



PLASTINDIA FOUNDATION®

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Plastindia Foundation In-House Journal

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May – 2013 • Vol – 39

25 Years In Service Of The Indian Plastics Industry – Plastindia Foundation Celebrates Silver Jubilee

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May Our Growth Continue to Rise & Shine...

My fellow members,

Plastindia Foundation has three challenges, which are on priority on our Desk.

- Plastic Waste Material and recycling thereof.
- Upgradation of knowledge and formal education for ever expanding and growing industry.
- Upgradation of technology for the mega volume production and reaching the scale of international level, implementation standards and improving productivity.

In the last few months, we have addressed these issues in small but effective way. As program for solid waste management, we have included TATA Institute of Social Sciences to work with us and the program is called "Let Deal – Plastics, Poverty, Prosperity". This program shall deal with bringing total awareness of solid waste management. Engaging rag pickers and making them carry better remuneration for their efforts and also bring visibility to do the end of life cycle polluting products into the recycling stream. Industry has all the solutions for recycling like mechanical recycling, plastics for plastics kilns, plastics for pig iron smelters, construction of road, plastics for fuel and would field products of any heterogeneous mixing to a utility product.

Our small effort to put this recycled plastic product in National Park and at the Exhibition at Indian Institute of Packaging have earned rich dividends and there is a demand generated to donate the products to socially amiable garden spaces. We are requesting our fraternity members to adopt area in their vicinity, collect waste and bring it to recycling centres. Kudos to Mr Jigish Doshi, Past President of PIF, Mr Shyam Tibrewal,

From the President's Desk

Past President of GSPMA Mr Vajubhai Vagasia. Our volunteers in Ahmedabad Mr Prashant Trivedi and Mr Navin Joshipura are taking lead to bring segregation of waste and recycling in Ahmedabad area. Soon we will have program by IPF for use of plastic waste in road construction to the extended length. As far as the Knowledge Centre goes, the Gap Analysis is complete. We are in the process of finalizing the financial obligation to our Joint Venture Partners, which should happen very shortly. We are now awaiting formal approval from Gujarat Government for Independent University Status, LOI.

Based on our master plan the campus structural planning is already in advance stage. We should start the building activity in another 3 months time which can initiate our evening college and upgradation of industrial man power very shortly

PIF took a unique step in inviting SMES from Europe. Seven cluster partners visited India and showed inclination to partner with Indian SME, SSI. Plastindia Foundation has requested fellow members to take the advantage of 2500 different Company in Europe to find joint venture partners who can help in upgradation of productivity, high level of technical upgradation and find a way to implement mega volume production very quickly. We have also invited South Korean manufacturers in the same way, which may happen in the month of May. Our desire and aim is to take a delegation to "K" show with potential 100 Joint Ventures. There are 2 special days fixed for this function, we wish to invite those who have missed the bus to write to PIF to find a matching partner.

As regards to PIF 2015 exhibition, our efforts are to finalize the site and all anxieties will be put to rest shortly. Plastindia Foundation seeks the strength of each and every member group to make 2015 a memorable event in all proportions.

Bipin Shah

President - Plastindia Foundation



R. A. Lohia

Dear Friends,

In my earlier communication I had mentioned that Indian Plastic industry is looking forward to a steady jump in per capita consumption in coming years. Plastic packaging is contributing a larger share in total per capita consumption apart from uses for other immense purposes. It has played an important and integral role in small packaging solutions that helps do more with less. It also drives innovation that helps create sustainable efficient solutions. It extends freshness, minimizes spoilage and breakages, saves energy and reduces waste. When looking at the entire life cycle of various packaging materials, plastics often compares favourably to other materials in areas such as energy and water use, air and greenhouse emission and solid waste. Plastic packaging is valuable and should be recycled wherever possible. It should be our endeavour that we educate to all sections of society the benefits of plastic packaging.

Work on Plastindia University (PIU) is in progress and has started taking shape with regard to appointment of project manager, cost structure, collection of funds, status of independent university, and appointment of a person to head the Plastindia University as Vice Chancellor, negotiations with Umass Lowell etc. etc. I hope more progress will take place with positive steps in times to come under the able leadership of our Mr. Bipin M. Shah.

Proposal for Plasticulture on vacant land of Plastindia University will be a good initiative. This will be a good opportunity for the industry to showcasing their ability for drip irrigation, pond liners, pond covers, greenhouse, mulching film, shednets etc. etc. under the able leadership of Dr. Yatish B. Vasudeo, Chairman of Plasticulture Committee.

Presence of delegation from Wiintech Cluster is an eye opener for the Indian plastic industry and it is up to industry entrepreneurs to take fullest advantage of such great opportunity. I would request all founder members of Plastindia Foundation to upload the details of such opportunity on their respective websites for advantage of their members.

On environment issues we are yet to move forward to our desired goal. It needs immediate steps to achieve our goal for better plastic image with positive action at ground level.

Thanking you

R. A. Lohia

Vice President - Plastindia Foundation

PlastIndia 2015 to be held in Gandhinagar, Gujarat

Mumbai, 10th May, 2013: PlastIndia Foundation, today announced Gandhinagar, Gujarat as its venue for the country's largest plastic trade show, PlastIndia 2015 which is the ninth Plastics Exhibition and Conference. The international standard arena is spread over a large area spread across 17 halls and over 1,00,000 sq mtrs which is 23% more exhibition space. The capital of the state, Gandhinagar is favourable for all types of business class which will provide a gateway for foreign companies into India.

According to the recent CARE ratings agency update, Gujarat contributes over 7% to India's GDP. It has come to establish itself as a strong growth engine with a decadal growth of 10% (2001 – 2011). The state now contributes more than 13% in manufacturing sector and 11% in primary sector output of the country.

Plastics are one of the significant raw materials used for various purposes ranging from household applications to industrial and high-end automobiles to hi-tech space shuttles. The forthcoming

9th PlastIndia 2015 Exhibition & Conference will encourage the Indian plastic industry to showcase their products and capabilities to international plastics buyer fraternity.

