

► **Braskem in numbers**

Export Revenue
RS **22.7** billion
US\$ 6.8 billion

Net Revenue
RS **47.3** billion
US\$ 14.3 billion

11 More than million kta
of production capacity in basic chemicals, renewables, thermoplastic resins and specialty chemicals.

Braskem **Unilene®**

8 Over 8,000 team members

36 industrial units

RS **2.4** billion
US\$ 714 million Investments

Ethylene, Green Ethylene, PVC, PE, PP

I m green

Global presence, local efficiency

About Braskem's Specialty Chemicals Business

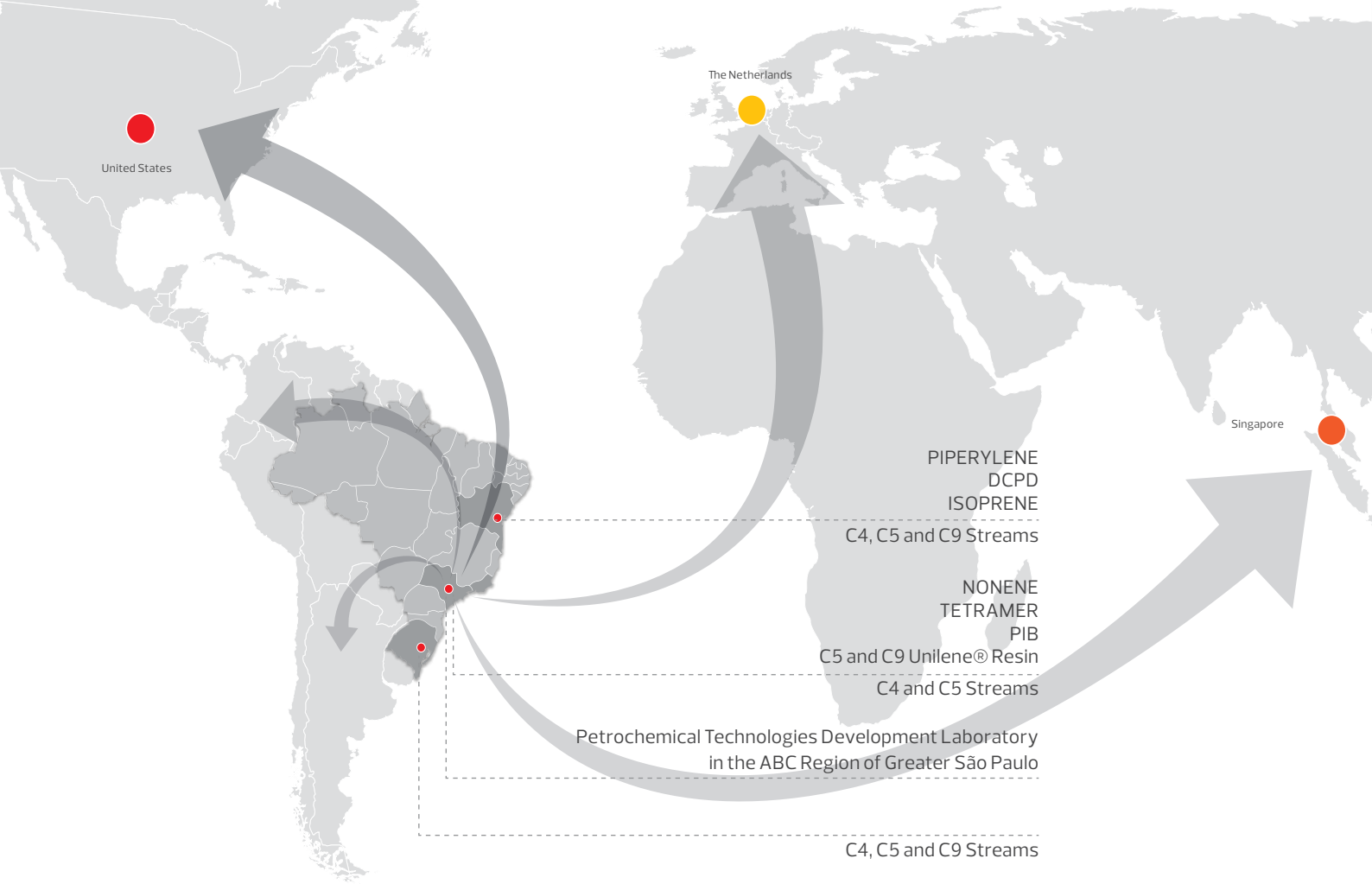
The largest producer of Hydrocarbon Resins and Polyisobutylene in Latin America, Braskem offers a host of solutions for a diversified and demanding market of specialty chemicals, addressing key applications, such as lubricants, rubber, coating, adhesives and others.

