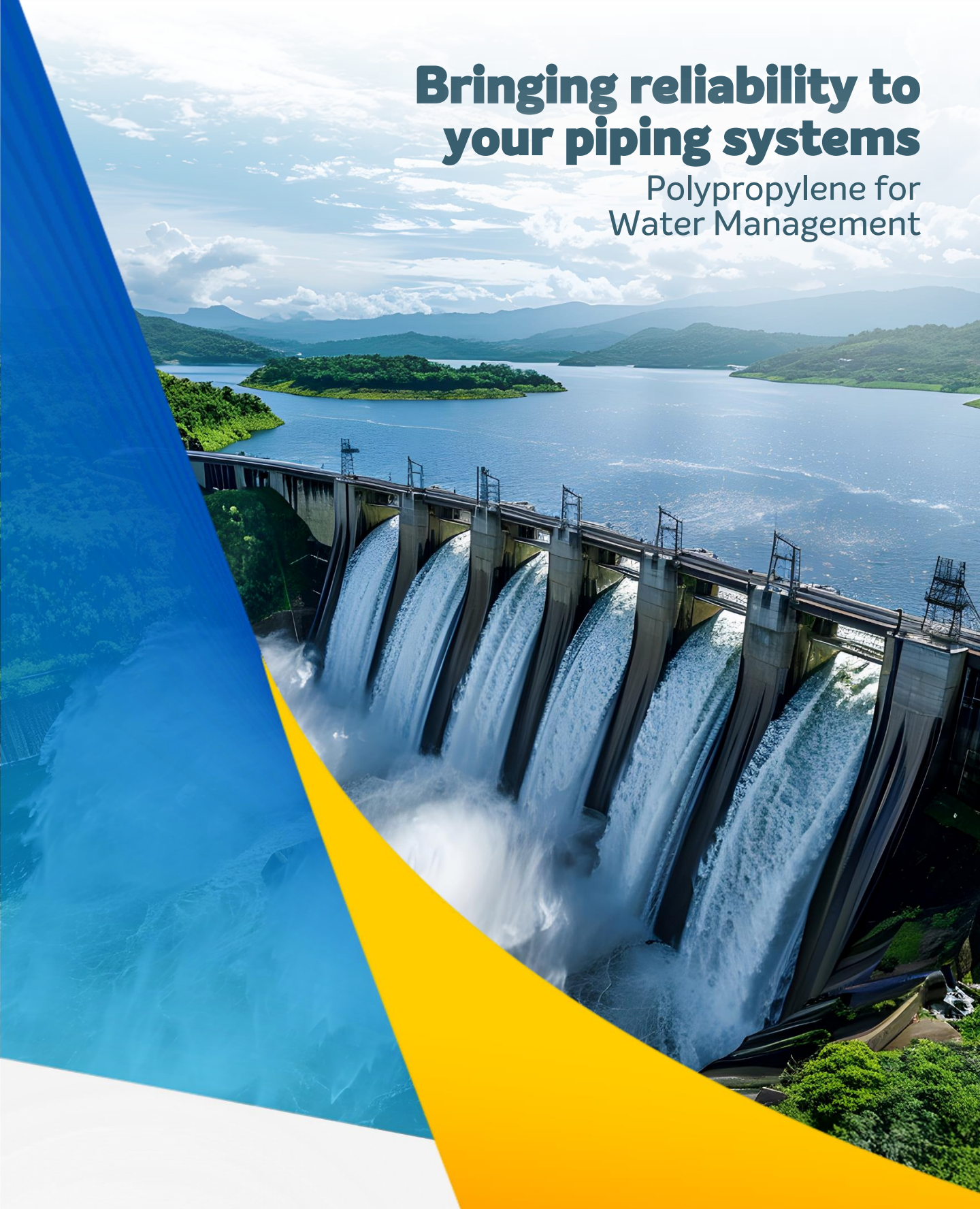
Bringing reliability to your piping systems

Polypropylene for Water Management



Braskem

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Innovation is the tool that drives us in the pursuit of our long-term commitments with sustainable development

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Our purpose is to improve people's lives by creating sustainable solutions through chemicals and plastics.

In line with the **UN 2030 sustainable development goals**, Braskem took on long-term goals with people and the planet in 2020. Working in three priority and four complementary dimensions, we are looking to achieve these goals through innovation.

Eliminating plastic waste

Mitigating Climate Change

Social Responsibility & Human Rights

An **ecosystem** developed to represent Braskem's **products, technologies** and **initiatives** that **help drive the circular economy**.

WENEW

A portfolio of products **made from sugarcane** that **captures CO_2** from cradle-to-gate, helping **mitigate climate change.**

I'm green™ BIO-BASED

ISCC International Sustainability & Carbon Certification

All our polypropylene grades are available with ISCC+ certification, using the mass balance method with bio, circular or bio-circular feedstocks*, ensuring sustainability and traceability across the supply chain.

Braskem's polypropylene is a **versatile material used in a wide range of water management** applications such as **sewer and sewage pipes**, irrigation systems, water storage tanks, stormwater drainage systems, and wastewater treatment components. Its **durability, chemical resistance, and lightweight nature** make it an ideal choice for these **demanding environments**, helping to **ensure cost-efficient** and **sustainable** water management solutions.

