

I'm
green

TM

INNOVATIVE
SOLUTIONS FOR A
MORE SUSTAINABLE
FUTURE

Braskem 

A new way of thinking about production and consumption - this is how Braskem can contribute to a more sustainable chain and future, helping its partners to achieve their sustainability goals.

The I'm green™ portfolio represents a revolution in the way plastic resins are produced. It is the result of our continuous commitment and investment in innovation and research to find the best solutions, bringing benefits to the planet and society.

Products under I'm green™ bio-based brand are produced from sugarcane and capture CO₂ from the atmosphere, contributing to climate change mitigation.



I'm
green



I'm
green™
BIO-BASED

I'm made from

**SUGAR
-CANE**

I'M RENEWABLE

- I'm HDPE, LDPE, LLDPE, EVA and PE WAX
- I'm blow-molded, injection molded, extruded
- I may be in **contact with food**
- I'm **capturing CO₂** from the environment
- I'm tackling **climate change**

I'm green™ PORTFOLIO EVOLUTION

INAUGURATION OF THE BIO-BASED ETHYLENE PLANT



Southern Brazil

Braskem becomes the market leader and pioneer in the production of biopolymers on an industrial scale by inaugurating the renewable ethylene industrial unit.

Launch of the I'm green™ to identify Braskem's bio-based products.

2010

2007



BIO-BASED ETHYLENE

Production of the first sample of renewable ethylene made from sugarcane ethanol.

2014



FAST COMPANY

Braskem is nominated as one of the 50 most innovative companies in the world by Fast Company magazine. The only Brazilian company to be listed and recognized for its research on bio-based products, such as I'm green™.

2018



BIO-BASED EVA

The new resin is made from sugarcane, and is used in the footwear, automotive, transportation, among other sectors.

2019

RENEWABLE SOLVENT

Braskem develops an oxygenated solvent from renewable sources, the HE-70s, for the paint, adhesive and personal care segments, among others still under development.



10 YEARS

The tenth anniversary of the launch of Braskem's I'm green™ portfolio.

2020

**OUR PATH IN
DEVELOPING PRODUCTS
FROM RENEWABLE
SOURCES CONTINUES.
TAKE PART IN
THIS JOURNEY!**

2021



PRODUCTION EXPANSION

Production capacity expansion of the renewable ethylene industrial unit.

PE WAX

Launch of I'm green™ bio-based polyethylene wax.



CREATION OF BRASKEM

Announcement of the public commitment that identifies Braskem's principles and values, including its contribution to economic and social growth and its operation following principles of sustainable development.

2002

OUR RESINS MADE FROM SUGARCANE



With the I'm green™ bio-based portfolio options, whose raw material is sugarcane, a sustainable and renewable source, Braskem's partners can offer their consumers a variety of unique products that contribute significantly to the reduction of greenhouse gases along the chain.

Bio-based products are drop-in solutions, which can replace the conventional version without the need to invest in new machinery.



Drop-in solutions

Replace conventional resin with no investment in new plastic conversion machinery



Renewable source

Made from sugarcane, a renewable raw material



Recyclable

Use the same recycling chains developed for conventional resins



CO2 capture

Sugarcane captures CO2 from the atmosphere, helping to slow down climate change



LIFE CYCLE ANALYSIS



To deal with the growing demand from society for more sustainable solutions and the pressing concerns of citizens about climate change, "Life Cycle Thinking" is one of the major challenges for industries and governments when creating products and proposing new regulations. In order to better understand the impacts associated with the production of I'm green™ bio-based polyethylene, Braskem conducts LCA, water footprint and land use studies for the product.



PE
I'm green™
bio-based

Applications

I'm green™ bio-based polyethylene can be used in rigid and flexible applications already available in the market, as well as in foamed plastics. The support of Braskem's technical teams during the development process, increases the chances of a fast approval while maximizing the renewable content in the final products.

Main applications



I'm green™ bio-based polyethylene is the renewable alternative to fossil polyethylene, a thermoplastic resin widely used in packaging in the consumer goods sectors, such as food, beverages, hygiene and cleaning products, as well as toys, trash cans and plastic bags. The I'm green™ bio-based polyethylene portfolio offers approximately 25 grades in the HDPE, LLDPE and LDPE families that cover a wide range of applications. In most grades the renewable carbon content ranges

from 80% to 100%, which can be certified by measuring the biogenic carbon content, according to the ASTM D6866 standard. There are labs that carry out carbon dating analysis and certifying bodies in Europe, USA and Asia. The certifying bodies in Europe, USA and Asia offer labels for the renewable content of a material or product based on the standard. At the end of its life, I'm green™ bio-based polyethylene can be recycled in the same way as conventional polyethylene.

