

## **New polyolefin products in Brasilplast 2007**

### ***TECHNOLOGY AND INNOVATION ARE THE SPOTLIGHTS OF BRASKEM IN POLYOLEFIN***

Braskem, the leader in thermoplastic resins in Brazil and in Latin America, launched ten new polyolefin products in Brasilplast 2007. Four new resins will be presented, which tend mainly to the markets of foods, agro-chemicals, paper and cellulose, and cargo haulage.

In polypropylene, the six new releases are focused on the markets of hygiene, agro-business, domestic appliances, foods, and chemical products. All new product releases, with high levels of innovation, were developed in the Braskem Innovation and Technology Center in Triunfo (Rio Grande do Sul) and Camaçari (BA).

This way, Braskem reaffirms its commitment with the creation of value for the entire petrochemical and plastics production chain, utilizing its technological autonomy to provide differentiated solutions to the market and strengthening its leadership in the industry.

#### **Polypropylene**

##### **Better performance for non-fabrics**

The new **H 125** resin, innovative for the non-fabrics market, is produced with a new technology, and was designed for the Spunbonded process, a reference to the industry. It presents excellent performance, providing better processing, enhanced resistance, in addition to reduced ethereal (volatile) emissions. One of its differentials is the capacity of producing fibers of reduced diameter, which allows for a greater feeling of softness, one of the most important qualities for the industry. **H 125** is destined for use in a wide range of applications in non-fabrics, such as the durable (mattresses and pillows) and discardable products (which represent 70% of the non-fabric market) such as diapers, sanitary pads and surgical clothes. The major advantages of the new releases are: Greater productivity, better stretch, providing a more resistant non-fabric, with reduction in the level of gel, which provides a lower fiber rupture rate and reduction in the generation of oil in the extrusion line, reducing the number of stops for the cleaning of equipment.

##### **High performance for the raffia market**

Resin **H 503 HS**, of high performance, is the new polypropylene release for the raffia industry. The innovative technology of the process provides superior performance by combining higher productivity in the extrusion to higher lace tenacity. This combination allows the production of sacks and fabrics with better quality and resistance. The resin can also provide a reduction in the weight of products, which implies in price reduction. By conserving the weight, the fabric gains in resistance. With the launching, Braskem hopes to expand its participation in the agro-business market, which appears to be resuming in growth. The new resin will be destined to valvulated and or sown bag applications for the packing of fertilizers, grains, flour and sugar, and fabrics for sacs and furniture lining. Standing out from among the advantages offered by the product in

extrusion is the higher stretching capacity and tenacity of the laces; for weaving, the assurance of more resistant fabrics, reduce rate of lace breakage and higher loom yield, which provides high performance and higher productivity, reduction of losses and better quality to the end product.

### **Gain in organoleptic properties**

**RP 145 is a polypropylene resin with excellent organoleptic properties, ideal for the packing of hot-packed food products, preserving their original taste.** This is Braskem's new release for the food packing and home appliances market. New in the Brazilian market, the product is unique with such characteristics which present high productivity and transparency, combined to a very low concentration of volatile residues, which eliminates the transmission of odors to packed foods. The development of the resin required about two years of dedication of the researchers of the Braskem innovation and Technology Center. It is estimated that the potential market for the resin is of about 40 thousand tons per annum, and initially, expected consumption of 5 thousand tons per annum, which can be doubled in the period of three years. According to Rui Chammas, commercial director, in charge of polypropylene business, "the launching of the resin is in response to the growing food market demand to expanding the packing of its products in transparent packaging, allowing consumers to see what they are taking home."

### **Better shelf display**

A resin with antistatic agent, already additivated, the **H 616** resin is another differentiated release of the company for food packing. The commercialization of the ready resin eliminates the operation of additive incorporation to the standard resin, which allows for greater homogenization within the lot and between lots as against mixing by a transformer. The major markets for the new resin are: The hard thermo shaped packing of margarine, butter, candy, tea and ice-cream, pots and lids for food, which do not retain dust on the outside, maintaining a new appearance even after prolonged exposure on supermarket shelves. Special additive supplementation provides reduction in superficial electric resistance and static charges, which attract dust and dirt. Braskem holds 42% of the market. According to Rui Chammas, with the launching, the company expects to expand 450 tons monthly in resin sales to the market in two years at most.

### **High processing qualities for industrial buckets**

Braskem launches into the Brazilian market propylene resin **CP 284R**, dedicated to industrial bucket injections, which especially meet the market of paints, food service, and chemical products in general, in addition to being used in components for home appliances. The compound has the marking characteristic of excellent balance between resistant to shock and hardness, great processing qualities and productivity. Developed in the Braskem Innovation and Technology Center in Triunfo, the new resin was researched for eight months and tested with clients. Rui Chammas, propylene commercial director, evaluates that "with the entry of **CP 284R** into the market, Braskem hopes to grow by about 20 thousand t/annum, and reach 1/3 of this market, especially in the industrial buckets segment".

### **Flexible packing excellence**

A random copolymer polypropylene – **RP 344** stands out for this luster, transparency and excellent weldability, being Braskem's launching for the flexible packing industry, such as, for example, of clothes, films for photographic albums and DVD casings. A **RP 344** foi idealizada para atender aos mais exigentes requisitos de propriedades óticas diferenciadas a cada produto a que se destina, além de proporcionar uma menor temperatura inicial e maior força de selagem na linha de produção. Essa combinação permite o desenvolvimento de estruturas mono (filmes únicos) ou coextrusadas (combinação de diferentes tipos de resinas) de desempenho superior. Desenhada especialmente para os processamentos em equipamentos de extrusão, a resina possui em sua formulação os aditivos antibloqueio e deslizantes, garantindo a ampliação da produtividade nas linhas de embalagem e acabamento.

