Braskem

Enabling Brands in Their

Sustainability Journey

I'm green™
BIO-BASED

LIKE TRADITIONAL PLASTIC
BUT MADE FROM PLANTS

ENABLING BRANDS IN
THEIR SUSTAINABILITY JOURNEY

FEBRUARY 2025

With a strategy centered around people and sustainability, Braskem is committed to **transitioning the industry to a carbon neutral circular economy**.

The **I'm green**™ bio-based portfolio is the result of our continuous commitment and investment in innovation and research to find the best sustainable solutions to mitigate climate change. Products under the I'm green™ bio-based brand **are produced from sustainably sourced sugarcane, offering a reduced carbon footprint** compared to traditional alternatives, bringing benefits to the planet and society.

I'm green™ bio-based portfolio is enabling brands in their sustainability journey.

I'm green™ BIO-BASED

I'm made from sugar-cane I'm renewable

- I'm HDPE, LDPE, LLDPE, EVA and PE WAX
- I can be used for food packaging, toys, cosmetics and hygiene applications
- I'm blow-molded, injection molded, extruded
- I'm **mitigating climate change**

We offer a fresh perspective. Over 10 years in the making

2002 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.

2007 BIO-BASED ETHYLENE

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

2010 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 I'm green™ bio-based brand for Braskem's bio-based portfolio.

I'm green™ BIO-BASED

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™ bio-based.

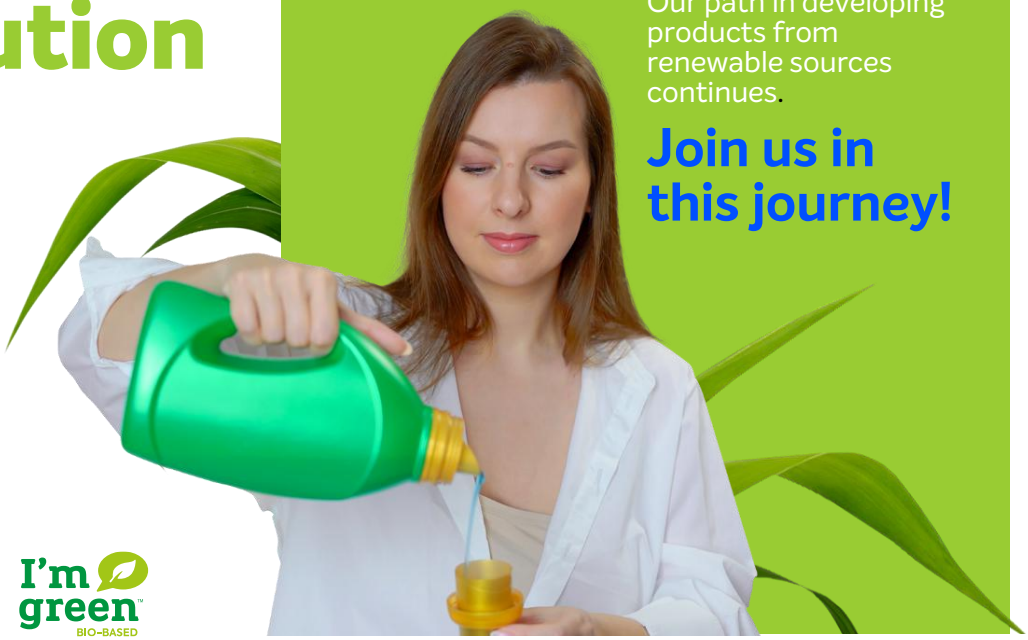
2018 BIO-BASED EVA

A new resin made from sugarcane, used invarious sectors, such as footwear, automotive, transportation, among others.

Portfolio Evolution

Our path in developing products from renewable sources continues.

Join us in this journey!



2021

PRODUCTION EXPANSION

Capacity expansion of the renewable ethylene industrial scale

PE WAX

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

2023

Our goal is to expand portfolio from 275kt to 1MMt by 2030.

We announced our joint venture with leading petrochemical SCG Chemicals, marking our steps towards additional mid-term bio-based PE production in Thailand.