Merely illustrative exemplary applications. The possibility of using this product for a specific purpose may change according to the country and should be analyzed by the interested party. Braskem does not guarantee the possibility of using the product with other materials for the desired application. Please check the RIS (Regulatory Information Sheet) or contact Braskem for specific regulatory information.

PE I'm green™ bio-based

Injection molding

Typical Properties	Melt Index (190 °C/2.16 kg)	Density	Minimum C14 content
ASTM method	D 1238	D 792	D 6866
Units	g/10 min	g/cm ³	%
SHA7260	20	0.955	94
	Buckets and bowls, lids, toys, thin-walled parts, houseware and cosmetic packaging.		
HDPE SHC7260	72	0.959	94
	Industrial containers, safety helmets, toilet seats, houseware, toys, lids, pallets, crater for beverage bottle, crater for fish and vegetables and cosmetic packaging.		
SGE7252NS	2.0	0.952	96
	Beverage bottle caps.		
LDPE SPB208	22	0.923 °	95
	Masterbatches, injection of parts with a large flat area such as snap lids.		
SPB608	30	0.915 °	95
	Masterbatches, injection of parts with a large flat area such as snap lids.		

Test specimens prepared from compression molding, according to ASTM D 4703. a) Value obtained by the ASTM D1505 method.

Tubes extrusion & blow molding

Typical Properties	Melt Index (190 °C/2.16 kg)	Density	Minimum C14 content
ASTM method	D 1238	D 792	D 6866
Units	g/10 min	g/cm ³	%
SGF4950	0.36	0.956	96
	Bottles for hygiene and cleaning products, bottles for beverages, compression molded caps and cosmetic packaging.		
HDPE SGF4960	0.34	0.961	96
	Bottles for food and beverages, bottles for dairy products, rigid containers for cosmetics and lubricant oils and caps & closures molded by compression.		
SGF4950HS	0.21	0.951	95
	Canisters from 2L to 20L for chemical products, bottles for concentrated detergent, bottles for food, tanks for wind shield and air ducts.		
SEB853	2.70	0.923 °	96
	Tubes for food and cosmetics.		
LDPE STN7006	0.60	0.924	95
	Tubes for food and cosmetics.		
SBF0323HC	0.32	0.923 °	95
	Tubes for food and cosmetics.		

Test specimens prepared from compression molding, according to ASTM D 4703. a) Value obtained by the ASTM D1505 method.

Extrusion coating

Typical Properties	Melt Index (190 °C/2.16 kg)	Density	Minimum C14 content	Additives
ASTM method	D 1238	D 792	D 6866	-
Units	g/10 min	g/cm ³	%	-
LDPE SBC818	8.30	0.918	95	-
	Low neck-in applications, good film stability, good adhesion to porous substrates, carton packs for food & beverages.			

Test specimens prepared from compression molding, according to ASTM D 4703.

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Fiber Extrusion

Typical Properties	Fluidity Index (190 °C/2.16 kg)	Density	Thermal Deflection Temperature (0.45 MPa)	Minimum C14 content
ASTM method	D 1238	D 792	D 648	D 6866
Units	g/10 min	g/cm ³	°C	%
SHA7260	20	0.955	67	94
	Two-component non-woven fabric and fibers in general.			
HDPE SHE150	1.0	0.948	76	94
	Raschel, protection and shadow nets and strings.			

Test specimens prepared from compression molding, according to ASTM D 4703. a) Tests performed on samples of 3 mm.