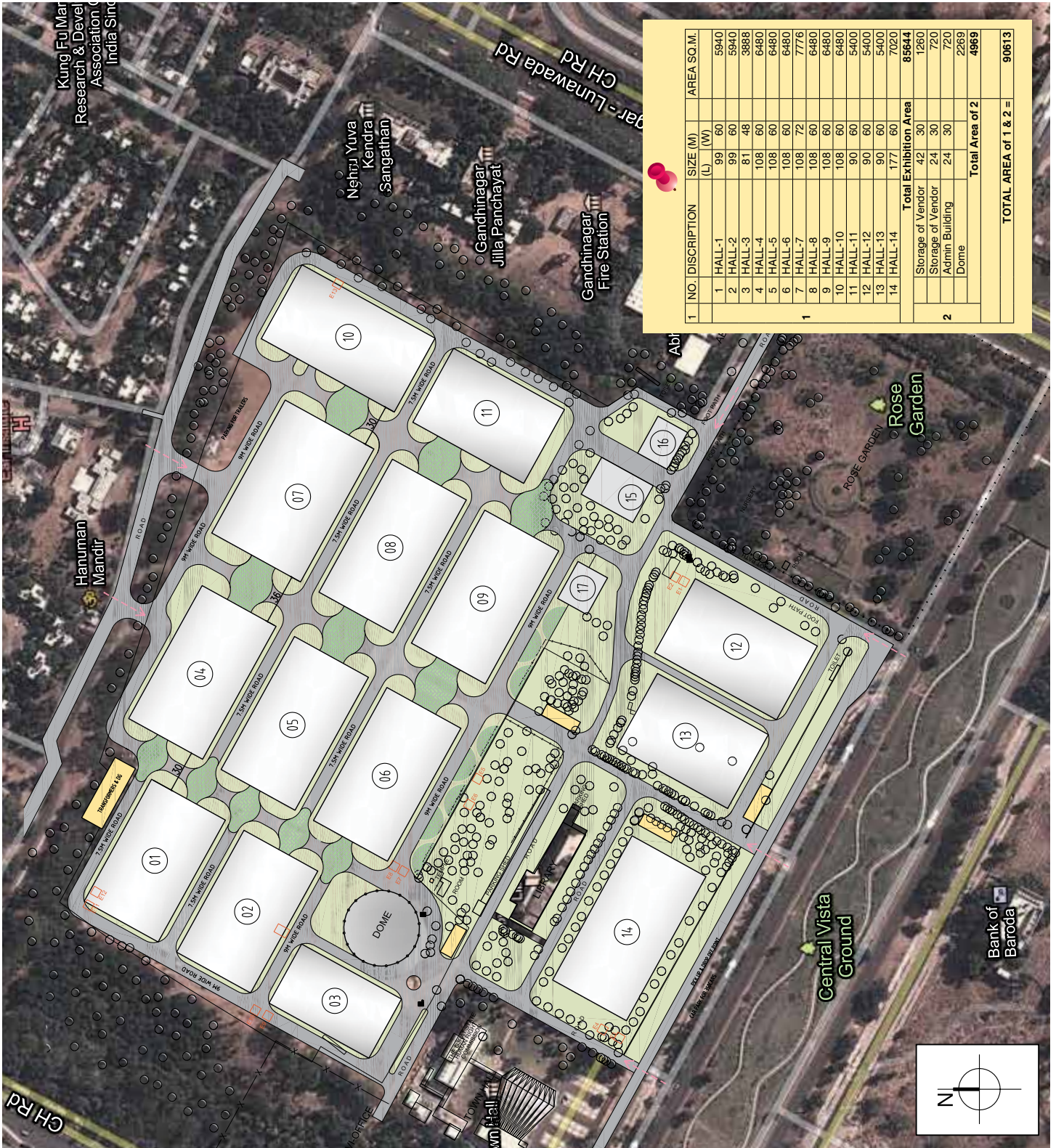
On this occasion Mr. Bipin Shah, President of PlastIndia Foundation said **"The PlastIndia 2015 is set to break all past records in terms of number of exhibitors as well as the visitors from various leading countries of the world. The requisite infrastructure, industry friendly environment and vibrancy make it conducive for such an event."**

PlastIndia 2015 will offer a global platform for buyers and sellers from plastic industry to enhance their business prospects, to establish strategic alliances, technology transfer etc. Showcasing a platform of international standards, PlastIndia 2015 will pave the way for intra-industry cooperation and will ensure bridging the gap between international community and Indian enterprises while exploring bigger business avenues.

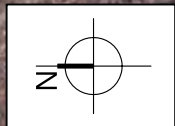


From L-R : Mr Rajesh Mohta, Mr Rajiv Raval, Mr L K Singh, Mr Bipin Shah (President – PIF), Mr R A Lohia, Mr J R Shah, Ms Sonam Monga

Exhibition Fairground Layout



1	NO. DISCRPTION	SIZE (M) (L) (W)	AREA SQ.M.
1	HALL-1	99 60	5940
2	HALL-2	99 60	5940
3	HALL-3	81 48	3888
4	HALL-4	108 60	6480
5	HALL-5	108 60	6480
6	HALL-6	108 60	6480
7	HALL-7	108 72	7776
8	HALL-8	108 60	6480
9	HALL-9	108 60	6480
10	HALL-10	108 60	6480
11	HALL-11	90 60	5400
12	HALL-12	90 60	5400
13	HALL-13	90 60	5400
14	HALL-14	177 60	7020
Total Exhibition Area			85644
Storage of Vendor			42 30
Storage of Vendor			24 30
Admin Building			24 30
Dome			2269
Total Area of 2			4969
TOTAL AREA of 1 & 2 =			90613



From the Editor's Desk



Choices are in plenty... Opportunities in abundance

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Dear Members,

India has a billion and more people - Our population is our strength and also a big challenge. Plastics is all set to meet the challenges to save valuable resources like food, water and air for our survival. Once the challenge was to have enough food for all, now the challenge is to save food and water from waste and ill handling.

We have enough resources, enough man power, enough land and good weather condition to grow food for all, if we can preserve it with state of art packaging !!!

Plastic packaging is a boon for the multiple task of saving and preserving food from rotting.

Packaging technology has grown to create the right environment for food and water packaging. Environment is one big issue that can be corrected with use of Biodegradable plastic or recycling the waste. Bio degraded plastic and its uses is long term solution to handle some of the key issues on waste management.

