

From the Editor's Desk

Year 2011 was a mixed bag for the polypropylene industry. Global consumption growth was not very encouraging amid financial turmoil of Europe and slowdown in manufacturing all over the world. On the domestic front healthy capacity increase of Polypropylene ensured better availability of material for years to come. Moreover end-use sectors like non-woven, BOPP and blow moulding continues to grow in India. Going forward Investment in new technologies, innovation in product design & reach to end users will be key to sustain growth of Polypropylene.

For the Indian Polymer fraternity we all now look forward to 8th Edition of PlastIndia 2012 at Pragati Maidan, New Delhi. Let's use this grand platform for sustainable growth through value added applications, while educating common people on the proper usage of plastics for a cleaner and greener India. A very hearty & warm welcome to visit RIL Pavilion at Plastindia from 1st-6th February '12

From my team, I take this opportunity to wish all Repol Konnect readers a very happy & prosperous 2012!

Best Regards
C. Paparao



Empowering BOPP Films for Value-Added Packaging

Copolymer Resins form one of the most critical component in the manufacture of Polypropylene Films for use in various packaging applications. Packaging is the science, art and technology of enclosing or protecting products for distribution, storage, sale, and use. Packaging also refers to the process of design, evaluation, and production of packages.

An optimally designed package protects the product till its final usage and adds value to the product.

Biaxially Oriented Polypropylene films and Cast Polypropylene Films are produced with mono layer construction or multilayer construction consisting of 3 to 5 layers of films. Generally homopolymer resin is used in the core layer and skin layers consist of copolymer resins.

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Special Features



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US Patent Granted To Reliance

U.S. Patent (Catalyst System for Polymerization of Olefins, USP 8043990) is granted to RIL. It describes about novel catalyst system for improved polymerization process and polypropylene characteristics. The concept was validated by several bench scale catalyst component synthesis and polymerization performance experiments.



PLASTINDIA
2012 Infinite Opportunities

8th International Plastics Exhibition & Conference
Feb. 1 - 6, 2012, New Delhi

**Visit RIL Pavilion
at Hall 9**

ALPLA India

Spearheading Innovative Packaging

Alpla is one of the leading global manufacturers of plastic bottles and closures with a footprint of 140 plants in 37 countries. The global sales in 2010 exceeded 2.5 Billion Euro. In India, ALPLA is likely to cross Rs 300 crores business in 2012 and is growing at the rate of 25% YOY.

Led by highly experienced and qualified management team, Alpla Indian operations include plants in Baddi, Sitarganj and Hyderabad with state of art of technology in extrusion blow molding and injection molding. High speed EBM Machines at Alpla are used with large cavitation and fast cycles resulting very high outputs. ALPLA technologies support the development of low weighting components with in-line leak testing and other quality checks. Alpla India has the largest presence in the Bi Injection cube technology in the world with outputs exceeding 1.0 billion components per annum. Other capabilities at global level include gradation, zebra effect, multi-layer bottles and in-mold labeling (IML).

ALPLA's client list in India includes Procter & Gamble, Reckitt Benckiser India Ltd., Johnson & Johnson, Unilever, Amway, Godrej, Amrutanjan, Emami, Zandu, GSK, SC.Johnson, Veedol, HPCL and others. ALPLA is the leading exporter of high performance plastic closures to USA, Europe, Middle East & Africa.

Alpla India received many laurels and appreciations for introducing innovative packaging for Iodex, Cadbury Little Champ and Zandu pack.

Since our inception in India, Reliance is our partner, starting from raw material supply to new customer development, Mr. Vagish Dixit added.



Mr. Vagish Dixit,
Managing Director,
Alpla India



National Award for Dollplast Machinery

M/s. Dollplast is manufacturing different types of Recycling Machinery to Process All type of Mixed Plastic Waste and Products (Insect Proof Plastwud) which is a New Technology Developed for the First time in India. The New Technology Developed helps in keeping the Environment neat and clean. This also helps in Conservation for precious forests and helps in Management of Plastic Waste.

Two awards from Department of Chemicals & Petrochemicals Govt. of India were for Innovation in Plastic Waste Management Machinery & Plastics Waste Management Process & Technology.



Mr. Anup Patel, Managing Director, Dollplast Machinery Inc. Ahmedabad Receiving National Award and Rs. 4.0 Lakh from Mr. Srikant Jena, Hon'ble Minister of State for Chemicals & Fertilizers, Govt. of India.