Cast and Tubular films

Typical Properties	Melt Index (190 °C/2.16 kg)	Density	Minimum C14 content	Additives
ASTM method	D 1238	D 792	D 6866	-
Units	g/10 min	g/cm ³	%	-
SGM9450F	-	0.952	96	AF
	Retail bags, promotional bags, produce bags and frozen food packaging.			
HDPE SHE150	1.0	0.948	94	AF
	Cereal packaging and blends with LLDPE and LDPE.			
SLL118	1.0	0.916 °	87	-
	Stretch films, blends with LDPE and HDPE and general use packaging. Other applications: blends for irrigation pipes, industrial sacks, liners and cosmetic packaging.			
SLL118/21	1.0	0.918 °	87	AB, D
	Automatic packaging (FFS) and blends with LDPE and HDPE.			
LLDPE SLH118	1.0	0.916 °	84	-
	Stretch films, blends with LDPE and HDPE and general use packaging. Other applications: blends for irrigation pipes and cosmetic packaging.			
SLH218	2.3	0.916 °	84	-
	Stretch films, blends with LDPE and HDPE and general use packaging. Other applications: blends for irrigation pipes, insulation of low and medium XLPE wires and cables.			
SLH0820/30AF	0.80	0.92 °	84	AB, AF
	Industrial sacks and blends with LDPE and HDPE.			
SBF0323HC	0.32	0.923 °	95	-
	Industrial sacks, agricultural films, co-extruded and heat-shrinkable films for palletizing and cosmetic packaging.			
STN7006	0.60	0.924	95	-
	High transparency films for food products packaging by coextrusion such as: cheese, meat, sausages, sliced ham, etc.; flat films for tablecloth, curtains and laminated fabric, flexible bottles for solids, liquids or paste products for hygiene and cleaning and cosmetic packaging.			
STS7006	0.60	0.925	95	AB, D
	High clarity films for coextrusion food product packaging, such as: cheese, meat, sausages, sliced ham, etc.			
LDPE SEB853	2.7	0.923 °	95	-
	Typical applications of blown film including diaper films and other general uses in addition to blends with LLDPE and HDPE.			
SEB853/72	2.7	0.923 °	95	AB, D
	Lamination film and general use, automatic packaging of solid products (FFS), automatic packaging for various products and high transparency for tissue paper.			
SPB681	3.8	0.922 °	95	-
	Extrusion of blow and flat films, injection molding, blends with LDPE, HDPE and cosmetic packaging.			
SPB681/59	3.8	0.922 °	95	AB, D
	Lamination films and general uses and automatic packaging for solid products.			

Test specimens prepared from compression molding, according to ASTM D 4703. Additives: AB = anti-blocking, S = sliding, FA = flow aid. a) Value obtained by the ASTM D1505 method.

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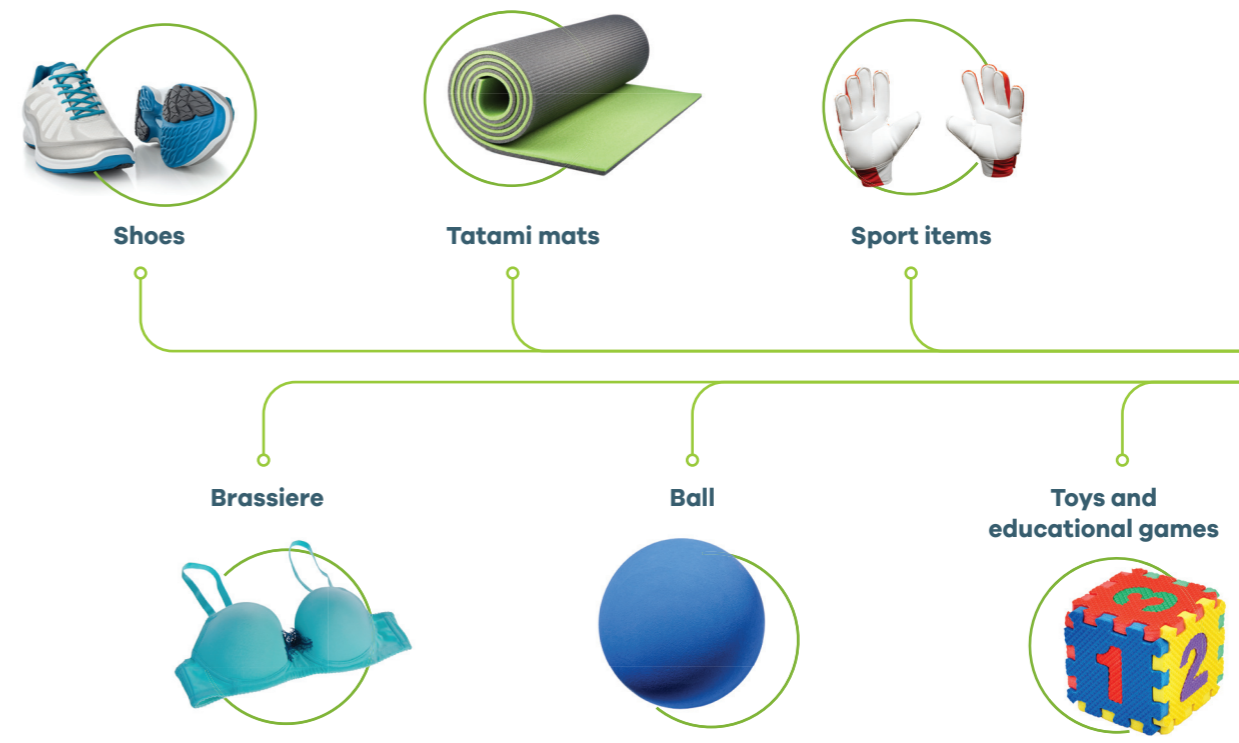
EVA
I'm green™
bio-based