2020

10 YEARS

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

2019

RENEWABLE SOLVENT

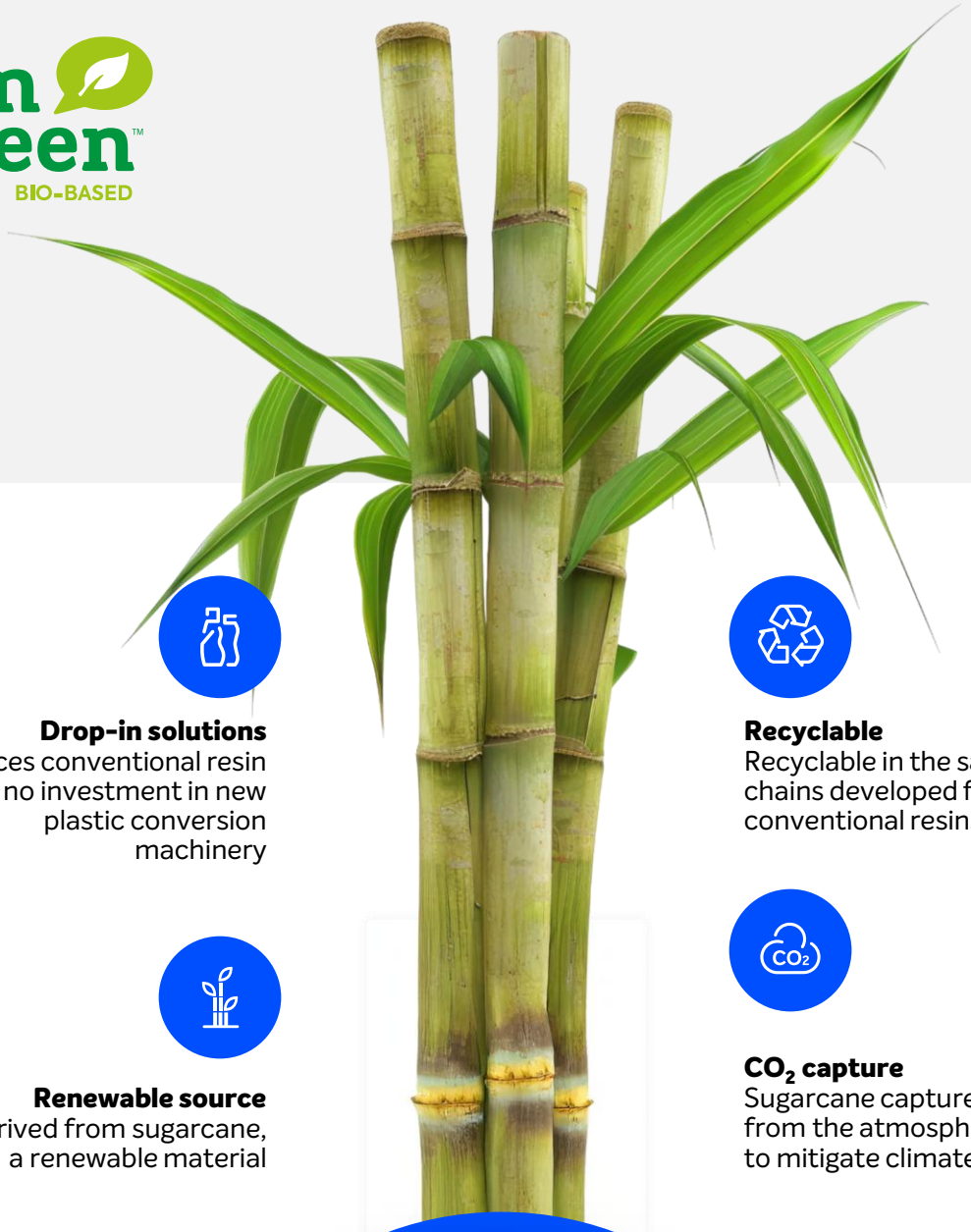
Braskem develops an oxygenated solvent from renewable sources, the HE-70s, for the paint, adhesive and personal care segments, among others.

Our resins made from Sugar Cane

With the I'm green™ biobased portfolio, derived from 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.

I'm green™ bio-based products are drop-in solutions, which can replace the conventional version without the need to invest in new machinery.

