production method and control tests to ensure the uniformity and quality of your product is in compliance with all laws.

200729 CBP TDS - Cardia Compostable B-F02 V3.8.doc

Page 2/2



ATTACHMENT B (STANDARD TEST)

ASTM D1709:2016

Standard Test Methods for Impact Resistance of Plastics Film by the Free-Falling Dart Method



TEST REPORT

REPORT NO.: 2021PC0504 PAGE: 1 OF 4

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Applicant: MARIBUMI STARCHTECH SDN. BHD.
No. 15, Jalan Signature Industrial Park 1
Signature Industrial Park
43500 Semenyih
Selangor

Manufacturer: - same as above -

Product: GARBAGE BAG
Trademark: MARIBUMI STARCHTECH
Type: Compostable
Rating: 30 Micron
Size: 700 x 700 mm

Reference Standard/ Method of Test: ASTM D1709 2016 - Standard Test Methods for Impact Resistance of Plastic Film by the Free-Falling Dart Method

Description of Sample: Ten (10) pieces of plastic bag sample indicated above were received for testing on 22 July 2021. Photograph of the sample is shown in Appendix A.

Date Received of Complete Application: 22 July 2021

Job No.: J20211460388

Description of Test Results: The test result of the submitted test sample is described in Page 2 of this test report.

Issued Date: 26 July 2021

Approved Signatories:

(Normazura Zakaria)
Testing Executive



(Rahmad Abd Shukor)
Head
Plastics and Composite Materials Section
Testing Services Department

REPORT NO.: 2021PC0504 PAGE: 2 OF 4

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Results:

GARBAGE BAG
Trademark: MARIBUMI STARCHTECH
Type: Compostable
Rating: 30 Micron
Size: 700 x 700 mm

PROPERTY	RESULT	TEST METHOD
Dart Drop Impact	759 g	ASTM D1709 Test parameters: • Method A • Dart dropped height: 680 mm Test date: 26 July 2021

REPORT NO.: 2021PC0504 PAGE: 3 OF 4

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Appendix A

Sample Received for Testing



Figure A.1. Photograph of 'GARBAGE BAG, Trademark: MARIBUMI STARCHTECH
Type: Compostable; Rating: 30 Micron; Size: 700 x 700 mm' Sample