26 countries served

3 international offices

20 markets served

70 International Clients



www.braskem.com

Braskem

Braskem

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► **You dream and we jointly make it happen**

Braskem believes in the dreams of its clients and seeks solutions that can make a difference in their life and for society. Being the benchmark in chemicals and biopolymers, Braskem applies its expertise in raw materials and specialty chemicals to products that are used by people every day, thus meeting the needs of our time.

Discover Braskem's Specialty Chemicals

And be surprised by the variety of industries served and the many business opportunities they can offer you.

- C3** Nonene, Tetramer
- C4** PIB
- C5** DCPD, Piperylene, Isoprene, C5 Unilene® Resin
- C9** Unilene®



► Nonene and Tetramer

C3

Nonene is one of the essential ingredients in the production of surfactants and specialty chemicals for the agrochemical, personal care, home care and paints and coatings segments. It enables producers of surfactant to create innovative and ideal solutions for shampoo formulations, detergents and surface cleaners, among others.

Since we believe that through chemicals we can help improve the quality of life of people, Braskem has a specialized logistics platform to deliver products to several countries around the world safely, quickly and with utmost quality.



CHARACTERISTIC	METHOD	UNIT	NONENE	TETRAMER
Color, Pt-Co scale	ASTM D-1209		5.0 max.	10 max.
Relative density 20 / 4 °C	ASTM D-4052		0.734 min. 0.745 max.	0.760 min. 0.770 max.
Bromine Number	ASTM D-1159	g /100 g	100 min. 130 max.	80 min. 100 max.
Water	ASTM E-203	ppm (m)	200 max.	200 max.
Flash Point	ASTM D 93	°C	20 min.	52 min.

The Nonene and Tetramer produced by Braskem contain at least 97% of monoolefins.

► PIB

C4

Braskem's PIB is non-toxic, meets all the requirements for usage in cosmetics and food.

The highly versatile PIB is present in several applications, from lubricants, stretch films, adhesives & sealants to cosmetics and others, providing them with important technical properties indispensable to each formulation:

Lubricity

Excellent lubricant qualities, reducing friction and viscosity indices, and can also be used in combination with other lubricants, oils and greases.

Tack

Characteristics of tack and adherence that vary according to the molecular weight.

Permanence

Does not dry even in the presence of drying catalysts. No loss of volatiles, remaining stable to the action of time.