I'm green™
BIO-BASED



Drop-in solutions
Replaces conventional resin with no investment in new plastic conversion machinery

Recyclable
Recyclable in the same chains developed for conventional resins

Renewable source
Derived from sugarcane, a renewable material

CO_2 capture
Sugarcane captures CO_2 from the atmosphere, helping to mitigate climate change

LIFE CYCLE ASSESSMENT

I'm green™ bio-based HDPE (polyethylene)

1kg I'm green™ bio-based polyethylene

-2,12kg of $kgCO_2e/kg$*

*LCA calculated as per ISO 14040/14044, reviewed by KPMG (2023)

In order to continually improve our understanding of the key environmental impacts associated with the production of I'm green™ bio-based PE, PE Wax, and EVA, Braskem has been conducting and updating our LCA studies since 2010.

The carbon footprint calculation of our most recent LCA confirms that I'm green™ bio-based plastics continue to support the journey to net-zero by offering a leading and unique portfolio of low-carbon solutions with the same characteristics and technical performance as their conventional counterparts.
Each kg of I'm green™ bio-based polyethylene that replaces a fossil-based polyethylene avoids the emission of 5kg CO_2e per kg PE, compared to the global average[1].
This is supported and strengthened by Braskem's continued commitment to sustainable practices under its Responsible Ethanol Sourcing Programme, which focuses on ensuring the highest possible levels of social responsibility, sustainability, and biodiversity in the value chain.

1 calculated using the Ecoinvent v3.9.1 database

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


Beverages


Cleaning products


Toys


Hygiene


Food


Agriculture and Industry


Coating


Retail

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 ≥84% to ≥96%,** 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.

Injection Molding

Typical Properties		Melt Index (190 °C/2.16 kg)	Density	Bio-based Carbon Content
ASTM method		D 1238	D 792	D 6866
Units		g/10 min	g/cm³	%
HDPE	SHD2560	25	0.959	≥94
		General caps, lids, toys, thin-walled parts, houseware and cosmetic packaging.		
	SHA7260	20	0.955	≥94
		Buckets and bowls, lids, toys, thin-walled parts, houseware and cosmetic packaging.		
	SHD0860	8,0	0.960	≥94
		General caps, lids, houseware, toys and cosmetic packaging.		
	SHC7260	7.2	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	SPB608	30	0.915 [a]	≥95
		Masterbatches, injection of parts with a large flat area such as snap lids.		
	SPB208	22	0.923 [a]	≥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	Bio-based Carbon Content
ASTM method		D 1238	D 792	D 6866
Units		g/10 min	g/cm³	%
HDPE	SGD4960	0.70	0.962	≥96
		Bottles for food and beverages, bottles for dairy products, rigid containers for lubricant oils, bottles for ethylic alcohol.		
	SGF4950	0.36	0.956	≥96
		Bottles for hygiene and cleaning products, bottles for beverages, compression molded caps and cosmetic packaging.		
	SGF4950HS	0.21	0.951	≥95
		Canisters from 2L to 20L for chemical products, bottles for concentrated detergent, bottles for food, tanks for windshields and air ducts.		
LDPE	SEB853	2.70	0.923 [a]	≥95
		Tubes for food and cosmetics.		
	STN7006	0.60	0.924 [a]	≥95
		Tubes for food and cosmetics.		
	SBF0323HC	0.32	0.923 [a]	≥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	Bio-based Carbon Content
ASTM method		D 1238	D 1505	D 6866
Units		g/10 min	g/cm³	%
LDPE	SBC818	8.3	0.918 *	≥95
		Carton packaging for food & beverages, low neck-in applications, good film stability and good adhesion to porous substrates.		

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

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Fiber Extrusion

Typical Properties		Melt Index (190 °C/2.16 kg)	Density	Bio-based Carbon Content
ASTM method		D 1238	D 792	D 6866
Units		g/10 min	g/cm³	%
HDPE	SHD2055NW	20	0.955	94
		Bicomponent non-woven fabric and fibers in general.		
	SHE150	1.0	0.948	94
		Raschel, protection and shadow nets and strings.		