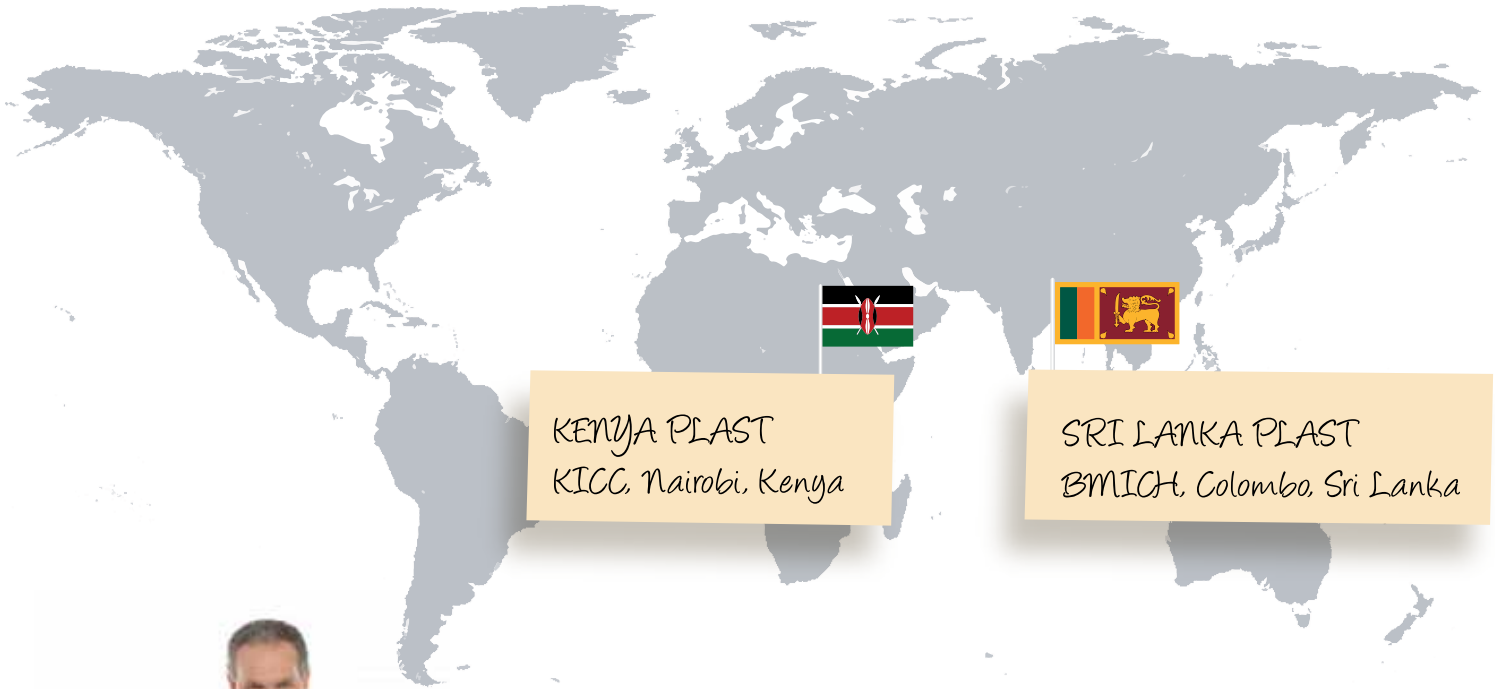
Let's put our best foot forward in our endeavour to contribute to plastic packaging with responsibility towards mother earth and the people we serve.

Subash Kadakia

Chairman - Publication Committee
Plastindia Foundation

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Creating Opportunities and Delivering Values

Plastics Drive Innovation in Packaging



Mr Bipin Shah
Director, Trend Plast Pouch Pack Pvt. Ltd.

If Banana is considered to be the marvel of packaging for food preservation, the human race has to be very active and innovative to come close and preserve the perishables. In the days of energy shortages, climate changes and food security, the fact that in all these three areas, the demand will go up not only because of increase in population but upgradation in the standards of living, calls for many more changes. The methodology of FARM to FORK and distribution of food will also be a challenge with respect to preservation of nutritive value, use less energy to preserve and take advantage of different innovative polymers and its combinations can become a rescue point.

The Packaging itself, be it in any form, for bulk packaging to a 5 mg of tablet of blood pressure poses enough challenges to satisfy consumer needs. It is said that a platter of food on the dining table in US travels around 700 miles before it reaches its final destination. This multifaceted aspect of transportation, preservation, distribution and retail showcasing, multiplies the need of innovations. The countries where development is yet to come, perishables don't even last for a week. Milk has to be distributed and consumed in less than 48 hours if not sterile or boiled. Vegetables loses 30% of moisture and oxidation sets in, which ultimately needs refrigeration. If 3 million bananas have to reach from South America to shores of UK in 4 days without getting perished, it calls for new technique of preservation and ripening of the fruit.

This multiple challenges in terms of packaging, needs involvement of usage of polymers in all forms to increase the shelf life, tamper evident packaging and use of dispensing of medicine brings excellent platform for polymer scientists. It is also being talked that now the skin packaging will have the flavour of the fruit and you will eat it with the contents. The spoilage of the canned food will be evident by the packaging colour changes, if life has expired.

In our Indian environment, where we have issues regarding transportation, cold storage, retail distribution and different ethnic foods consumed in a different geographical region multiplies our problems manifold. 250 million tons of foodgrains still lies, out of

which huge quantities lies in Government godowns in the name of buffer stock, but ultimately soiled and eaten by rodents. An Indian farmer has lowest productivity per acreage of land and has lack of knowledge for crop manipulation and soil upgradation. How do we cope with this unique situation? The answers are very simple but need of development on the infrastructure is the most critical aspect to harness this problem. Be it glass, metal, paper or plastics, and combination thereof, their successful developments have been used for generations should be evaluated for the Indian environment and adapted accordingly. The challenge for the packaging industry is to use these raw materials and ultimately at the end of the life cycle, bring it back to the recycling centres. Papers, glass and metals due to their availability from the last century has been put to recycling very efficiently whereas plastic and in particular thin film and packaging materials do not find way into recycling centres. How can we change it, is the real challenge. We have to revolutionize the packaging, increase shelf life of produce and make sure that resources utilized and methodology used is not only economic, but sustainable. For Indian environment, the key areas of growth are agriculture, retail, food processing, medicines, plastic packaging which can be effectively utilized.



The following are the growth drivers.



Segmented developments in foodgrains, cement, packaging milk and health drinks, carbonated drinks and water distribution are basic needs of packaging development, apart from the distribution of industrial goods and paints, varnishes. The awareness of hygiene, beautification and skin care will also become growth driver in time to come. Converting from loose distribution to packed foods will also become a reality, moment the retail chain is in position. Today in India only 4% of the population is using retail chain, which ultimately can be a big growth driver for packaging material.

At PACE, Prague it was a unique experience where B to B involvement was cleared very efficiently. India was given the

chance to project the need, which I hope was done successfully. Monitoring the sessions for sustainability, newer developments, novel technology in Nano particles and mass volume of aluminum cans production was the highlight and the learning curves. Plastindia Foundation's President had the opportunity of giving the opening remarks to set the tone of the packaging conference, monitored the sessions on different topics, details are available with PIF and also given the concluding remarks on the entire conference. The respect given to Plastindia Foundation to deliberate, discuss and observe the entire conference speaks volumes for opportunities that may be just around corner for all the participants.

Use of Antimicrobial in Food Packaging

We share this earth with so many living things including billions of invisible microorganisms such as bacteria, viruses and fungi. These microorganisms can be found anywhere; in the cell phones, home appliances we use, in the cloths we wear, in the water we drink, the food we eat, in the air we inhale and few of them are inside our body as well. The majority of the microorganism is of bacteria and the rest are viruses and fungi.

The use of technology in day to day routine has made our life simpler and keeps us safe from the demerit of bacteria, viruses and fungi. A high performance antimicrobial masterbatch is designed to address the growing threat posed by bacteria to humans as they go about their daily chores. These tiny and almost invisible microorganisms are all around us, often multiplying in damp places like household kitchens and bathrooms.

Food is unlike durable goods such as electronic appliances and furniture. Sustaining the food quality and safety are major concerns in the food packaging industry. Packaging materials are used to provide only outer layer protection. Therefore food packaging is quite different from the packaging of durable products. To improve the life of a product now we have various kinds of active substances which can be incorporated into the packaging material to improve its functionality and maintain the quality.