REPORT NO.: 2021PC0504 PAGE: 4 OF 4







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- A Test Report will be issued in respect of Testing Services conducted and shall relate only to the sample actually tested. SRIM QAS International makes no warranty whatsoever and the Applicant shall not represent in any manner that any duplication or mass production of the Product is same as the sample actually tested in that SRIM QAS International has tested any of the duplicated or mass produced Product. Measurement uncertainty shall be included in the Test Report when there is no statement of conformity required. Where a statement of conformity to a specification or standard is applied, the Simple Acceptance Rule is used. Unless otherwise stated, the Acceptance Rule with Guard Band is used.
- The Test Report shall not be misused, amended, changed, varied or modified in any manner whatsoever by the Applicant or otherwise.
- If the Test Report is to be furnished to any third party or to the public, each such Test Report shall be furnished in full, legible and in its entirety.
- The Test Report shall not be reproduced and shall not be used for any advertising purposes or whatsoever without written approval from the Head of Quality, Occupational Safety and Health & Environment (QOSHE) of SRIM QAS International of No. 1, Persiaran Dato Menteri, Building 5, Section 2, P.O. Box 7035, 40700 Shah Alam, Selangor Darul Ehsan.
- Customer (applicant/Manufacturer/etc.) is not permitted to use any SRIM QAS International, SRIM or other SRIM's subsidiaries logo or words on packaging, samples manual, technical specification, forms and products.
- Subject to consent and written approval from the Head of Quality, Occupational Safety and Health & Environment (QOSHE) of SRIM QAS International, the customer (applicant/Manufacturer/etc.) may use SRIM QAS International logo or word in the promotional material and the Applicant shall only include the phrase "A sample of this product has been tested by SRIM QAS International" (Test Report No.) (dated) (for real test), (its whole standard) or such similar words which state that only the sample was actually tested. This phrase shall only be used for the purpose of product advertisement or product promotion (e.g. brochure/press release/etc.). For avoidance of doubt, the statement shall not be used on the sample, packaging of the sample, forms and products.
- In the event there is an investigation from a Government Regulatory Agency concerning the Applicant's Test Report, SRIM QAS International may disclose the information pertaining to the Test Report for purposes of such investigation.
- Further or in the alternative, it is strictly forbidden unless with prior written approval from the Chief Executive Officer of SRIM QAS International, to represent in any manner whatsoever that SRIM QAS International, SRIM and/or other SRIM's subsidiaries has endorsed, approved or validated the Product of the Applicant in any manner whatsoever.
- In the event the Applicant is found in breach of the provisions, SRIM QAS International, SRIM and/or other SRIM's subsidiaries without prejudice to any other rights and remedies may take whatever action necessary including but not limited to:
 - Informing and placing a notice in the media;
 - Obtaining an injunction from Court (cost on a solicitor-client basis to be borne by the Applicant);
 - Refusing to accept any further Product for Testing Services from the Applicant or whoever relates to the Applicant, whether a subsidiary or otherwise;
 - Introducing the Applicant to withdraw and recall the advertisement, statement or document in question and advise a clarification and apology to SRIM QAS International, SRIM and/or other SRIM's subsidiaries based on a national publication of SRIM QAS International's choice of the Applicant's side cost; and
 - Informing or lodging a report pertaining the Applicant's Test Report with the relevant authorities.
- SRIM QAS International is committed in supporting an environmentally friendly business practice by reducing paper consumption. Therefore we do not issue any hard copy of Test Report to the Applicant. However, additional certified true (signed) or in full copy of Test Report may be issued upon request by the Applicant upon payment of the relevant fee. The certified true copy(ies) or full copy of Test Report shall only be given for Test Report issued not more than three (3) years from the date of issuance.
- Issuance of Amendment Report due to the following reasons are chargeable to the Applicant:
 - Changes in details of the sample and/or address;
 - Changes in details of the Manufacturer's name and/or address;
 - Changes in details of the factory location name and/or address;
 - Changes in details of the model and/or type designation;
- However, issuance of Supplementary Report due to the following reasons are FOC:
 - Miscellaneous and typo errors;
 - Misleading technical information as agreed in PPT form;
 - Test data not reported;
 - Mistake in reporting of test data.
- Corrections to report shall only be allowed if the date of issuance of the original report has not exceeded 6 months and shall be limited to a maximum 3 times, after either case whichever occurs earlier, an Amendment or a Supplementary Report shall not be issued.

ASTM E1252:1998 (Reapproved 2015)

Standard Practice for General Techniques for Obtaining Infrared Spectra for Qualitative Analysis

 <p>SIRIM QAS International Sdn. Bhd. (Company No.: 199601037368 (410334-X)) No. 1, Persiaran Delfi Meranti, Section 2, P.O. Box 7035 47000 Seremban, Selangor Darul Ehsan, Malaysia Tel: 03-55440305(5940) Fax: 03-55440319 www.sirim-qas.com.my</p>	 	<p align="center">TEST REPORT</p>
		<p>REPORT NO. : 2021PC0566</p>
<p align="center">THIS TEST REPORT IS ISSUED IN SECURED PDF SOFT COPY</p>		
<p><small>This Test Report refers only to samples submitted by the applicant to SIRIM QAS International Sdn. Bhd. and tested by SIRIM QAS International Sdn. Bhd. This Test Report shall not be reproduced, copied in full and shall not be used for any purpose by any persons or firms (including but not limited to advertising purposes) without written approval from the Head of Quality, Occupational Safety and Health & Environment (QOSH), SIRIM QAS International Sdn. Bhd. Please refer the last page for Conditions Relating to the Use of This Test Report.</small></p>		
<p>APPLICANT</p>	<p>MARILUMI STARCHTECH SDN BHD No. 15, Jalan Signature Industrial Park 1 Signature Industrial Park 43500 Semenyih Selangor</p>	
<p>MANUFACTURER</p>	<p>-same as above-</p>	
<p>PRODUCT</p>	<p>Food Packaging Plastic Brand: MARILUMI STARCHTECH Size: 18 inch x 18 inch Product description: Biodegradable Food Packaging</p>	
<p>REFERENCE STANDARD/ METHOD OF TEST</p>	<p>ASTM E1262-1998 (Reapproved 2016)31 - Standard Practice for General Techniques for Obtaining Infrared Spectra for Qualitative Analysis.</p>	
<p>DESCRIPTION OF SAMPLE</p>	<p>New test sample shown in Appendix A was received for testing on 24 August 2021.</p>	
<p>DATE RECEIVED OF COMPLETE APPLICATION</p>	<p>25 August 2021</p>	
<p>JOB NO.</p>	<p>J2021460442</p>	
<p>DESCRIPTION OF TEST RESULTS</p>	<p>The test result of the submitted test sample is described in Page 2 of this test report.</p>	
<p>ISSUED DATE</p>	<p>26 August 2021</p>	
<p>APPROVED SIGNATORIES:</p>		
<p align="center">  (Ir. Zarina Resman) Principal Testing Executive </p>		<p align="center">  (Rahmad Abd Shukur) Plastics and Composite Materials Section Testing Services Department </p>