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

Cast and Blown Films

Typical Properties		Melt Index (190 °C/2.16 kg)	Density	Bio-based Carbon Content	Additives
ASTM method		D 1238	D 792	D 6866	-
Units		g/10 min	g/cm³	%	-
HDPE	SGM9450F	0.33 (MI 190°C/5,0kg)	0.952	≥96	–
		Retail bags, promotional bags, produce bags and frozen food packaging.			
LLDPE	SLL118	1.0	0.916 [a]	≥87	-
		Stretch films, blends with LDPE and HDPE, general use packaging, blends for irrigation pipes, industrial sacks, liners and cosmetic packaging.			
	SLL118/21	1.0	0.918 [a]	≥87	AB, S
		Automatic packaging (FFS) and blends with LDPE and HDPE.			
	SLH118	1.0	0.916 [a]	≥84	-
		Stretch films, blends with LDPE and HDPE, general use packaging, blends for irrigation pipes and cosmetic packaging.			
	SLH218	2.3	0.916 [a]	≥84	-
		Stretch films, blends with LDPE and HDPE, general use packaging, blends for irrigation pipes, insulation of low and medium XLPE wires and cables.			
LDPE	SBF0323HC	0.32	0.923 [a]	≥95	-
		Industrial sacks, agricultural films, co-extruded and heat-shrinkable films for palletizing and cosmetic packaging.			
	SBF0323HC/12	0.32	0.923 [a]	≥95	AB, S
		Industrial sacks, agricultural films, co-extruded and heat-shrinkable films for palletizing and cosmetic packaging.			
	STN7006	0.60	0.918 [a]	≥95	-
		High transparency films for coextrusion for food product packaging, flat films and laminated fabric, flexible bottles for solids, liquids or paste products for hygiene and cleaning and cosmetic packaging.			
	STS7006	0.60	0.925 [a]	≥95	AB, S
		High transparency films for coextrusion for food product packaging.			
	SEB853	2.7	0.923 [a]	≥95	-
		High transparency films, films for diapers, blends with LLDPE and HDPE.			
	SEB853/72	2.7	0.923 [a]	≥95	AB, S
		High transparency film, lamination film and automatic packaging of solid products (FFS).			
	SPB681	3.8	0.922 [a]	≥95	-
		Extrusion of blow and cast films, films for diapers, blends with LLDPE and HDPE and cosmetic packaging.			
	SPB681/59	3.8	0.922 [a]	≥95	AB, S
		Lamination films and automatic packaging for solid products.			

Test specimens prepared from compression molding, according to ASTM D 4703. Additives AB = anti-blocking, S = slip agent, PPA = polymer processing aid. a) Value obtained by the ASTM D1505 method

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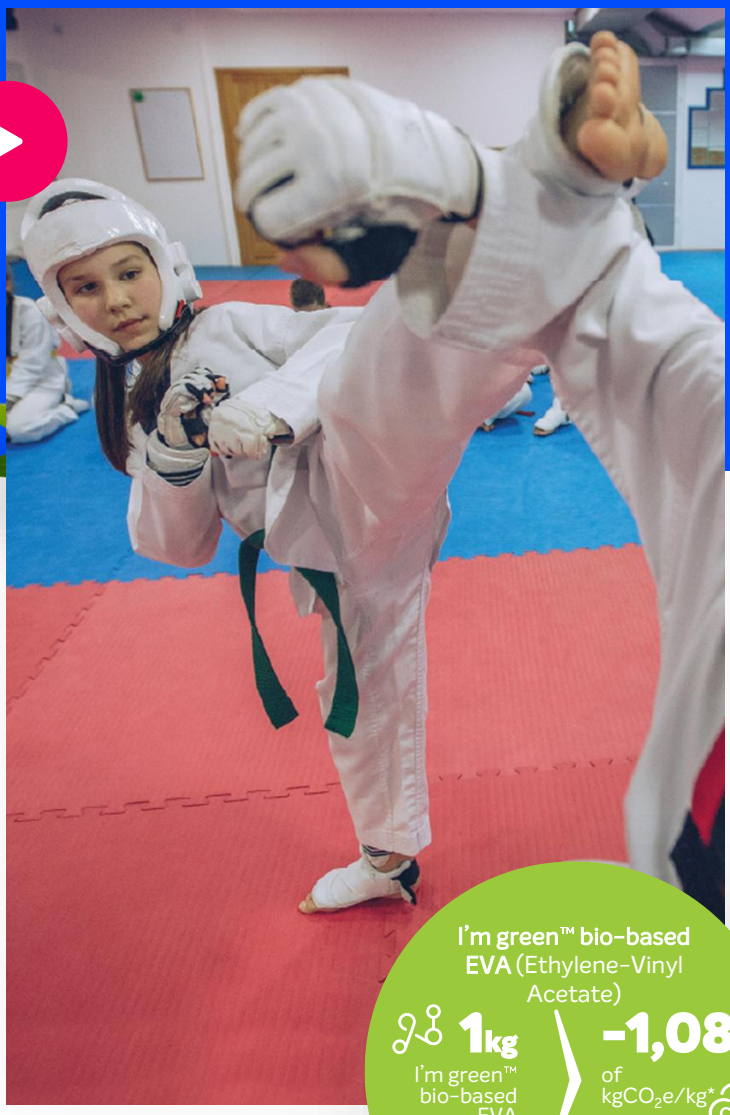
EVA