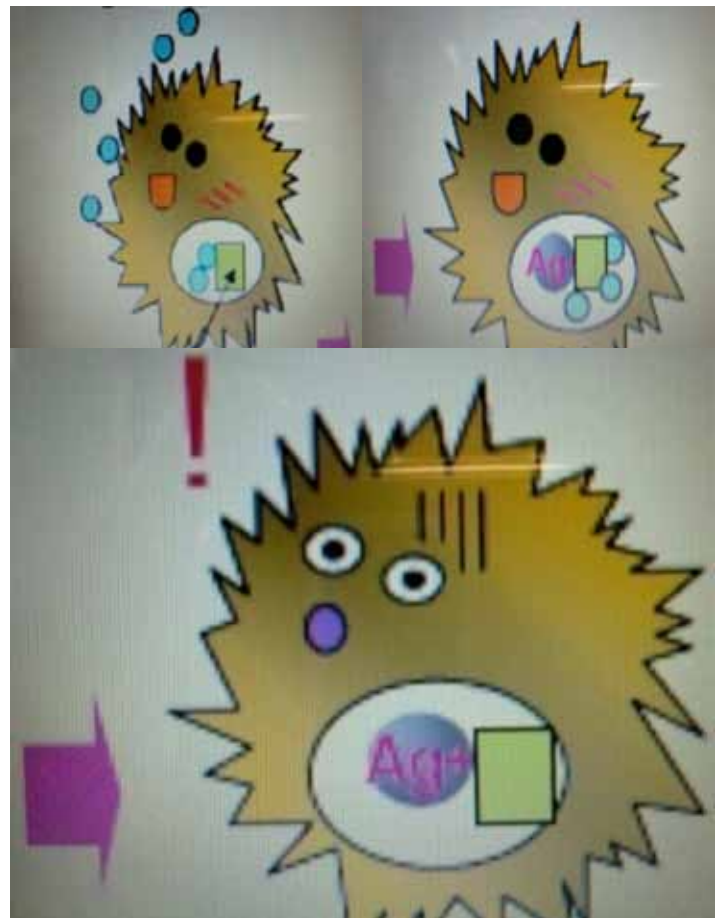
The use of Antimicrobial Masterbatches in packaging can be considered as an emerging technology that could have a significant impact on product life extension and safety. Antimicrobial agents incorporated into a polymer in food packaging can command the microbial group and target specific bacteria to provide higher quality product and prevent the microbial growth. The use of appropriate coatings can impart antimicrobial effectiveness. This application could be used for foods effectively in the form of films and also as containers and utensils. Food packaging materials may acquire antimicrobial activity by common antimicrobial substances, radiation or gas emission/flushing. Radiation methods may contain using radioactive materials, laser-excited materials, UV-exposed films, or far-infrared-emitting ceramic powders. For examples, berries and grapes are stored in produce boxes, palletized, and stretch wrapped, then flushed with sulfite to prevent fungal spoilage.

Plastiblends is pleased to introduce the new member of its product array "antimicrobial masterbatches" based on nano silver particles. The nano silver is procured from nbm- nano bio matters, Spain, which is helping Plastiblends with strong technical background for determination of the effectiveness of product in various application areas. The active ingredient in this antimicrobial masterbatch is silver, a naturally occurring metal with a well known excellence for

its antimicrobial activity against wide spectrum of microorganism such as E.coli, Legionella, Pseudomonas, Salmonella, S. aureus, Aspergillus, niger among others for centuries. Silver is a proven most effective against harmful microorganisms present in everyday life for human beings. Silver prevents microbial growth by interaction with negatively charged components in the microbial cell membranes, altering their barrier properties and thereby preventing the entry of nutrients or causing the leakage of intracellular content.

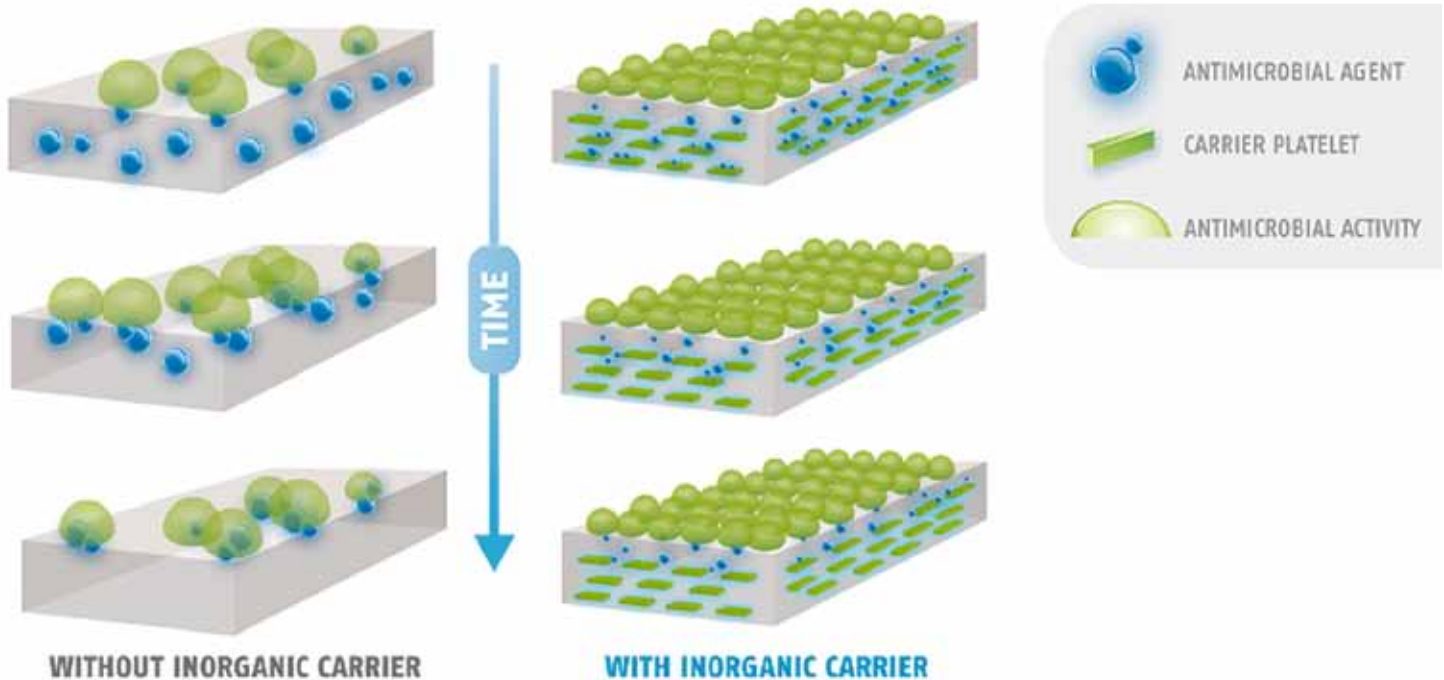
Mechanism of Activity against Bacteria

- ♦ Silver(Ag ion) moves into bacteria
- ♦ Silver (Ag ion) reacts with the protein in bacteria
- ♦ The reaction hinders cell division, then bacteria cannot grow.



