

# Polypropylene for Water Management

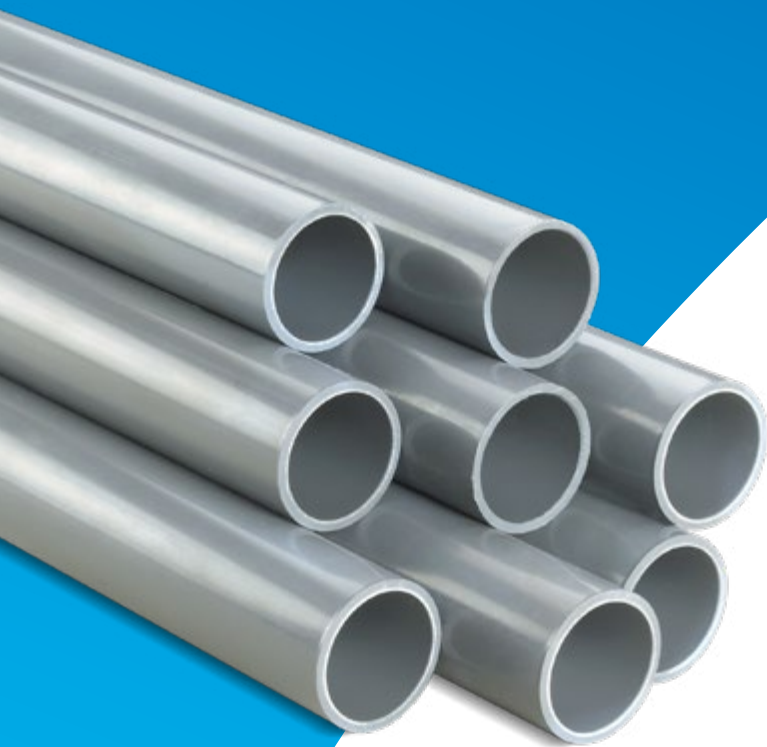
Bringing reliability to your piping systems





Braskem is your experienced and reliable partner in products for water management.

We supply selected products to meet your requirements. Our portfolio range includes Homopolymer and Heterophasic Copolymer Polypropylene and High Density Polyethylene. We constantly strive to advance solutions to enhance our portfolio and to develop new products in cooperation with you.



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## Injection Molding

For our valued customers we offer PP injection molding grades which provide good creep and temperature resistance.



Grade	MFR	Density	Flexural Modulus	Tensile Stress	Tensile Strain	Charpy Notched		Vicat (10N)	HDT (0,45MPa)	OIT (200°C)
						(23°C)	(-20°C)			
Method	ISO 1133	ISO 1183	ISO 178	ISO 527-1	ISO 527-1	ISO 179		ISO 306	ISO 75-2	ISO 11357-6
Unit	g/10min	g/cm <sup>3</sup>	MPa	MPa	%	kJ/m <sup>2</sup>		°C	°C	min
<b>CSP030N</b>	0,3	0,9	1300	27,5	11	70	6	156	89	> 60
Fittings (DIN EN1852), heat stabilized, high molecular weight										
<b>C123-01N</b>	1,2	0,9	1350	27	7	15	6	154	90	-
Fittings, fast cycletime										





## Pipe Extrusion

Our PP extrusion grades are designed to fulfill your requirements for non-pressure underground drainage and sewerage pipes. Furthermore, we offer products for cables and multilayer pipe systems.

PP provides a very high stiffness and impact as well as a good chemical resistance compared to PVC pipes.



Grade	MFR	Density	Flexural Modulus	Tensile Stress	Tensile Strain	Charpy Notched		Vicat (10N)	HDT (0,45MPa)	OIT (200°C)	
						(23°C)	(-20°C)				
Method	ISO 1133	ISO 1183	ISO 178	ISO 527-1	ISO 527-1	ISO 179		ISO 306	ISO 75-2	ISO 11357-6	
Unit	g/10min	g/cm <sup>3</sup>	MPa	MPa	%	kJ/m <sup>2</sup>		°C	°C	min	
ICP	CSP030N	0,3	0,9	1300	275	11	70	6	156	89	> 60
		Sewer pipes, DIN EN1852, heat stabilized									
	Inspire® 118	0,3	0,9	1750	33	10	60	2,5	156	107	> 60
Sewer pipes, DIN EN1852, heat stabilized											
Inspire 114® EU	0,5	0,9	1500	28,5	9	65	4,5	155	95	> 25	
	Corrugated pipes, heat stabilized										
HPP	F008F	0,8	0,9	1500	33	10	8	-	158	95	> 30
		Multilayer pipes, sewage pipes									

