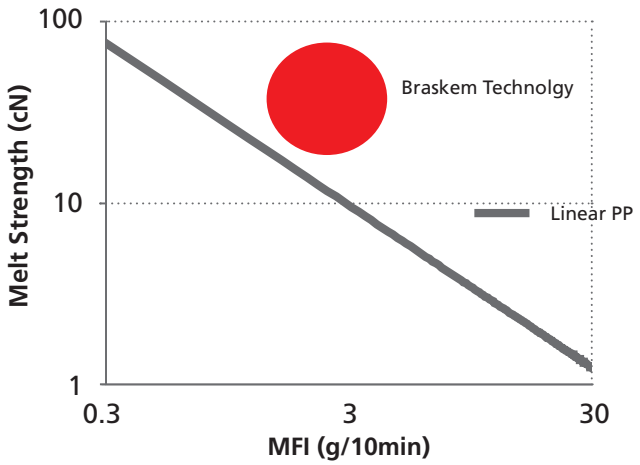
High Melt Strength Polypropylene

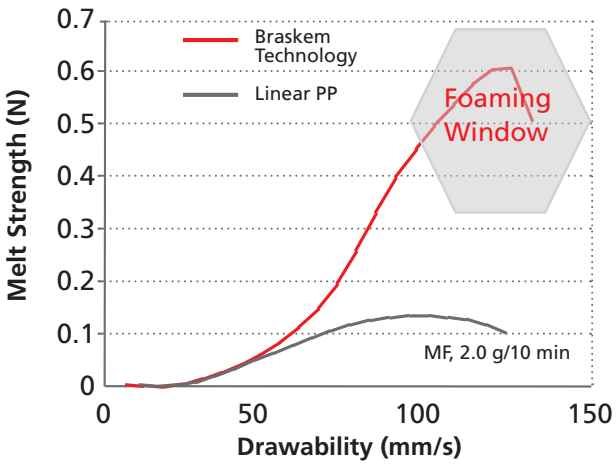
Braskem Amppleo®

Polypropylene benefits combined with high melt strength open doors for many applications

High Melt Strength Polypropylene Features and Benefits

- High melt strength and extensibility of Amppleo HMS PP coupled with the mechanical properties and chemical resistance of standard PP allow entry into non traditional PP applications
- With Amppleo HMS PP, foam can be produced using CO_2 or butane in inline or tandem processes achieving densities as low as 30 kg/m^3
- Synergistic performance when blended with a range of polymers
- Benefits in solid applications include increased sag resistance with outstanding top load and wider processing windows





Applications

- Amppleo HMS PP is designed to be used in low and high density (30 –150 kg/m^3) foam applications such as extruded sheet, planks, tubes and profiles
- End use applications include protective packaging and automotive headliners
- Amppleo's high melt strength and sag resistance also provides value in thermoforming, blow molding, injection molding and blown film

Braskem Amppleo 1025MA & 1020GA

Braskem Amppleo 1020GA & 1020GA exhibit both high melt strength and high melt extension, enabling these grades to achieve very low density foams with controlled cell size and morphology

The Foaming Process

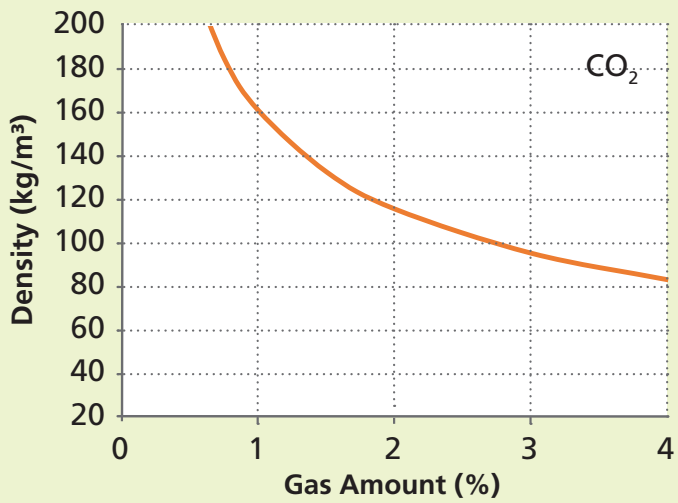
The foaming process is perhaps the most complex existing in polymer processing, involving several resin characteristics, equipment capabilities and formulations. In general terms the blowing agents are injected at high pressures into the molten polymer. This mixture is homogenized and is cooled to temperatures significantly lower than for injection molding PP products. At this lower temperature, the pressure is reduced at the die exit and the dissolved gas is no longer stable inside the polymer, forming cells that expand. Chemical foaming agents are also used to nucleate the foam providing a more uniform cell structure.