I'm green™ bio-based



I'm green bio-based EVA, which is partially derived from sugarcane, is the sustainable alternative for several segments that use EVA in their products. Minimum bio-based carbon content **ranges from**

≥80%

to

≥45%

I'm green™ bio-based EVA (Ethylene-Vinyl Acetate)

1kg I'm green™ bio-based EVA

-1,08kg of $kgCO_2e/kg$*

LCA calculated as per ISO 14040/14044, reviewed by ERM (2025)

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

Shoe Soles

Tatami Mats

Sport Items

Brassiere

Ball

Toys and Educational Games

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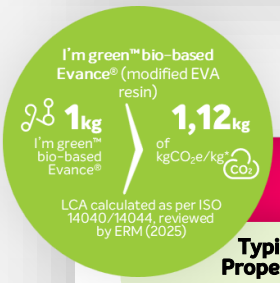
Foamed Products

Typical Properties		Melt Index (190 °C/2.16 kg)	Vinyl acetate content	Bio-based Carbon Content
ASTM method		D 1238	Braskem	D 6866
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		



Braskem Evance®

Typical Properties		Melt Index (190 °C/2.16 kg)	Vinyl acetate content	Bio-based Carbon Content
ASTM method		D 1238	Braskem	D 6866
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.		

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PE Wax

I'm green™ bio-based

I'm green™ bio-based polyethylene wax complements Braskem's bio-based portfolio offer for multiple markets.

I'm green™ bio-based PE Wax

1kg PE Wax > -1,55kg of $kgCO_2e/kg$

*LCA for GWAX 150A calculated as per ISO 14040/14044, reviewed by ERM (2025).

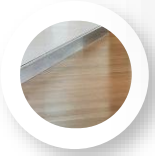
Applications

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

Main applications

Adhesives

Compounds



Coatings

PE Wax

Grade	Dropping point	Solidification point	Melting point	Needle penetration (25°C)	Dyn. viscosity (140°C)	Density	Acid value	Acid value	Yellowness index	Flashpoint – Pensky M.
Method	DIN ISO 2176	DIN ISO 2207	DIN ISO 51007	DIN 51579, ASTM D1321	DIN EN ISO 2555	DIN EN ISO 183-1	DIN EN ISO 2114	DIN EN ISO 3681	DIN EN ISO 11664	DIN EN ISO 2719
Units	°C	°C	°C	10-1mm	mPas	g/cm³	$mg_{(KOH)}g$	$mg_{(KOH)}g$	-	°C
GWAX 30E	101	82	100	12	53	0.88	<1	<1	26	>216
GWAX 50E	108	94	105	4	138	0.88	<1	<2	4	>220
GWAX 10A	115	95	113	17	32	0.92	<1	<1	55	>200
GWAX 50A	119	104	118	2	141	0.94	<1	<1	30	>225
GWAX 150A	120	105	120	1	360	0.93	<1	<2	<25	>225
GWAX 260A	125	112	127	1	818	0.95	<1	<1	2	>220

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 70 countries and we count on 40 industrial units, located in Brazil, the United States, Germany and Mexico (in partnership with Mexican company Idesa). For more information, visit www.braskem.com.

Global Leader in the production of biopolymers

Clients in more than
70 Countries

6th largest producer in **PE, PP** and **PVC**

#1 producer of PE, PP and PVC in the **Americas**

#1 producer of PP in **North America**

#1 producer of PE, PP and PVC in **Latin America**

40 Industrial Units:

29 plants in Brazil
5 plants in USA
4 plants in Mexico
2 plants in Germany

More **than**
8.000
Team Members

Braskem