Grade	HLMI 190°C/2,16kg	Density	Flexural Modulus	Tensile Stress	Izod Notched (23°C)	ESCR (10% lgepal) (50°C)	Vicat (10N)	HDT (0,45MPa)
Method	D 1238	ISO 1183	D 790	D 638	D 256/A	D 1693	D 1525	D 648
Unit	g/10min	g/cm <sup>3</sup>	MPa	MPa	J/m	h	°C	°C
HDPE	HDB0358	0,3	0,958	1465	30	145	130	70
		Corrugated pipes, not heat stabilized						

## PP piping systems: DIN EN 1852-1:2018

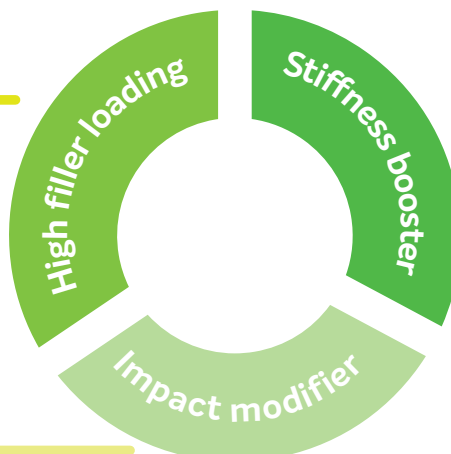
We have tested our high performance products for sewer pipes at an accredited institute. CSP030N is a standard pipe grade with very high impact strength. Inspire 118 is the material of choice if additional ring stiffness is required.

		Inspire® 118			CSP030N		
		Pipe			Granules	Pipe	Granules
		SN4 / SDR 33 / S16	SN8 / SDR 29 / S14	SN16 / SDR 22 / S10,5		SN4 / SDR 33 / S16	
		accredited institute	accredited institute	accredited institute	Braskem	accredited institute	Braskem
Hoop Stress Test	1000h/95°C/2,5MPa	✓	✓	✓	-	✓	-
	140h/80°C/4,2MPa	✓	✓	✓	-	✓	-
Ring stiffness		✓	✓	✓	-	✓	-
		6,4 MPa	8,4 Mpa	22 Mpa	-	6,4 MPa	-
Resistance to external blows		✓	✓	✓	-	✓	-
MFR		✓	✓	✓	-	✓	-
OIT		-	-	-	> 60 Min	-	> 60 Min

## Pipe Compounding

Braskem has a variety of PP grades for your pipe compounds. Let us know your specific needs.

Our high flow products helps you to add high loading of mineral filler. MFR up to 100 g/10 min is available



Braskem can provide PP Homopolymers of different MFR with a Tensile Modulus up to 2200 MPa

We offer a wide selection of heterophasic copolymers. Impact resistance at 20 °C up to 10 kJ/m<sup>2</sup>.

# Sustainable solutions for you

Braskem offers a huge variety of sustainable products for compounds. Our portfolio ranges from grades made of bio-based material to recycled material. The material is certified and we offer a service to provide you with a life cycle analysis.

Our commercial team will support you in finding the right sustainable material for your needs.



## BIO-BASED RAW MATERIAL

- HDPE, LDPE, LLDPE and EVA
- Blow molding, injection molding & extrusion
- Can be in **contact with food\***
- Measurable **bio-based content**
- **Captures CO<sub>2</sub>** from the environment
- Tackling **climate change**



## MASS BALANCE CERTIFIED BIO-ATTRIBUTED

- PP
- Blow molding, injection molding & extrusion
- Can be in **contact with food\***
- **ISCC** mass balance certified bio-based
- Contributes to reduce **dependance on fossil feedstock**
- **Reduced carbon footprint**



FOSTERING THE TRANSITION TO A CIRCULAR ECONOMY



## RECYCLED RESINS

- rHDPE, rLDPE, rPP
- Blow molding, injection molding & extrusion
- Made from **post-consumer recycled plastic**

## MASS BALANCE CERTIFIED RECYCLED

- PE, HPP, RPP and ICP
- Blow molding, injection molding & extrusion
- Can be in **contact with food\***
- **ISCC** mass balance certified recycled