The nano silver active ingredient used is highly effective as compared to completion product as it is coated over inert clay carrier. This offers more surface area as compared to silver without carrier and it is highly effective in microorganism control as more surfaces are available for exposure to microorganisms.

HIGH DISPERSION AND CONTROLLED RELEASE



The silver ions are strongly bound on the surface of the modified clay carrier. The dispersed engineered clay creates a large “internal” specific surface within the polymer or coating system and this creates a high efficiency of the silver ions. The silver ions are slowly released to the surface allowing for years of antimicrobial effects.

The active ingredients in these antimicrobial masterbatches are approved by-

- Environmental Protection Agency (EPA) United States of America.
- Food & Drug Administration (FDA)- United States of America.
- Biocidal Products Directive (BPD)- European Community
- SIIA: Main Regulatory Body For Antimicrobial Articles- Japan
- NSF International- United States of America.

Plastiblends Antimicrobial masterbatches are as per the International Standards:

METHOD	MATERIAL	TEST NORM	MAIN POINTS
Antibacterial	Non porous material	JIS 2801 / ISO 22196	Widely used for polymer testing
Antimicrobial	Polymer matrix, powder, fiber, etc.	ASTM E2149	Dynamic conditions
Antifungal	Polymer matrix	ISO 846 / JIS 2911:2010	Visual (qualitative)
Antimicrobial	Polymer matrix, powder, fiber, etc.	Macrodilution method (CLSI)	Widely used for antibiotic testing
Antimicrobial	Polymer matrix, powder, fiber, etc.	Macrodilution method (SIAA)	MIC values
Antimicrobial	Textile	JIS 1902 / ISO 20743	Reference method for Textile products

Use of Antimicrobial in Food Packaging

Plastiblends antimicrobial masterbatches are successful in the following applications:

- Hospital bed posts
- Hospital gowns
- Kitchen cutting board
- Toilet seats covers
- Sport shoes liners
- Sport under garments
- Socks and underwear garments
- Carpets
- Keyboards / mouse
- Mobile covers
- Medical structure
- Public seating
- Playground equipment
- Toothbrushes
- Fishing ropes etc.

Antimicrobial additives have been used successfully for many years in everyday life. The direct incorporation of antimicrobial additives in packaging films is a convenient methodology by which antimicrobial activity can be achieved. Plastiblends antimicrobial master batch is highly successful to control the buildup of bacteria and fungi on the surface of plastic products and textiles.

From :
Team Plastiblends
Neha Marolia
Executive, Corporate Communication



Advances in "In-Mould Labeling"



Mr Manish Desai
Managing Director, Mudrika Labels Pvt. Ltd.

Customer service is like watering plants, you take care of them on regular basis and one day you will see returns on your labour. Better fruits will be yielded with something extra namely healthy fertilizers, enough sunlight and organic pesticides to keep them growing without any intervention of pests. In the packaging industry that extra translates to equipment innovations and adoption of latest technology.

Referred to as a further firming solution for other decorative methods, heat transfer films have rapidly captured the attention of vendors in the past few years. Heat transfer is a process where the image is transferred to the product by heat and pressure. The carrier film winds on the other side as a wastage which can be later recycled. The foil which is transferred to the product sticks to it like skin and is generally non-tamperable. The labels are supplied in roll-form to the client where with the help of the applicator machine they can proceed with the application on the final product.

The label consists of a protective coating, release coating, ink (which can be used for making image) and transfer coating.



Transfer coat melts when it is subjected to hot temperature of 200-225° C and release coat helps to keep the ink or the image intact and release from the base substrate.

There are many products which can be decorated by this method. For instance a heavy usage is seen in office and school stationery products, household plastic wares, industrial elements like paints and lubricant containers and so on.

Heat transfer films are a widely used and preferred technology which beautifies your product and increases its shelf recognition. But with the advancement in the technology and the science of labeling, research continues for an extreme labeling solution which brings us to... **In-mould Labeling**



Termed as the "The ultimate labeling solution", it proves it worth at all levels. In-mould labeling is the use of paper or plastic labels during the manufacturing of containers by blow molding, injection molding, or thermoforming processes. The label serves as the integral part of the final product, which is then delivered as pre-decorated item. Combining the decoration process with the moulding process cuts the total cost to an amazing count.

In-mould labeling (IML) was initially designed for blow molding. Through the developments using injection molding or thermoforming has increased the efficiency of the labeling process. The original concept involves coating the reverse side of the label with a heat seal layer, followed by a substrate material in which heat resistant ink is applied to. A heat resistant coating of

Advances in "In-Mould Labeling"

lacquer is then applied. This process eliminates the need to flame treat the bottles prior labeling to achieve adequate adhesion.

There are several techniques for conducting the In-mould labeling process. Vacuum and compressed air can be used to handle the labels, also static electricity can be used. Electrostatic charging electrodes charge a label while it is being transferred to the moulding machine, so that when the label is placed on the tool and released by the labeling robot, it will wrap itself onto the tool. Most robot systems for placement of labels are not required for specific moulding machines and can be used with up to date presses with fast clamping systems.

Labels may be paper or a similar material to the moulded product. Polypropylene or polyethylene is commonly used as label material, with a thickness of 40 to 70 microns. Cavitated label material is also used. This is a sandwich material, having a spongy layer bonded between two very thin solid layers. An advantage of cavitated film is better conformance to small-radius curves on a product. Laminated film can be used to decorate products, yielding high wear-resistance. This type of film has the printed surface protected by a second layer of film, with a thickness of 30 or 40 microns. Products using this type of label might include picnic-ware, mouse-mats, or internal automotive components.

In-mould labeling is a popular method of decorating injection for plastic bottles. IML can provide greater decorating options than other methods. Multi-color screen printed and dry offset lithography printed graphics are used to produce products with higher quality graphics than available with other decorating methods.

Injection moulding is widely used for thin wall containers such as ice-cream tubes, paint and lubricant containers, household products as well as various cosmetic containers wherein suitable products for blow moulding are the food industry for edible oil containers, personal care products, toiletries such as hand wash bottles, liquid detergents and so on. IML is of luxurious advantage as it can be used over complex shapes which are difficult to print and label otherwise. Apart from that, IML process eliminates the labeling step and all associated equipment and labour and has excellent recycling capabilities.

It is deeply believed businesses with best technology, advanced machineries and highly skilled professionals yield favourable results. Superior technology is the key to success along with the work force that understands it and derives the best out of it. Knowledge of technologies like Heat-transfer process and In-mould labeling, can surely help beat all the odds.



