

► **Polypropylene for
Automotive and Compounding**

Driving New Levels of Performance and Innovation

Braskem



▶ **Surpassing Industry Standards with High Performance, Sustainable Polypropylene**

Braskem's broad polypropylene (PP) portfolio meets the needs of today's sophisticated automotive and compounding applications. Benefits from the proven performance that helps our customers add value to a wide range of innovative downstream solutions include:

- Reduced wall thickness enables using less raw material in achieving lightweighting solutions that lower transportation costs, improve fuel economy, and reduce emissions
- Unique balance of stiffness, toughness, and flowability offer exceptional competitive advantages for multiple end-uses
- Braskem targets joint technology and innovation platforms that enable our clients to meet and exceed stringent market demands

▶ Accelerating Innovation and Speed to Market

Two technologically integrated centers located in Pittsburgh, Pa. and Triunfo, RS, Brazil employ more than 300 specialized professionals who work closely with customers on joint product and application development. These state-of-the-art facilities feature:

- Pilot-scale equipment that replicates customer production environments for more true-to-life polymer testing
- Compounding and applications operations that create innovative solutions to meet customer needs
- Catalyst labs for developing experimental polymers with enhanced physical properties
- On-site analytical labs that provide tools to understand performance requirements

▶ Next-Generation PP Impact Copolymers

- Developing the next generation of performance PP impact copolymers that exploit recent advances in catalyst and process technology, combined with polymer science and engineering innovation





► **Reliable, Responsive Service and Supply**

We are focused on being responsive to our Global client needs with service levels and supply security unmatched by the competition. At the heart of this responsiveness is geographic diversity that provides reliable sourcing, with production facilities in North America, Germany, and Brazil.

► **Customer-driven Innovation**

We understand the importance of a competitive and dependable supply of high-quality products. Applications often come along that require new levels of performance. Braskem has the capability to provide the technical expertise and innovation that meets your product differentiation requirements.

▶ Expanding the Boundaries of Compounds with High Toughness, High Flow Impact Copolymers

Braskem's high toughness, high flow impact copolymers allow producers to explore the production of compounds previously unachievable. This evolution in Braskem's portfolio aims to provide a greater balance of processability and toughness, which adds versatility and flexibility. Benefits include:

- Improved toughness impact copolymers for environments requiring very high impact resistance
- Enhanced properties at low viscosity for compounding flexibility and performance
- Exceptional cold temperature impact resistance
- Very high toughness for improved flexibility in downstream formulation development



▶ Broad offering of High Crystallinity Homopolymers

Developed for the automotive compounding market, our high crystallinity homopolymers provide premium levels of stiffness, flowability, compounding flexibility, and performance:

- Wide range of melt flow rates
- Enabling higher HDT performance





TI8300C – New PP Grade for Automotive Compounding

PP impact copolymer with excellent
toughness–stiffness balance

- Designed for injection molding (~30 MFI) applications
- 100% ductility at -30 C
- Demonstrated up to 30% reduction in external elastomer loading levels in TPO compounds
- Potential impact modifier for compounding and packaging application

► Unique 2000 Series Impact Copolymers

The 2000 Series Impact Copolymers are designed to meet industry trends for higher levels of performance. Expand your compounding design freedom with the following product features:

- High Stiffness and flow performance
- Reduced emissions
- Low gels
- Suppressed tiger marking

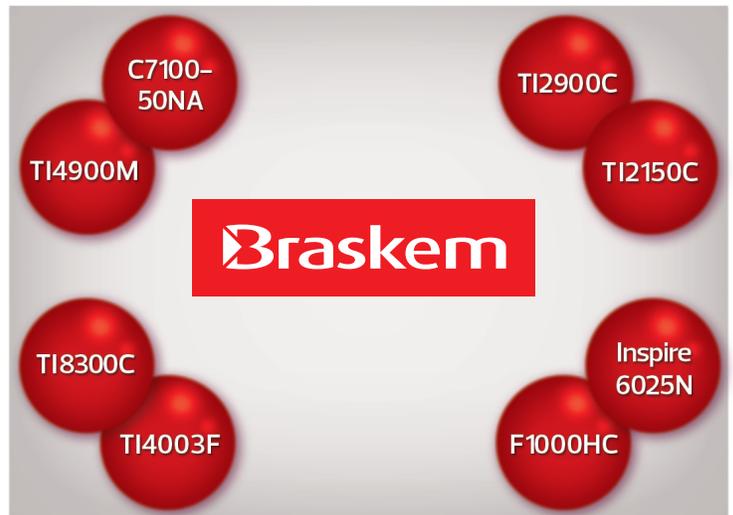
► Among the Industry's Broadest Impact Copolymer Portfolios

Depend on Braskem to meet impact copolymer performance needs with a broad portfolio featuring:

- Broad range of melt flow rates
- High melt strength resins for target market opportunities
- Unmatched continuity throughout the design space of impact copolymers

High MFR

Aesthetics



Toughness

Stiffness

Specialty Impact Copolymers to Suppress Tiger Marking

Product	Melt Flow (g/10min)	Flex Mod (psi)	N.Izod (ft-lb/in)
TI2150C	15	235,000	1.5
TI2350C	40	235,000	1.0
TI2600C	66	235,000	0.9
TI2900C	110	235,000	0.7
TI71000M	120	260,000	0.7

High Flow Impact Copolymers

C700-35N	35	220,000	1.2
C7100-50NA	50	138,000	2.3
TI6800WV	80	155,000	2.3
TI4900M	115	210,000	0.7

High Ductility Impact Copolymers

TI4003F	0.3	210,000	NB
TI6035NB	3.8	140,000	NB
TI6200Q4	20	115,000	NB
TI8300C	30	140,000	NB
TI6350WV	35	135,000	4.2

High Crystallinity Homopolymers

INSPIRE 6025N	2.5	300,000	0.7
D218	8	304,000	0.6
F350HC2	35	300,000	0.4
F1000HC	115	300,000	0.3

High Flow Homopolymers

CP1200B	126	180,000	0.3
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Braskem is one of the world's leading plastics and chemical companies with 40 industrial plants in Brazil, the United States, Germany and Mexico – the company's newest industrial complex is a joint venture with Idesa, which represents a \$5.2 billion investment.

Braskem is the largest producer of thermoplastic resins in the Americas and the leading producer of biopolymers in the world, creating more environmental-friendly, intelligent and sustainable solutions through chemicals and plastics. Known for innovative solutions such as I'm green Polyethylene™ made from renewable sugarcane and UTEC®, the company's own trademarked Ultra High Molecular Weight Polyethylene for high performance applications, Braskem's products and technologies enable the automotive, packaging, healthcare, and construction industries to produce goods that enhance quality of life for people around the world.

Braskem America is a wholly owned subsidiary of Braskem S.A. headquartered in Philadelphia. The company is the leading producer of polypropylene in the United States, with five production plants located in Texas, Pennsylvania and West Virginia, and an Innovation and Technology Center in Pittsburgh.