## LOW CARBON SOLUTIONS

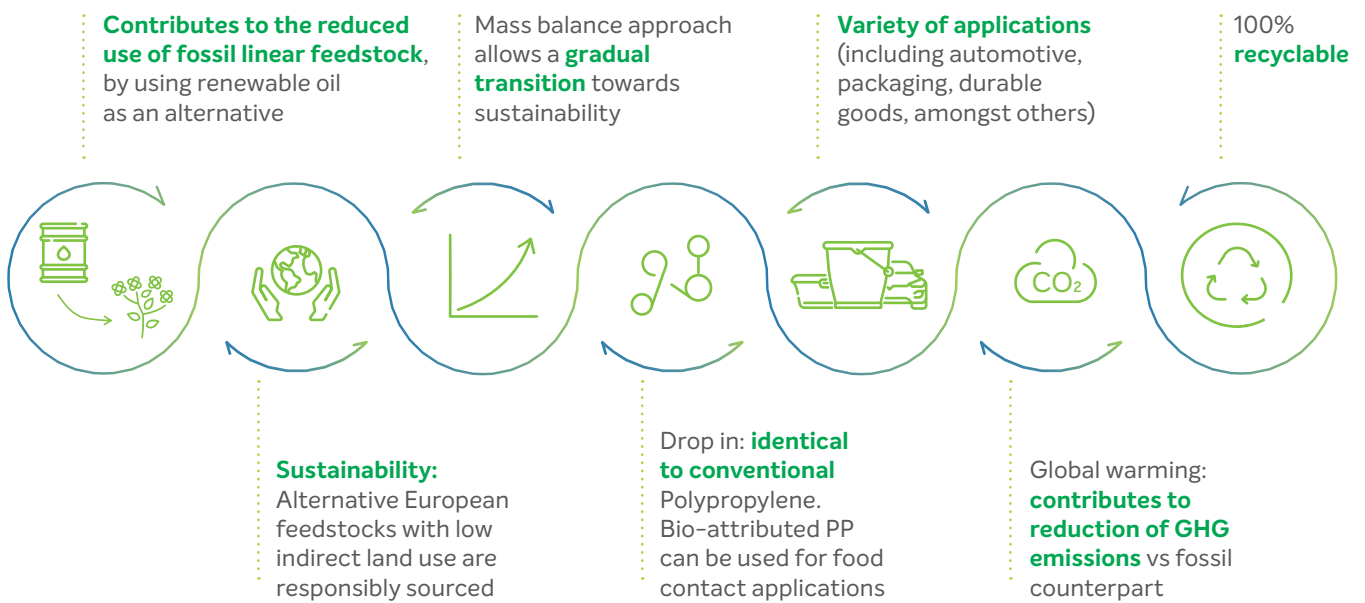
- rHDPE, rPP
- Blow molding, injection molding & extrusion
- Measurable **bio-based content**

**Braskem can offer all PP products with an ISCC PLUS certificate.**

\*These applications are merely exemplary. The possibility of using this product for a specific purpose may vary according to the jurisdiction and should be analyzed by the interested party. Braskem does not warrant the suitability of the product for the intended use when combined with other substances. Please check the RIS or contact Braskem for specific regulatory information.

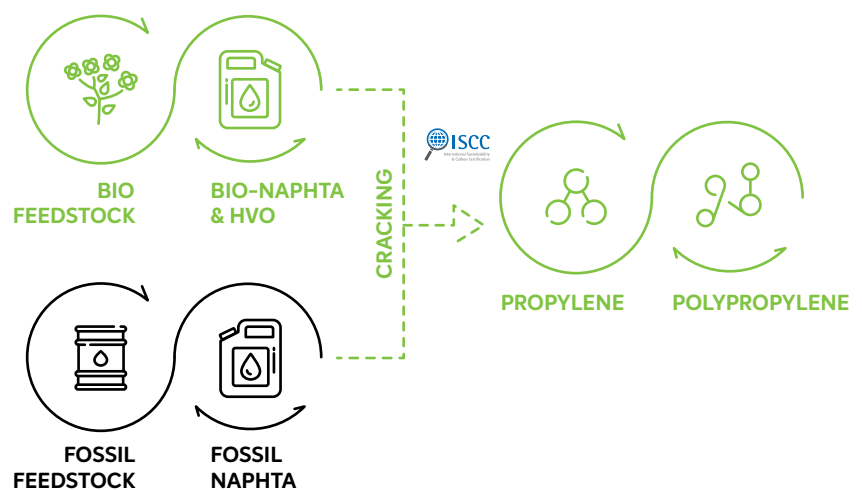
# Introducing bio-attributed mass balance PP

By using the mass balance approach Braskem is scaling up the amount of bio-attributed feedstock that can be re-introduced in the value chain.