An eye for detail- The Mudrika Approach

At Mudrika we don't work for our customers, we work with them. We don't do jobs, we create art with a scientific approach using the latest technology and industry know-how. We have a passion for the work we do and that reflects in our customer centric approach to business in being proactive and providing our clients with cutting edge labeling solutions that enable their brands to stand apart from the noise on the store shelves.

Mudrika is India's leading label converter. We are working to raise the standard and promote the whole self-adhesive market in India.

Mudrika : Self adhesive labels in roll form.

Multivision : Total packaging solution in sheet fed offset printing.

MSD : Heat transfer film and In-mould labels.

Interpack : Master cartons & corrugated boxes.



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Mr Anoop Srivastava
General Manager (Marketing), Performance Films Division The Supreme Industries Ltd.

With the gradually increasing per capita consumption and growing consumer awareness as well as increased capacity to pay, the marketing of food products, industrial consumables etc. is revolutionizing the packaging film industry. The concept that the product in a pack gives more assurance and psychological advantage overrides that little extra cost. A product thus becomes the vehicle to ensure quality and quantity of the brand assumes relevance and significance. The availability of variety of packaging media has lightened the marketing efforts providing a choice of selection to suit product range, market size, distribution pattern, display features etc. A cross section of retail packs of the type of co-extruded and laminated structures/HDPE bottles/jars, stretch blow-moulded containers, bag in box systems and aseptic tetrapacks, vacuum packed products, etc. speak volumes for the industry and consumer realization.

Since years multi-layer barrier films have traditionally being used for packaging of food products like edible oils, pure ghee, cashew nuts, tea etc. With the growing demand for longer shelf-life, barrier films are being used as sealant layer in laminates using Polyester/ BOP film for reverse printing benefit and enhancing barrier properties of products like dairy items/ meat/ fish etc. Current applications of barrier films are well known like

- Edible oil, dairy products like ghee, UHT milk, cheese
- Dry fruits like cashewnuts, walnut, groundnut, apricot
- Beverages like tea, coffee
- Other food products like cereals, mango pulp
- Non-food products like polymer granules, hygiene products, chemicals, SMC compounds, etc.

However, there has been a tremendous growth in other new applications which really proves that barrier materials like nylon

and EVOH are finding favour with the plastic processors in producing multi-layer co-extruded films. With change in consumer expectations of longer shelf-life, lower permeation of aroma and flavour, MAP, recyclability etc. newer products are being developed by packaging companies. MAP (Modified Atmosphere Packaging) has become the leading food packaging standard for processed and frozen meat, poultry, fish and cheese products. Technology has been developed such as machine direction orientation (MDO) for further improved barrier properties, toughness, puncture resistance and rapid cooling.

New trends in co-extruded multi-layer films being observed are :

- **Thermoforming:** for extended shelf-life and capacity to withstand freezing temperatures for longer transit time. They give excellent formability in deep draw applications for products like meat, cheese, poultry dates etc. They also give good gloss and clarity and are high impact and puncture resistant.
- **Substitution of rigid packaging:** (e.g. stand-up pouches using nylon films) thereby making them more cost-efficient / lighter in weight.
- **Down gauging:** It is one of the most desired properties expected from newer packaging medium so as to cut cost per unit but without compromising on barrier properties.
- **Development of barrier film structures:** that compete more effectively against foil, metalized polyester/ BOPP film etc. For example, in the US, non-foil structures for army rations are being developed which are retortable as well as recyclable. They replace aluminium foil which has a tendency to develop pin holes and stress cracks. Alternate structure is a blend of PP/ EVOH / nylon /PP to give desired properties of foil.

Emerging Trends in Multilayer Barrier Films

- **Resealable films for lidding applications:** Special resins used are 100% solid pressure –sensitive adhesives that are extruded into a multi-layer film. The film is laminated with PET film which forms a lidding web ready to be sealed to a thermo formed tub/ tray. After the consumer opens the lid first time, the extruded film breaks the hot-melt layer and due to the exposure of pressure -sensitive layer, it becomes resealable to the tray. Tests prove that the lid can be resealed at least 5 times.
- **Eco-sustainable / biodegradable plastics:** Special raw materials have been developed which are replacing petroleum based raw materials and making plastics biodegradable. They are FDA approved and can reach up to 80% biodegradation during 27 days.
- **Films offering UV protection:** For clear and attractive product display.
- **High quality symmetrical and asymmetrical films:** With

minimum curls, easy peel lids and temperature resistance adjusted for boilable bags and many more...

The foremost requirement of any product packaging is the protection of the contents. Thus the packaging has to provide high barrier against moisture, oxygen and aroma. The second absolutely essential functionality of the packaging is the retention of inherent properties especially for edible products. Last but not the least, the packaging should be strong enough to withstand multi point transportation and storage.

Demand for sustainability and higher shelf life is pushing the packaging film industry in two directions: towards bio-degradable barrier films and to long-life films that extend product life and reduce waste. Above factors have led the plastic processors to develop suitable and affordable films as they recognize that it is not the technology itself that is important but its commercial applications at an affordable cost.



Thin colour-changing films in sensors to detect food spoilage and security

Food is lost or wasted throughout the supply chain, from initial agricultural production down to final household consumption. Studies by The Swedish Institute for Food and Biotechnology (SIK) on request from the Food and Agriculture Organization of the United Nations (FAO), suggest that roughly one-third of food produced for human consumption is lost or wasted globally, which amounts to about 1.3 billion tpa, as per worldfoodscience.org. Overall, on a per-capita basis, much more food is wasted in the industrialised world than in developing countries. It is estimated that the per capita food waste by consumers in Europe and North America is 95-115 kg/year, while this figure in Sub-Saharan Africa and South/Southeast Asia is only 6-11 kg/year. The causes of food losses and waste in medium/high-income countries mainly relate to consumer behaviour as well as to a lack of coordination between different actors in the supply chain. Food can be wasted due to quality standards, which reject food items not perfect in shape or appearance. At the consumer level, insufficient purchase planning and expiring "best-before-dates" also cause large amounts of waste, in combination with the careless attitude of consumers and their wasteful habits. In a bid to reduce food wastage, developments are being introduced in active and intelligent packaging. The packaging made of intelligent plastics lets consumers know when the food is close to spoiling because of damaged wrappers, the expiration or "best before" date is passed, or has not be stored at the proper temperature.