Color

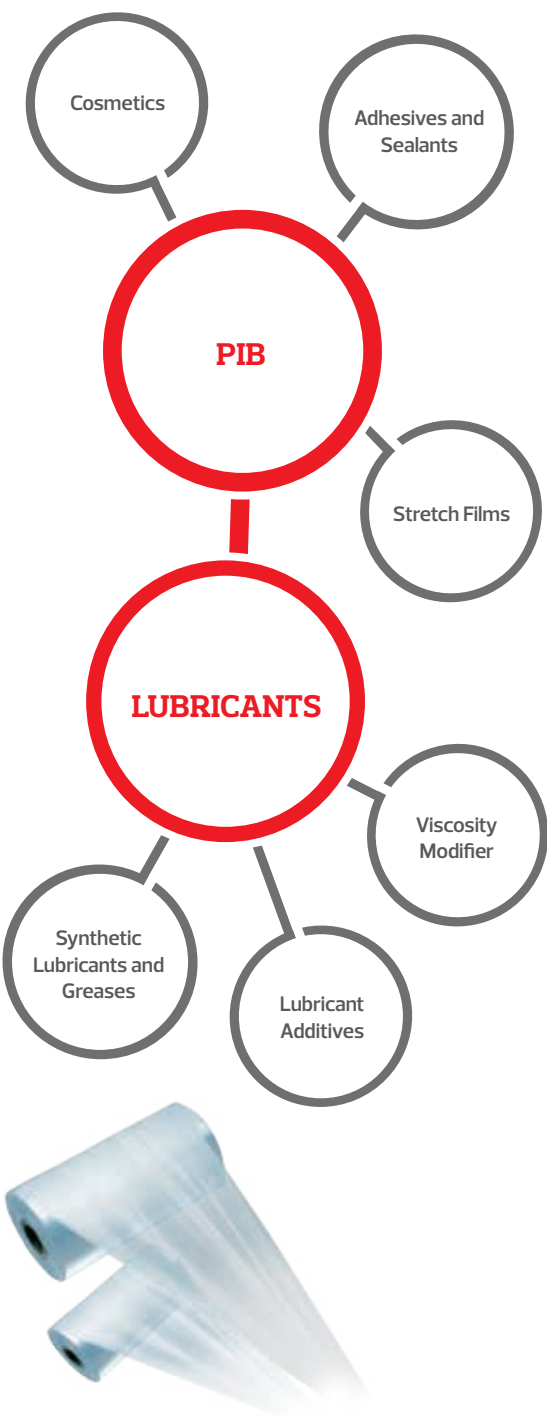
Transparent and stable product even when exposed to light.

Compatibility

Synthetic polymers such as polyethylene and polypropylene, and with most natural products such as rubbers, resins and waxes.

PIB applications in rubbers

Braskem introduces a new feature that justifies its patent: the increase in oxygen barriers in rubber compounds. The formulations improve both processing performance and gas-barrier properties. These advantages make it possible to manufacture lighter products with greater savings in terms of materials and energy.



Properties	Avg. Molecular Weight	Viscosity 37.8° C	Viscosity 100° C	Color	Density 20/4° C	Flash Point	Melting Point
Unit	Daltons	cSt	cSt	Pt-Co	-	°C	°C
Test Method	SM 180-6	ASTM D-445	ASTM D-446	ASTM D-1209	ASTM D-4052	ASTM-D92	ASTM-D97
Grades							
PIB 4	300	15	—	50	0.82	125	-50
PIB 6	330	32	6	50	0.84	130	-50
PIB 8	440	105	12	50	0.85	130	-30
PIB 10	500	380	28	50	0.87	135	-30
PIB 24	940	7000	210	30	0.89	200	-5
PIB 32	1300	22000	700	30	0.90	220	5
PIB 122	2500	—	3200	30	0.91	240	10
PIB 128	2700	—	4400	30	0.91	255	16
PIB 240	4200	—	13000	30	0.92	280	ND

► DCPD, Piperylene, Isoprene, C5 Resin

C5

Isoprene

Braskem's Isoprene features high purity and is ideal for use in the specialty rubbers segment for healthcare applications, and also in adhesive and compound formulations.