## How production works?

The production route of propylene and polypropylene, from mass balance bio-attributed or fossil feedstock, is exactly the same. Therefore, both bio-attributed and fossil PP have the same characteristics, quality and properties.



## Availability

PRODUCTION  
EUROPE

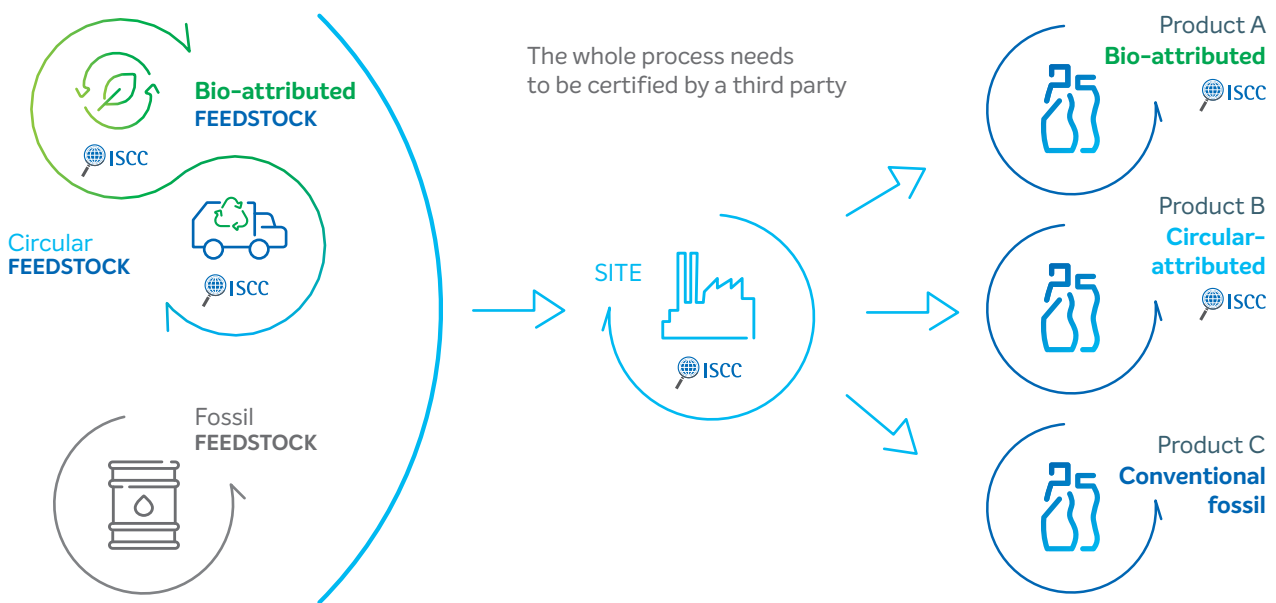
MARKETS  
GLOBALLY

PORTFOLIO  
PP (HOMO, COPO, RANDOM)

# What is mass balance?

Mass balance has been designed to trace the flow of materials through a complex value chain. This approach enables the tracking of the amount of circular and/or bio-based content in the value chain and attribute it based on verifiable bookkeeping.


Why do we introduce mass balance? Mass balance is an essential approach that allows the market to transition in an efficient manner to a low carbon economy.



## MASS BALANCE

  
ENSURE TRACEABILITY

  
RESOLVE COMPLEX LOGISTICS

  
USE IN EXISTING INFRASTRUCTURE

  
INCREASE THE UPTAKE OF SUSTAINABLE FEEDSTOCK

  
LOWER DEPENDANCE OF FOSSIL FEEDSTOCK

THIS IS HOW WE ACCELERATE A TRANSITION TO A...  
**CIRCULAR**  
& LOW CARBON  
**ECONOMY**



## It's all about partnership

Old fishing nets and ropes are among the most common waste collected in the harbors. Braskem supports Plastix in the process to recycle them and markets the resulting Green Plastics.