CONFERENCE

Clear Plast 2011 Conference

POPULAR PLASTICS & PACKAGING and SPE India organised the first ever conference dedicated to clarified PP in Mumbai on 23rd November 2011. More than 250 passionate stakeholders from additive suppliers, Resin producers, leading FMCG, large retailers, renowned machinery manufacturers and processors gathered to hear from international experts at the conference.

Mr. Warren Wider, President, Polymer Business and Cracker, Reliance Industries Limited, in his keynote address shared global outlook for clarified PP. He reiterated that Clarified PP has only 4% share of the total PP consumption in India as against the global average of 8%, which implies the huge growth potential of India.

He cited many new opportunities in Dairy, Pharma and Appliance sector to drive the consumption to 170KTA in 2015 from 100KTA as of now.



A Conference "Automotive Plastics India 2011" was held at Grand Hyatt, Mumbai on 24th Nov' 2011 organized by CPMA & ElitePlus++. RIL was one of the premium partners alongwith leading auto OEMs.

Automotive Conference

The conference provided a common platform to address the expectation of Automotive manufacturers and OEMs to the plastics community in areas of new material development and quality improvement.



Mr. Nirmal Thakkar, Chairman, Tipco Industries Ltd.



Mr. Indru Advani, Brite Autoplast Ltd.

Mr. Kamal Nanavaty, RIL presented awards for long term pioneering contribution in Automotive Industry to Tipco Industries Ltd. and BriteAutoplast Ltd.

Industry Events

Polymers Applications particularly on Leno for Fruit & Vegetable Packaging, FIBC for Sugar and Food Grain storage and Agro textiles for Fruit Cover & Crop Cover.

We participated in 12 Industry Events for promotion of various polymer applications. The events organized under the aegis of FICCI, Agricultural Universities, Krishi Vigyan Kendra have led to increase in awareness of



In continuation with our effort to promote polymer end-use applications, 14 Customer Meets were held across India:

RIL Driven Events

- 6 Agriculture Meets across Maharashtra for promoting PP Nonwoven as Fruit Cover & Crop Cover
- 3 Entrepreneur Development Programs with specific focus on Nonwoven at Bangalore, Daman & Nagpur
- 2 Customer meets at Kanpur & Chandigarh for Building & Construction Applications
- M/s Unilever & M/s ASB participated at our Rigid Packaging Seminar in Kolkata



Opportunities with PP Compounds in Automotive Sector

Plastics specially Polypropylene is an integral part of global automotive industry. Polyethylene, Polyvinyl Chloride, Polycarbonate, Polyamide, Acrylic, Styrenics and Polyurethane are other thermoplastics commonly used for passenger car and commercial vehicle across the world. About 9 MMT of plastics are used for this sector per annum and more than 45% is polypropylene or its compound.

Polypropylene is preferred material for the auto industry because of the following properties

1. Base polymer has excellent balance of stiffness and impact
2. Wide range of Homo Polymer and Co-Polymer grades with varied MFI
3. Possible to compound with Talc/Mineral/Glass/Wood/Natural fibre to achieve tailor made properties

India is now the hub of automotive industry having almost all major producers of vehicle. Current manufacturing capacity of 3.7 million will grow to 5.3 million by 2014.



While local demand of passenger vehicle has steadily grown @ of 17 % in last 5 years, India exports about 4.5 lakhs of vehicles every year. Vehicle manufacturers are looking for weight reduction, part consolidation and better aesthetics by introducing plastics replacing metal or glass. To meet such requirement Polypropylene compound manufacturers are increasingly using High Crystalline Polypropylene, various Thermoplastics Elastomers (TPE & TPO) & High flow PP resins to meet the stringent demand of OEM.

Polypropylene based long glass fibre compounds are also becoming popular for auto segments due to very high mechanical strength, improved thermal performance for under-the-bonnet components.

Major applications of PP compound in vehicle are Dashboard, Bumper, Door Trim, Console

The shift of the auto industry to developing world created a significant growth opportunity of thermoplastics compounding specially Polypropylene based compounds in India. Demand of niche reactor grade polypropylene is continuously on rise to meet the demanding specification of OEMs.

In India, PP consumption level per car is less compared to developed world and hence, offers huge opportunity for growth. Moreover, with an increasing focus towards reducing weight of vehicle in order to reduce cost and fuel consumption, the growth of Polypropylene compounds is expected to accelerate at a phenomenal rate.