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Result:

Product : Food Packaging Plastic
Brand : MARBUM STARCHTECH
Size : 18 inch x 18 inch
Product description: Biodegradable Food Packaging

TEST	RESULT	TEST METHOD
Fourier Transform Infra-Red (FTIR) Analysis • Main functional group in the sample	-(C=O)O- (ester group) (see Figure B.1 in Appendix B)	ASTM E1252 Test parameters: • Scan method: Using attenuated total reflection (ATR) accessory • Scan range: 4000 cm ⁻¹ to 800 cm ⁻¹ • Number of scans: 16 times Test date: 25 August 2021

Note: Biodegradable/compostable polymers consist of either ester (in biopolyester), amide (in proteins), or hydroxyl and acetal/ether (in polysaccharide) functional groups

REPORT NO: 2021PC0566	PAGE: 3 OF 5
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Appendix A

Sample Received for Testing





Figure A.1. Photograph of Food Packaging Plastic, Brand: MARIBUMI STARCH TECH,
Size: 18 inch x 18 inch, Biodegradable Food Packaging* Sample



The logo is a circular emblem. The outer ring contains the text 'SIRIM QAS International Sdn Bhd' in a circular path. Inside this ring, there is a smaller circle with a star at the bottom. The text 'PLASTICS & COMPOSITE MATERIALS SECTION' is written in a circular path within the inner circle.

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Appendix B

Functional Group Analysis for 'Food Packaging Plastic' Sample

Figure B.1 FTIR Spectrum of 'Food Packaging Plastic', Brand: MARIBUMI STARCHTECH, Size: 19 inch x 19 inch, Biodegradable Food Packaging' Sample



ATTACHMENT D (STANDARD TEST)

ASTM E1252:1998 (Reapproved 201953)

Standard Practice for General Techniques for Obtaining Infrared Spectra for Qualitative Analysis

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TEST REPORT

REPORT NO.: 2021PC0882 PAGE: 1 OF 5

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Applicant: MARIBUMI STARCHTECH SDN BHD
No. 15, Jalan Signature Industrial Park 1
Signature Industrial Park
43500 Semenyih
Selangor

Manufacturer: -same as above-

Product: COMPOSTABLE PLANTER BAG
Brand: MARIBUMI STARCHTECH
Type: COMPOSTABLE
Size: 150 mm x 330 mm
Description: SEEDLING BAG FOR COMMERCIAL USE

Reference Standard/ Method of Test: ASTM E1252:1998 (Reapproved 201953)* - Standard Practice for General Techniques for Obtaining Infrared Spectra for Qualitative Analysis

Description of Sample: New test sample shown in Appendix A was received for testing on 25 November 2021.

Date Received of Complete Application: 25 November 2021

Job No.: J20211400637

Description of Test Results: The test result of the submitted test sample is described in Page 2 of this test report.

Issued Date: 9 December 2021

Approved Signatories:

(H. Zarina Razmini)
Principal Testing Executive

(Halimza Halimza)
Head
Plastics and Composite Materials Section
Testing Services Department

REPORT NO.: 2021PC0882 PAGE: 2 OF 5

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Results:

Product: COMPOSTABLE PLANTER BAG
Brand: MARIBUMI STARCHTECH
Type: COMPOSTABLE
Size: 150 mm x 330 mm
Description: SEEDLING BAG FOR COMMERCIAL USE
Test: Detection of Specific Polymeric Material using FTIR Analysis Technique

NO.	POLYMERIC MATERIAL	RESULT	TEST METHOD
1	Polyvinyl Chloride (PVC)*	Not Detected	ASTM E1252
2	Phthalates	Not Detected	Test parameters: • Scan method: Using attenuated total reflection (ATR) accessory • Scan range: 4000 cm ⁻¹ to 600 cm ⁻¹ • Number of scans: 16 times
3	Polyethylene (PE)*	Not Detected	
4	Polypropylene (PP)*	Not Detected	Test date: 26 November 2021
5	Polystyrene (PS)*	Not Detected	
6	Bisphenol A	Not Detected	

Note: Further confirmation for the presence of PVC, PE, PP and PS can be done using Differential Scanning Calorimetry (DSC) analysis technique.