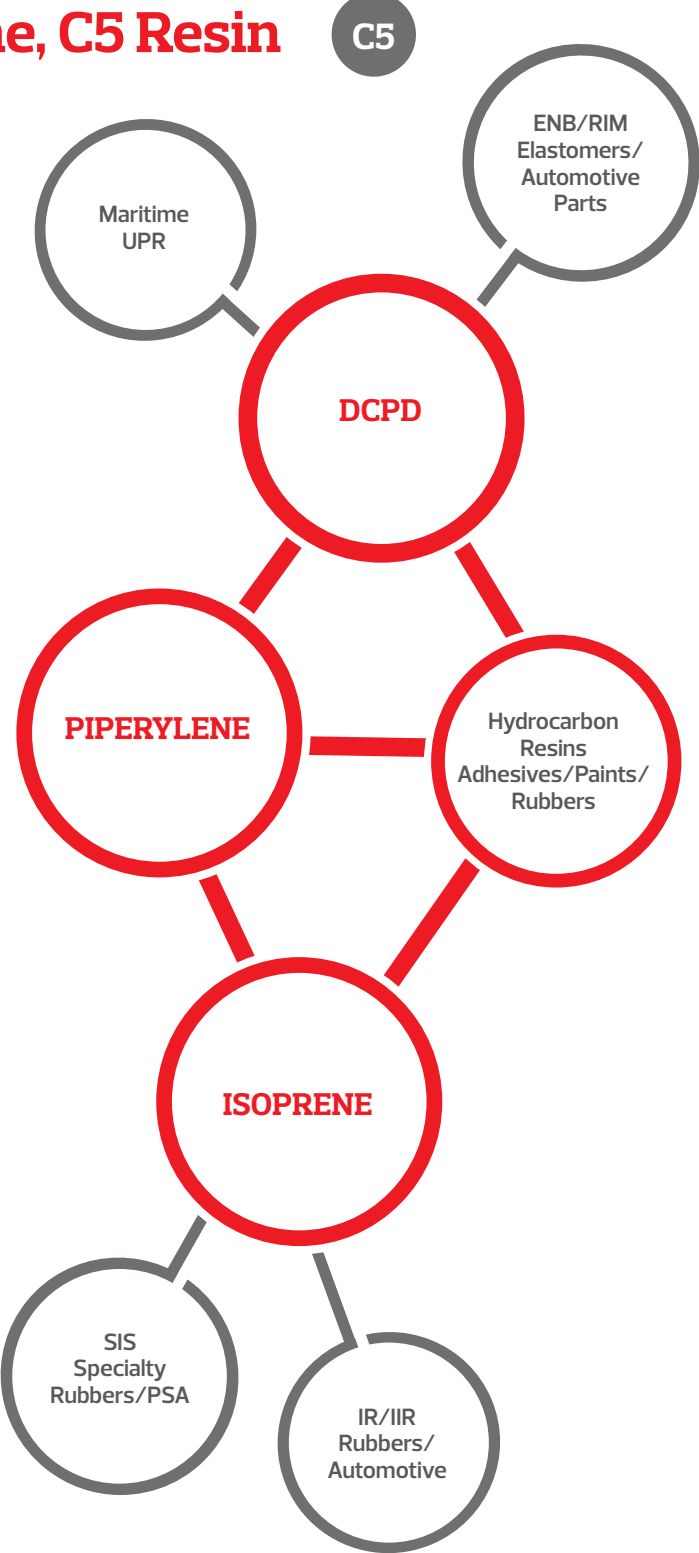
DCPD

A major advance for the market, it enables the manufacturing of lighter parts with superior mechanical properties. Obtained through the C5 stream, it is used as a raw material in the production of various resins, such as polyesters and hydrocarbon resins. DCPD polymers feature an excellent combination of stiffness and strength, a wide range of application temperatures, high-quality surface finish and excellent electrical insulation properties.

Piperylene

Used as a raw material to produce hydrocarbon resins with applications in various industries, such as adhesives, paints, plastics and rubbers.

We have expanded our portfolio of Unilene® resins, which are known for their high quality. Discover the C5 Unilene® Resin, the ideal solution for PSA adhesives, rubbers and paints.