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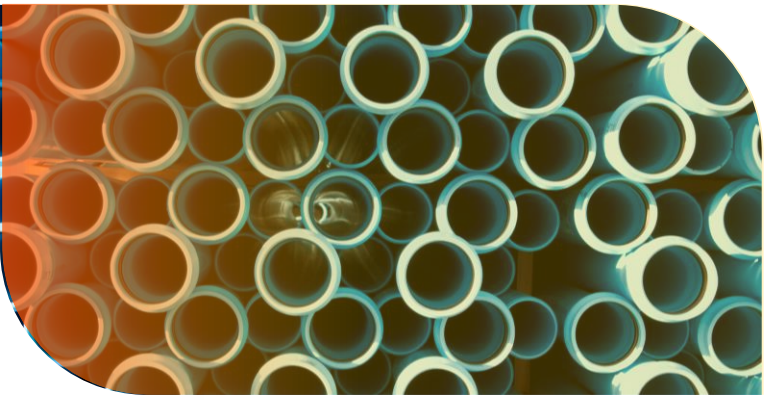
*www.iscc-system.org/certification/iscc-documents/iscc-material-lists/

Injection Molding

Injection molding produces components like fittings, valves, and pump components. Braskem offers a diverse range of PP products that deliver high-strength and durable parts ideal for water management systems.

Extrusion

PP extrusion grades are designed for non-pressure pipes for sewerage and drainage. Braskem's materials are ideal for mono- and multilayer pipe systems with very high stiffness and impact resistance. Compared to PVC, PP pipes characterized by increased chemical resistance.



PP piping systems: DIN EN 1852-1:2023-07

Our high-performance products for sewer pipes have been tested at an accredited institute to ensure reliability. CSP030N is a standard pipe grade offering excellent impact strength, while INSPIRE 118 is ideal when additional ring stiffness is needed.

INSPIRE 118

- High molecular weight PP impact copolymer for non-pressure sewer pipes
- Excellent stiffness-toughness balance at lower temperatures
- Enabling higher SDR/SN

Compounding

Braskem offers high-flow polypropylene grades with MFR up to 100 g/10 min, enabling high mineral filler loading for enhanced material strength. Our selection includes homopolymers with a tensile modulus up to 2200 MPa, as well as heterophasic copolymers with impact resistance up to 10 kJ/m^2 at 20 °C, providing exceptional durability and versatility for advanced water management applications.

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INJECTION MOLDING

Grade	MFR	Density	Flexural Modulus	Tensile Stress	Tensile Strain	Charpy Notched (23 °C)	Charpy Notched (-20 °C)	Vicat (10 N)	HDT (0,45 MPa)	OIT (200 °C)
Method	ISO 1133	ISO 1183	ISO 178	ISO 527-1	ISO 527-1	ISO 179	ISO 179	ISO 306	ISO 75-2	ISO 11357-6
Units	g/10 min	g/cm³	MPa	MPa	%	kJ/m²	kJ/m²	°C	°C	min
CSP030N	0,3	0,9	1300	27,5	11	70	6	156	89	>60
	fittings (DIN EN1852), heat stabilized, high molecular weigh									
C123-01N	1,2	0,9	1350	27	7	15	6	154	90	-
	fittings, fast cycle time									

PIPE EXTRUSION

	Grade	MFR	Density	Flexural Modulus	Tensile Stress	Tensile Strain	Charpy Notched (23 °C)	Charpy Notched (-20 °C)	Vicat (10 N)	HDT (0,45 MPa)	OIT (200 °C)
	Method	ISO 1133	ISO 1183	ISO 178	ISO 527-1	ISO 527-1	ISO 179	ISO 179	ISO 306	ISO 75-2	ISO 11357-6
	Units	g/10 min	g/cm³	MPa	MPa	%	kJ/m²	kJ/m²	°C	°C	min
ICP	CSP030N	0,3	0,9	1300	27,5	11	70	6	156	89	>60
		sewer pipes, DIN EN1852, heat stabilized									
ICP	INSPIRE 118	0,3	0,9	1,750	33	10	60	2,5	156	107	>60
		sewer pipes, DIN EN1852, heat stabilized									
ICP	INSPIRE 114EU	0,5	0,9	1,500	28,5	9	65	4,5	155	95	>25
		corrugated pipes, heat stabilized									
HPP	PG107H	0,7	0,9	1,400	33	11	7	-	155	85	>30
		multilayer pipes, sewage pipes									

	Grade	MFR	Density	Flexural Modulus	Tensile Stress	Tensile Strain	Vicat (10 N)	HDT (0,45 MPa)	OIT (200 °C)
	Method	ISO 1133	ISO 1183	ISO 178	ISO 527-1	ISO 179	ISO 306	ISO 75-2	ISO 11357-6
	Units	g/10 min	g/cm³	MPa	MPa	kJ/m²	°C	°C	min
HDPE	HDB 0358	0,3	0,958	1,465	30	145	200	130	70
		corrugated pipes, not heat stabilized							

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DIN EN 1852-1:2023-07

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

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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.

Clients in more than

70

countries

More than

8.500

team members

6th

largest producer in PE, PP and PVC

#1 producer PE, PP and PVC in the Americas

#1 PP producer in North America

#1 PE, PP and PVC producer in Latin America

40

industrial units:

29 plants

4 plants

5 plants

2 plants

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