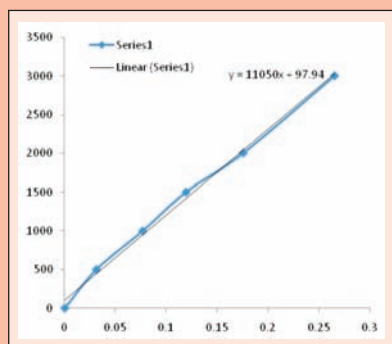
Polypropylene will continue to play a dynamic role in continuing innovation that will drive the Automotive industry to higher levels in terms of affordability, quality, performance, safety and emissions.

Determination of Clarifier Content in cPP

The degree of clarity and haze improvements achievable with a clarifier in PP is directly related to the concentration of the clarifier in the product. To ensure that the targeted clarifier concentration is maintained in the formulation, PARC has developed an estimation method by using Fourier Transform Infrared Spectroscopy (FTIR). This method may be used as a quality control tool and to ensure process stability and minimum variation in product performance.

A master mix of Polypropylene was prepared containing fluff along with antioxidants and other process additives. This master mix was further used to prepare premixes of different concentrations of commercially available clarifier. Different concentrations of clarifier such as 0, 500ppm, 1000ppm, 1500ppm, 2000ppm and 3000 ppm were prepared. These mixtures were then micro compounded and subsequently injection molded to get a transparent disc of 1.5 mm thickness. The thickness of the disc was maintained within +/- 2% deviation. Process parameters were kept constant for all formulations so as to ensure uniformity in the results.

These molded discs were then analyzed by FTIR spectrophotometer (Perkin Elmer Spectrum 1000). A certain peak corresponding to clarifier compound was identified and its concentration was studied. The area under the peak absorbance was used to quantify the clarifier content in that particular formulation. A plot of corrected area (obtained from the instrument) versus concentration in ppm was plotted and used as a calibration curve. A sample with unknown concentration of clarifier was also micro compounded and injection molded at the same processing parameters. The absorbance value of this sample was fed into the calibration plot and the concentration was estimated.



	corrected area	ppm loading
	0.001	0
	0.0319	500
	0.0772	1000
	0.1197	1500
	0.1757	2000
	0.2653	3000
Unknown	0.1701	1977.55

The calibration curve and the corresponding values are given here.

Thus it can be seen that clarifier content in Polypropylene can be suitably estimated by FTIR method.

Empowering BOPP Films for Value-Added Packaging *Contd. from Page No. 1*

The types of copolymer resins are ethylene random copolymers, Ter-polymers or butene copolymers. Main functions of copolymer grade are

- Metal adhesion for metallisable film
- Barrier properties improvement
- Provide heat seal property to the film

Above is achieved through combination of C2 and/or C4 contents. These grades are used with or without additives such as slip and/or antiblock. Heat sealing is carried out by bonding together two polymer surfaces in the way that the surfaces are forced into intimate contact while they are in partially molten state.

Proper control of process parameters such as temperature, time and pressure based on the characteristics of each laminate film is important to ensure that the pouch is leak-free and can withstand maximum loading during handlings.

Heat seal resin (HSR) for film substrates, finds utility in packages designed for form-fill-seal applications such as snack foods.

To characterize the suitability of a HSR, following properties are important

- Ultimate seal strength
- Heat seal temperature range
- Hot tack properties
- Slip performance
- Food contact compliance

A high performance HSR for film exhibits a low heat seal initiation temperature, broad heat seal temperature range, slip behaviour maximizes heat seal strength and high hot tack strength to allow versatility on packaging machinery. Further, it is good for machinability, as measured by low coefficient of friction, CoF, broad heat seal window and resistance to blocking when under conditions of pressure and elevated temperature. Many innovative packaging applications can be designed by combination/blending of various copolymer resin for polypropylene films.




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EVENT CALENDAR

Plast India 2012, New Delhi, February 1-6

Intelpack 2012, Mumbai, February 23-25

Geotextiles ITTA Conference 2012, Mumbai, February 24

Medical Fair 2012, Mar 2-4, 2012

Automotive Testing Expo 2012, Chennai, Mar 6-8

Plumbexindia 2012, Mumbai, Mar 16-18

Urban Infra World Expo 2012, Mumbai, Mar 19-21




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