► Unilene®

Braskem's hydrocarbon resin

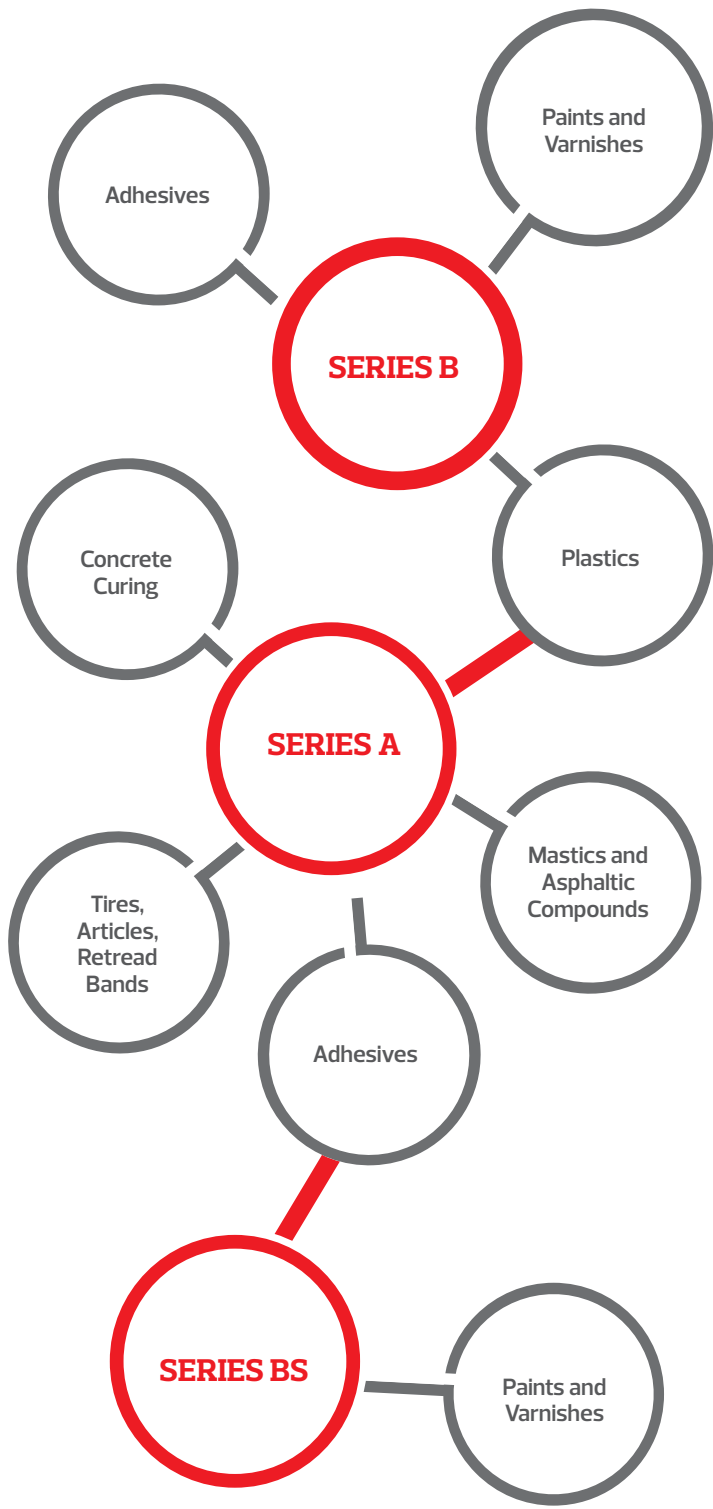
Widely recognized for conferring excellent quality and tackifying power, which are essential for high-performance adhesives.

Compatibility

Compatible with a wide range of polymeric materials such as: Elastomers - SBR, NBR, CR, EPDM, BR, NR and TR. Plastics - EVA, PVC and PP. Resins - Alkyd, Epoxy, Phenolic and Styrenated.

Solubility

In solvents based on aromatic and oxygenated hydrocarbons.



Properties	Softening Point	Gardner Color	Acid Number
Method	ASTM D-6496	ASTM D-6166	ASTM D-974
SERIES A	A-80	75 – 86	7 max.
	A-90	87 – 95	7 max.
	A-100	96 – 105	6 max.
SERIES B	B-100	95 – 105	6 max.
	B-110	106 – 115	6 max.
	B-120	116 – 125	6 max.
SERIES BS	BS-130	126 – 135	5 max.
	BS-140	136 – 145	5 max.