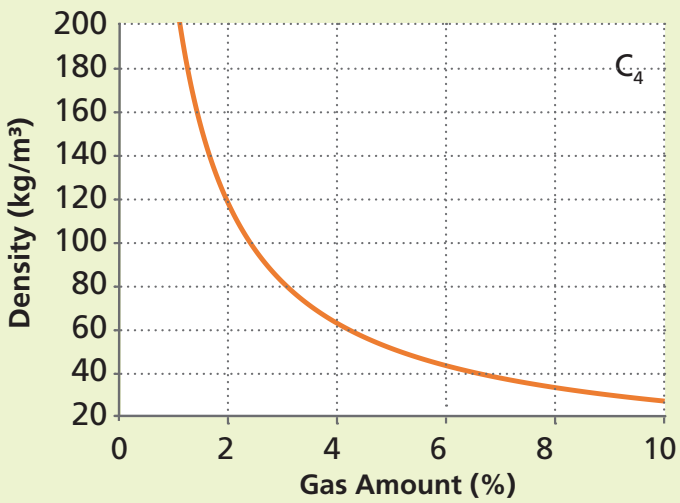
HMS offers some important superior characteristics such as high dissolution capacity of the expansion gas with high solubility, resulting in greater uniformity of cell structure and ability to reach lower densities with higher melt strength.

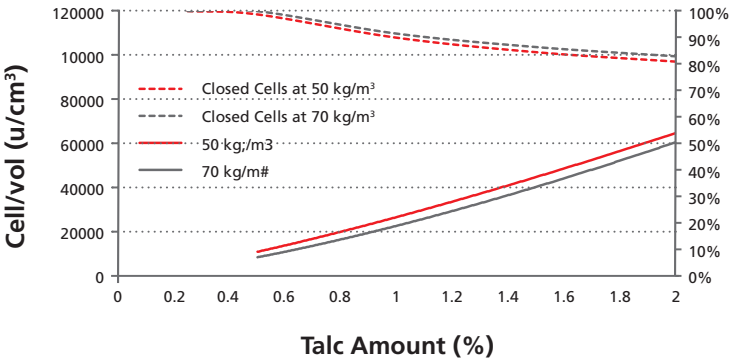
Property	Unit	Amppleo 1025MA	Amppleo 1020GA	Linear Homopolymer
Melt Flow Rate	g/10 min	2.5	2.0	2.0
Melt Strength	cN	50	60	10
Flexural Modulus	kpsi (MPa)	330 (2276)	264 (1820)	255 (1758)
HDT@66psi	°C	130	117	115

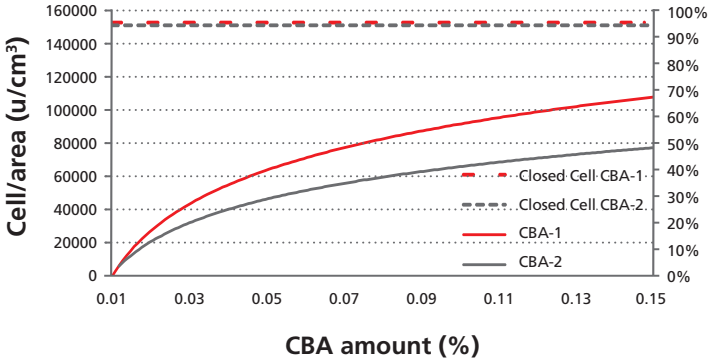
Braskem HMS – Process Flexibility

Braskem's Amppleo HMS PP products are designed to be used in low and high density foam applications and with multiple physical and chemical blowing agents. The technology has been demonstrated on tandem and inline extrusion processes. This provides customers with a wide processing window and broad application possibilities.





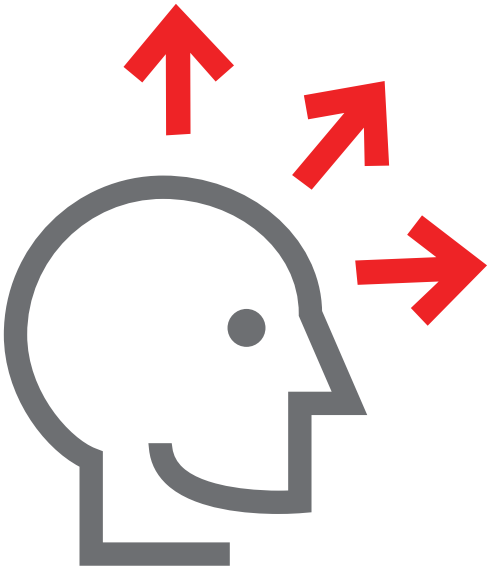




Why you should partner with Braskem

Braskem's Customer-driven Innovative Focus

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. We understand the importance of a competitive and dependable supply of high-quality products for the future.



Accelerating Innovation and Speed to Market

Two technologically integrated centers located in Pittsburgh, PA and Brazil employ more than 300 specialized professionals who collaborate with customers on joint product and applications development. These state-of-the-art facilities feature:

- On-site specialized analytical labs
- Pilot-scale equipment that replicates customer production environments for true-to-life polymer testing
- Compounding, film, sheet, thermoforming and foaming applications equipment that create innovative solutions to meet customer needs

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.

Braskem

www.braskem.com