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Appendix A
Sample Received for Testing

Figure A.1 Photograph of 'COMPOSTABLE PLANTER BAG' Brand: MARIBUMI STARCHTECH Sample

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Appendix B
Functional Group Analysis

Figure B.1 FTIR Spectrum of 'COMPOSTABLE PLANTER BAG' Brand: MARIBUMI STARCHTECH Sample



ATTACHMENT E (STANDARD TEST)

ASTM E1252:1998 (Reapproved 201953)

Standard Practice for General Techniques for Obtaining Infrared Spectra for Qualitative Analysis

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TEST REPORT

REPORT NO.: 2021PC0881 PAGE: 1 OF 5

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Applicant : MARIBUMI STARCHTECH SDN BHD
No. 15, Jalan Signature Industrial Park 1
Signature Industrial Park
43500 Semenyih
Selangor

Manufacturer : -same as above-

Product : COMPOSTABLE GARBAGE BAG
Brand: MARIBUMI STARCHTECH
Type: COMPOSTABLE
Size: 457 mm x 533 mm
Product description: GARBAGE BAG FOR GENERAL USE

Reference Standard/ Method of Test : ASTM E1252:1998 (Reapproved 201953) - Standard Practice for General Techniques for Obtaining Infrared Spectra for Qualitative Analysis

Description of Sample : New test sample shown in Appendix A was received for testing on 25 November 2021.

Date Received of Complete Application : 25 November 2021

Job No. : J20211460636

Description of Test Results : The test result of the submitted test sample is described in Page 2 of this test report.

Issued Date : 9 December 2021

Approved Signatories:

(i) Zarina Razmini
Principal Testing Executive

(Hafizul Mahibul)
Head
Plastics and Composite Materials Section
Testing Services Department

REPORT NO.: 2021PC0881 PAGE: 2 OF 5

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Result:

Product : COMPOSTABLE GARBAGE BAG
Brand : MARIBUMI STARCHTECH
Type : COMPOSTABLE
Size : 457 mm x 533 mm
Description : GARBAGE BAG FOR GENERAL USE
Test : Detection of Specific Polymeric Material using FTIR Analysis Technique

NO.	POLYMERIC MATERIAL	RESULT	TEST METHOD
1	Polyvinyl Chloride (PVC)*	Not Detected	ASTM E1252
2	Phthalates	Not Detected	Test parameters: • Scan method: Using attenuated total reflection (ATR) accessory • Scan range: 4000 cm ⁻¹ to 600 cm ⁻¹ • Number of scans: 16 times
3	Polyethylene (PE)*	Not Detected	
4	Polypropylene (PP)*	Not Detected	Test date: 26 November 2021
5	Polystyrene (PS)*	Not Detected	
6	Bisphenol A	Not Detected	

Note: Further confirmation for the presence of PVC, PE, PP and PS can be done using Differential Scanning Calorimetry (DSC) analysis technique.

REPORT NO.: 2021PC0881 PAGE: 3 OF 5

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Appendix A
Sample Received for Testing

Figure A.1 Photograph of 'COMPOSTABLE GARBAGE BAG; Brand: MARIBUMI STARCHTECH' Sample

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Appendix B
Functional Group Analysis

Figure B.1 FTIR Spectrum of 'COMPOSTABLE GARBAGE BAG; Brand: MARIBUMI STARCHTECH' Sample



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Manufacturer office: (603) 8723 1997

Sales Gallery Office: (603) 83094404

sales@maribumistarchtech.com

enquiry@maribumistarchtech.com



Manufacturer office:

No. 22A, Jalan Hi-Tech 7/3, Hitech 7
Industrial Park, 43500, Semenyih,
Selangor



Sales Gallery Office:

Unit L-03-03A, 3rd Floor, Conezion
Commercial, Persiaran IRC 3, IOI Resort
City, 62502 Putrajaya, Sepang, Selangor
Darul Ehsan Selangor MY



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