I'm green™ bio-based EVA, made from sugarcane, is the sustainable alternative for several segments that use EVA in their products. Bio-based content ranges from **45% to 80%**, based on the ASTM D6866 standard. At the end-of-life, I'm green™ bio-based EVA can be **recycled/reused** in the same way as conventional EVA.

Applications

I'm green™ bio-based EVA is ideal for applications such as: shoes, adhesives, toys, wires & cables, tatami mats and foams in general. The support of Braskem's technical teams during the development process, increases the chances of a fast approval while maximizing the renewable content in the final products.

Main applications



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Foamed Products

Typical Properties	Fluidity Index (190 °C/2.16 kg)	Vinyl acetate content	Minimum C14 content
ASTM method	D 1238	Braskem	D6866
Units	g/10 min	%	%
EVA SVT2180	2.1	19	80

Polymer used as a base for manufacturing foamed and reticulated plates and soles (unisole midsole) for shoes, toys, sporting items, etc. The resin can be processed by injection molding or compression.

Test specimens prepared from compression molding, according to ASTM D 4703.

Braskem Evance

Typical Properties	Fluidity Index (190 °C/2.16 kg)	Vinyl acetate content	Minimum C14 content
ASTM method	D 1238	Braskem	D6866
Units	g/10 min	%	%
EVA Evance SVT2145R	2.1	14	45

Semi-amorphous thermoplastic resin with medium Vinyl Acetate content, easily crosslinkable and good compatibility with different thermoplastics, inorganic fillers and pigments. It has an excellent soft touch, good grip, good resistance to abrasion and resilience.

Test specimens prepared from compression molding, according to ASTM D 4703.

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PE WAX

I'm green™
bio-based

I'm green™ bio-based polyethylene wax is a product that offers lower carbon footprint as it comes from sugar cane. It's a sustainable solution that complements Braskem's portfolio offer for multiple markets.

Applications

I'm green™ bio-based polyethylene wax is ideal for use in applications such as: adhesives, cosmetics, paints and compounds.

Main applications



Adhesives



Cosmetics

Paints and compounds



PE Wax

Family	Grade	Dropping point	Solidification point	Melting point	Needle penetration (25°C)	Dyn. viscosity (140°C)	Density (23°C)	Acid value	Saponification value	Yellowness index	Flashpoint – Cleveland	Flashpoint – Pensky M.
Units		°C	°C	°C	10-1mm	mPas	g/cm³	mg _(KOH) /g	mg _(KOH) /g	-	°C	°C
PE	GWAX 50E	108	94	105	4	138	0.88	<1	<2	4	>250	>220

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Braskem: global presence

With a global, human-oriented vision of the future, Braskem strives every day to improve people's lives by creating sustainable solutions in chemistry and plastics.

Braskem is the largest producer of thermoplastic resins in the Americas and a global leader in the production of biopolymers on an industrial scale. Our products are exported to some 71 countries and we count on 40 industrial units, located in Brazil, the United States, Germany and Mexico (in this country in partnership with the Mexican company Idesa).

For more information, visit www.braskem.com.



+15,4 MM TONS/YEAR

production of thermoplastic resins and other chemicals

Export to customers in about approximately **71** COUNTRIES

+ than 8.000 team members

40 industrial units:
29 plants in Brazil
5 plants in USA
4 plants in Mexico
2 plants in Germany