In a new development for food packaging, in-mold labels made from a photonic gel will change colour when exposed to chemicals associated with a foodstuff rotting. This will provide an instant visual warning if the food has gone bad. Very thin colour-changing films that may serve as part of inexpensive sensors for food spoilage or security, multiband optical elements in laser-driven systems and even as part of high-contrast displays have been created by Materials scientists at Rice University and the Massachusetts Institute of Technology (MIT). The new work led by Rice materials scientist Ned Thomas combines polymers into a unique, self-assembled metamaterial that, when exposed to ions in a solution or in the environment, changes colour depending on the ions' ability to infiltrate the hydrophilic (water-loving) layers. The research was published in the American Chemical Society journal ACS Nano. The micron-thick material called a photonic gel, far thinner than a human hair, is inexpensive. Film to cover an area the size of a football field would cost about a hundred dollars. When used in food sensor- the colour would change from blue to red, if it is inside a sealed package and the environment in that package changes because of contamination or ageing or exposure to temperature. The films are made of nanoscale layers of hydrophobic polystyrene

and hydrophilic poly(2-vinyl pyridine). In the liquid solution, the polymer molecules are diffused, but when the liquid is applied to a surface and the solvent evaporates, the block copolymer molecules self-assemble into a layered structure. The polystyrene molecules clump together to keep water molecules out, while the poly(2-vinyl pyridine), P2VP for short, forms its own layers between the polystyrene. On a substrate, the layers form into a transparent stack of alternating "nano-pancakes." "The beauty of self-assembly is that it's simultaneous, all the layers forming at once," Thomas said. The researchers exposed their films to various solutions and found different colours depending on how much solvent was taken up by the P2VP layers. For example with a chlorine/oxide/iron solution that is not readily absorbed by the P2VP, the film is transparent. When that film is taken out, washed, and introduced in a new solution with a different ion, the colour changes.

The researchers progressively turned a clear film to blue (with thiocyanate), to green (iodine), to yellow (nitrate), to orange (bromine) and finally to red (chlorine). In each case, the changes were reversible. Thomas explained that the direct exchange of counterions from the solution to the P2VP expands those layers and creates a photonic band gap - the light equivalent of a semiconducting band gap - that allows colour in a specific wavelength to be reflected. "The wavelengths in that photonic band gap are forbidden to propagate," he said, which allows the gels to be tuned to react in specific ways. Co-authors of the paper are Rice research scientist Jae-Hwang Lee and MIT postdoctoral researchers Ho Sun Lim and Joseph Walsh. The work was supported by the U.S. Army Research Office, the U.S. Air Force and the Korea Research Foundation, funded by the Korean government. Other potential applications for the technology include security (instant, visual testing for drugs, explosives or biological contaminants) or as an alternative technology to e-ink or thin film transistor displays.

Source Courtesy: www.plastemart.com



Recent Trends : Plastics for Packaging

Advances in edible food packaging to tackle waste management issues

Food packaging has become a major part of our solid waste stream, with a majority of this packaging being difficult or impossible to recycle. EPA statistics show that containers and food packaging constitute 32% of U.S. household waste. This problem has vexed Harvard scientists, who announced that they have developed a food packaging technology that could eliminate the need for plastic containers, and we could see on grocery store shelves in the next 12 months. Harvard professor David Edwards and designer François Azambourg have invented WikiCells, which encase various foods and liquids in edible membranes that function like the skin of a grape. They are "novel edible forms for eating and drinking transportable foods and drinks without plastic." They encase various foods and liquids in edible membranes that function like the skin of a grape. WikiCells can hold gazpacho soup, hot chocolate, ice cream, yogurt almost anything. The membrane itself is made of food particles say, cheese or dried fruit and held together by calcium or magnesium ions and alginate. They consist of a natural food membrane held together by electrostatic forces and containing a liquid, emulsion, foam, or solid food substance possibly within an edible or biodegradable shell. They can be used to protect otherwise vulnerable foods, then broken away like an eggshell when it's time for the food to be consumed. Because WikiCells' skin keeps water out and in it is possible to simply compost the "shell" and wash the inside as you would apples or peaches-making the total product more environmental friendly.

The team has already created a few imaginative WikiCells, including a tomato membrane containing gazpacho soup that can be poured over bread, an orange membrane filled with orange juice that you can drink with a straw, smaller grape-like membrane holding wine, and a chocolate membrane containing hot chocolate. For now, this would be a speciality item, used only by those who could afford and operate their very own WikiCell Machine. But in the future Edwards hopes they will someday be commercially available to the broader public. "The notion of WikiCells is that you are englobing liquid, foam, or something else in a soft membrane held together by food particles that are being connected by electrostatic charges to each other and to a small amount of natural polymer." The soft membrane could be surrounded by a harder egg-like shell if necessary something made out of chocolate, rock candy, or even algae. If that's hard to imagine, think of it this way: a tomato and basil membrane that houses gazpacho, a chocolate membrane holding hot chocolate, or an orange membrane containing orange juice.

University of California food scientist Professor John Krochta has developed an edible food coating derived from the dairy by-product whey. He believes that the protection, which can either be a smooth, glossy coat or a thin, plastic-like film, can be used to make foods spoilage-resistant. It will reduce the amount of packaging needed and finds a use for a by-product that now ends up mostly in low value products or is thrown away. Manufacturers of edible film also have a selection of starches to choose from, including wheat, potato or corn. Scientists at Oregon State University's department of Food Science and Technology have already designed an edible film made from natural ingredients that protects foods coated in the material from spoiling. The film can also hold vitamins and other nutrients within it to boost the nutritional value of the food. The scientists combined chitosan, a fibre found in crab and shrimp shells, which is also a raw material for nutraceutical products, and the protein from egg whites, lysozyme, to create an anti-microbial food wrap.

Dr. Kamal Badiani runs Pepceuticals at Leicestershire, and is working very hard to make edible packaging a reality. This firm is developing an invisible film which can be used to coat poultry and meat. Dr. Kamal explains that it will protect poultry and meat a bit like a skin. Dr. Kamal says that a customer has to cook the meat in same normal way. Dr. Kamal has already made the prototype, and he mentions that it is completely tasteless.

Source Courtesy: www.plastemart.com 



New technologies offer great potential for bioplastics in food packaging

Profits from bioplastics on the European market are expected to grow up to EUR 475.5 mln in 2016 (from a profit of EUR 142.6 mln in 2016), as per Frost & Sullivan. The survey sees increasing prices for raw materials and a growing consciousness for the environmental impact of packaging waste as the driving forces behind this growth. Most packaging material today is made from plastics based on crude oil - recycling these plastics is a complicated process. Their dependence on oil as basic raw material couples the price for these plastics indirect with the crude oil price. Especially short-lived, single use packaging of foods and consumer goods (according to study about 12% of the total packaging amount) could well be made from bioplastics with the same hygienic qualities, especially from starch based or Polyactid acid plastics.

Due to the competitive pressure on the plastics market, bioplastics still have difficulties competing with cheaper oil based plastics. The unstable political situation in several Middle East countries and a static grow of crude oil price from the relative stable prices in the mid-nineties could well make alternative resources for plastics more competitive. Some of the difficulties with cost-efficient production could nevertheless be overcome if bioplastics are produced as a mass product by the big players on the synthetics market. "Focusing on increased production capacities and the efficient use of them could well help to overcome the difference in price between biopolymers and conventional plastics;" explains Sujatha Vijayan, Research Analyst of Frost & Sullivan. "This will generate growth on the market and help to find replacements for oil-based polymers in numerous applications." But also administrations could play an important part in the break through of biopolymers: by offering tax

privileges or legal regulations in favour of bioplastics.