By using such differentiated properties, Braskem and Ciola – manufacturer of conversion equipment – present an innovative co-extruded film structure in PP and PE. The solution is under production in the Ciola Tubular Extruder of 3 layers, launched by the company in Brasilplast 2007.

The solution combines the transparence and luster of PP with the resistance and weldability of PE, and is composed of polypropylene RP 344, and a polyethylene based on Metaloceno Braskem Flexus<sup>®</sup> 7200. The solution created new application possibilities in this market such as the production of packing for cooled cheese, for example.

## **Polyethylene**

### ***High performance for the frigorific market***

Braskem is incrementing its line of resins for the frigorific industry, with the launching of the resin **LL 7901 S**. The round bottom packing for frozen or cooled chicken, and packing for frozen chicken parts (with and without bone, and mechanically sorted parts – MSP) are the major market for the new resin. The LL 7901 S is a quaterpolymer, low linear density polyethylene, modified and developed to reach the best balance between the properties required by the market, providing better product integrity and superior performance. From among the major properties stand out its higher hardness, greater resistance to perforation, better luster, Better resistance to cold welding, and reduce blocking tendency. Such attributes translate, for example, into higher cutting and welding speed for the transformer, and to end user, better packing appearance and enhanced product integrity due to the reduction of torn/breached packing.

To develop the product, Braskem invested into lab resources, which came from the Braskem Innovation and Technology Center in Triunfo/RS, which holds a highly qualified staff of doctors, experts and researchers. Also, it is important to point out the partnership with the transformers and end-users in the development of the resin. The packing market for frigorific products, focused on chicken, is estimated at 67 kt/annum. With the launching, the company foresees a growth of 10 to 20% in the sales volume in the next couple of years.

### **BS600 expands its participation in the agro-chemical industry**

Braskem in complementing the agro-chemical market with the launching of the **BS600** – a bi-modal high density polyethylene resin. The launching will exclusively tend to the market of vials for packing chemical and agro-chemical products such as canisters for agricultural pesticides. By working with potentially hazardous products, the resin requires

constant innovation to continuously ensure the evolution and safety of the products. By being a bi-modal high density polyethylene resin, it allows for excellent balance between mechanical resistance and tension breaking resistance. These two important properties ensure the integrity of the product and its quality and safety during handling. The chemical and agro-chemical market is strategic for Braskem. "We are confident in the resumption of the growth of the industry, which already reveals improvement signs", points out Marcelo Mancini, commercial director of Polyethylene Business. The new resin, which presents an excellent level of innovation, has the potential to meet the domestic market and Mercosul, especially the Argentinean market, of a nation of solid agricultural activity.

### **Braskem solution for Rotational Molding.**

Braskem is presenting to the market the most complete line of resins for rotational molding of the Brazilian market. The medium density linear polyethylene resins offer an excellent combination between mechanical properties and processability to the market. Além disso, por possuírem estreita distribuição de peso molecular, proporcionam homogeneidade na fusão do material, otimizando o processo de rotomoldagem e conferindo ao produto final um excelente acabamento superficial. The market of water tanks, large volume tanks, technical parts for the agricultural industry and civil construction, are the major targets of the roto-molding industry in the Brazilian market, considered as strategic for Braskem. "We have the best complete line of resin in the domestic market. The objective now is to increase the number of applications and consequently the participation in the market by means of partnerships and solutions with clients who have the objective of strengthening the image of roto-molding in Brazil", explains Marcelo Mancini, commercial director of polyethylene Business. Braskem is the sole producer in Brazil and Latin America to provide roto-molding resin in two locations: the petrochemical pole of Triunfo, and in Camaçari. "Such availability allows us to meet client needs in a more effective manner by means of logistical advantage in product distribution", explains Marcelo Mancini, commercial director of Polyethylene Business.

### **Braskem solution for technical films**

The solution was created by Braskem to cater to the market of technical films destined for the automatic packing of high performance packaging, laminated or not. The solution is usually employed in the packing of rice, beans, cereals, flour, sugar, to name a few food products. The solution combines products of the portfolio with lines of the specialty of PE, Braskem Pluris® and Braskem Flexus® - quaterpolymer PE and metallocene base PE. The synergy between the resins guarantees excellent balance of the mechanical properties, which provides packing with greater product protection during storage and transport, and reduced rates of breach in drop tests. It also provides excellent optical properties, ensuring better product visualization and higher appeal of the pack on POS shelves, in addition to excellent weldability properties, providing higher packing productivity. **Braskem Solutions** are aimed at occupying new market niches emerging with the need for premium products in basic food categories that add value to the segment.

### **Braskem solution for stretch films**

Braskem has a distinguished portfolio of resins for the industrial stretch film market, destined to the breakdown of cargo for transportation. These resins are able to meet the

highest demand standards for such applications, as they provide excellent luster and transparency, in addition to presenting enhanced productivity and yield, higher resistance to perforation and tear, retention and protection of the load/content. Stretch producers are given the possibility of combining different resins, including those of linear butene, octane base, and Braskem Flexus<sup>®</sup> - dedicated to plan and tubular processes. The combination of these combinations offers higher yield to end products. The solutions focus mainly on the industries of soft-drink packing, paper and cellulose, cargo haulage, protection of equipment against moisture, and for the protection and compacting of fodder in the agricultural industry. **Braskem Solutions for stretch films** were developed for two years and with the new portfolio, Braskem foresees growth of 65 to 7% in the volume of sales of this product.