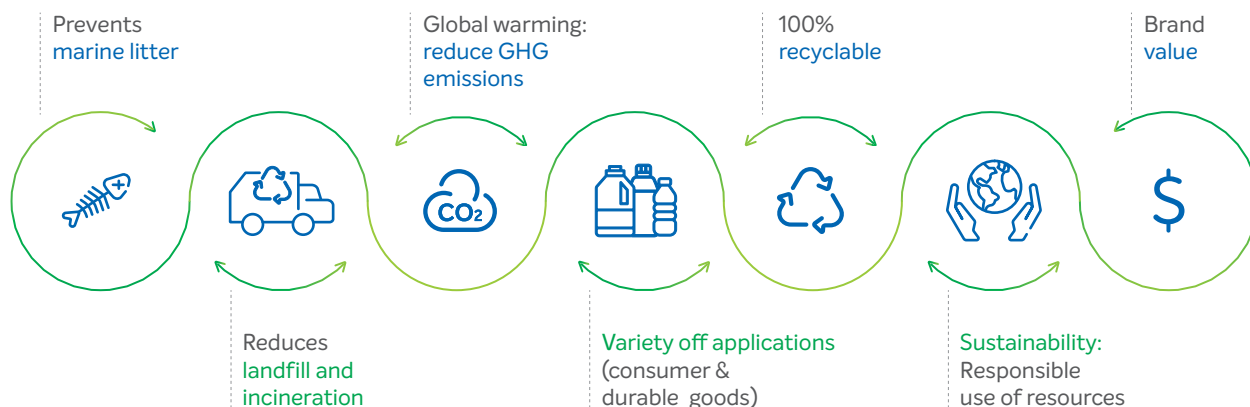
**PLASTIX**

Plastix is a Danish plastic recycling company specialized in sorting and recycling plastic fiber waste from the maritime industry. With its proprietary recycling technology, Plastix has proven that it is possible to make beautiful new plastic products from plastic waste, which before had to go to landfill or incineration.

**Braskem**

Braskem has joined forces with Plastix to help them optimize the recycling process and accelerate the introduction of this innovative and high-quality circular plastic to the market.

## Plastix value proposition



## Plastix production process



## Product portfolio

Type	Grades	Origin	PCR Content %	Density [g/cm <sup>3</sup> ]	MFR [g/10 min] ISO 1133		Flexural Modulus [MPa]	Charpy [kJ/m <sup>2</sup> ]	Color <sup>[1]</sup>
					230 °C / 2.16 kg	190 °C / 2.16 kg			
PP	DP249A (development)	Fishing nets & ropes	98	0,92	3,5	-	1350	5	green
HDPE	RDH001A (development)	Fishing nets & ropes	98	> 0,945	-	0,8	-	-	green

<sup>[1]</sup> Alternative colors maybe available on request

DP249A and RDH001A are high-quality post consumer recycled (PCR) plastics, originating from end-of-life maritime plastic fibers. These fishing nets, ropes and others fibers are collected from fisheries, harbors and other waste sources, preventing possible marine pollution, incineration or landfill.



# Europe

## Rotterdam, Netherlands

Headquarters  
Start-up year: 2017

## Schkopau, Leipzig Area

Capacity: 360 kT/yr  
Technology: Spheripol  
Start-up year: 1998

## Wesseling, Cologne Area

Capacity: 265 kT/yr  
Technology: Unipol  
Start-up year: 1991



Innovation & Technology Centre  
Start-up year: 2016

## Braskem in numbers



Warehouses  
**Europe**

Antwerp | **Belgium**  
Murcia | **Spain**  
Bologna | **Italy**  
Rotterdam | **The Netherlands**

**297**

Team Members



**2** Industrial Units:  
Wesseling and  
Schkopau (Germany)

PRODUCTION  
CAPACITY OF

**625** KT/Y

of **PP**




# Global presence

With a global vision of the future, oriented toward people and sustainability, Braskem is engaged in contributing to the value chain in order to strengthen the Circular Economy. Its more than 8.000 team members are dedicated to improving people's lives through sustainable solutions in chemicals and plastics. With its corporate DNA rooted in innovation, Braskem offers a comprehensive portfolio of plastic resins and chemical products for diverse industries, such as food packaging, construction, manufacturing, automotive, agribusiness, health and hygiene, and more. Braskem is globally headquartered in Brazil and EMEA head office is based in Rotterdam – NL. In total, there are more than 40 industrial units in Brazil, the United States, Mexico, and Germany, exporting its products to clients in over 80 countries.

 **8,353**  
Team Members

PRODUCTION  
OF OVER **20** MM TONS/YEAR  
of thermoplastic  
resins & other  
chemicals products



**40** industrial units:  
29 plants in Brazil  
5 plants in the United States  
2 plants in Germany  
4 plants in Mexico