Meanwhile packaging producers aim to develop active plastics for food packaging that help to minimize odours. Big potentials is expected for bioplastics with integrated freshness, temperature or quality indicators. Whether bioplastics will witness a break through on the packaging-market depends, not only on a growing customers demand but also on the development of new technologies. Better permeance properties of food packaging foils could well increase a polymers market value. "Companies currently work on new features with different technologies to upgrade the properties of biopolymers. These inventions could well change the way plastics are used in the packaging industry" Vijayan added.

Recyclability is an important environmental consideration in the plastics business, and particularly in packaging. However, it is worth noting that many bioplastics are not biodegradable. These products are physically identical to their petroleum-based counterparts and are being developed as drop-in substitutes. For such materials, then, recyclability of the final product is not necessarily increased by their use. Even without the use of plant-based substitutes, plastics already lend themselves to recycling and thus benefit from some preference in the market. In the market for drop-in substitutes, bioplastics gain most of their "green halo" through their low life-cycle environmental impacts relative to petroleum resins. They tend to be made from feedstocks that are non-toxic and produce low levels of greenhouse gas (GHG) emissions.

Source Courtesy: www.plastemart.com





Dr. Yatish B. Vasudeo
Chairman – Plasticulture Committee, Plastindia Foundation

Project Villages at Jalna / Aurangabad was visited by Chairman Dr Vasudeo and team.

The first phase implementation which began in Nov 2012 has installations completed in one of the two villages considered. The second village could not be taken up owing to low water levels. In the first village, where the inauguration took place, Pagirvadi, installations for 100 farmers are completed. There was a farmer workshop on maintenance conducted by the drip company – Kisan Irrigation where farmers were given information on the use, maintenance and other related issues. A 2 day visit was organised to Nanded Agricultural Institute and Parbhani Cotton Research Centre. 25 farmers from Pagirvadi village participated in the 2 day program. This program was jointly organised by Kisan Irrigation and the NGO – SPMESM. As planned in the second phase – before Kharif 2013, 9 villages will go in for drip deployment. The two companies Kisan Irrigation and Kriti Industries have confirmed participation in the program.



The 9 villages and farmer beneficiaries' status are as under:

Project Villages Status				
No.	Village	Farmers	JLG Formed	Bank accounts opened
1	Dahigavan	50	10	10
2	Mhatrewadi	60	12	12
3	Shelgaon	100	18	10
4	Najik Pangari	60	8	0
5	Dhopateshwar	50	0	0
6	Anjandoh	50	7	0
7	Donwada	50	0	0
8	Khamkheda	40	0	0
9	Morhira	40	6	0
		500	61	32

During the meet with Mr Khose of NABARD, he lauded the awareness created through Kisaan Raja at Jalna and the overall impact it has created in the district. Bad monsoons in the region have created greater awareness of micro irrigation. Farmers who have not been shortlisted to be a part of the UPNRM program are keen to deploy drip at Jalna. A mechanism to cater to this is being worked on by PPC and the NGO. 2 more Micro Irrigation companies have approached PPC to be considered as suppliers to the project. Their confirmation on the project guidelines is awaited, before they are introduced to the project villages as suppliers for the project.

It is observed that villages prefer to go with a single company as supplier. This is also helpful for the company in terms of taking up programs associated with the program for the village. Choice of drip systems is left to the farmers. PPC's role is that of a facilitator.

For the next Kisaan Raja, Regions considered are Gujarat, Odisha, Bihar and Rajasthan. Preliminary talks with NABARD HO are in progress and anchor participants for the activity are being contacted. Inducting farm equipment manufacturers and agro chemical companies is being pursued.



ORGANISATION OF PLASTICS PROCESSORS OF INDIA

Seminar on – “Plastics in Automotives – Redefining Possibilities” – 7- 8th March 2013 in Chennai.

The Global Automotive Plastics consumption is expected to grow from 6.7 million tons in 2011 to 10.2 million tons in 2016 at an estimated CAGR of 8.5 %. In India the average usage of plastics in car is 65 kg. whereas the global average is 125 kg. per car. The increase in usage of plastics in automotive has the objective of light-weighting of automotives. This is essential as the fuel cost is moving northwards.

Against the above mentioned background Organization of Plastics Processors of India alongwith VDMA held the 5th edition of the Indo-German International Seminar – “Plastics in Automotives – Redefining Possibilities” was held on March 7th – 8th , 2013 at the Trident in Chennai.

The Seminar was sponsored by VDMA, Reliance Industries Ltd., Ferromatik Milacron India Pvt. Ltd. and Mutual Industries Ltd. It was supported by Department of Chemicals & Petrochemicals; Automotive Component Manufacturers Association of India (ACMA) and Society of Indian Automobile Manufacturers (SIAM).

The inaugural session of the seminar was held in the morning of 7th March 2013, The Chief Guest was Mr. Manfred Geiss, CEO, Geiss AG, Germany. Mr. Achal Thakkar, Treasurer, OPPI delivered the Welcome Address. Mr. Deepak Lawale proposed Vote of Thanks.

During the 2 day Seminar, Speakers from companies – Sumitomo, KraussMaffei, Arburg, Engel, Unicor, Geiss, Hennecke, Leonhard Kurz, Kautex, Kiefel, Kuka Roboter and WittmannBattenfeld made highly studied presentations. These presentations covered the entire gamut of use of Plastics in Automotives.

Truly International Seminar

Nearly 215 participants from original equipment manufacturers, Plastics Raw Material Manufacturers, Plastics Processors producing Plastic Components for Automotives. Automotive Paint Producers, Plastic Processing Machinery Manufacturers, Consultants, Robot Manufacturers etc. attended the Seminar on both days.

The presentations by the Speakers were followed by Q & A sessions. The high level of participation was reflected during the Q & A sessions. The Speakers provided useful solutions to the problems being encountered by the delegates in their day to day operations.

Mrs. Lilli Rudnick, VDMA summed up the impressions of the Speakers, participants in her mail address to Mr. Deepak Lawale, Secretary, OPPI. The mail stated – “The speakers were impressed by the number of participants at this event. We hope that this conference has contributed towards bringing exciting new technology to the Indian plastics processing industry and that the attendees gathered new and interesting insights that will find a place in their future strategic plans.”



Mr. Achal Thakkar delivering Welcome Address



Mr. Manfred Geiss, the Chief Guest delivering Key Note Address during the Inaugural Ceremony.

Founder Members Activities



Seminar in progress



Mrs. Lilli Rudnick presenting a memento to Mr. Manfred Bulik, Hennecke



Power-packed Q & A Session



Speakers alongwith members of OPPI & VDMA



Mr. Andreas Lichtenauer, Kautex making his presentation



Mr. Nanda Kumar, CEO, WittmannBattenfeld making his presentation.



INDIAN PLASTICS INSTITUTE

INDIAN PLASTICS INSTITUTE

IPI and Global reach

IPI and its Chapters organized several educational and meaningful activities as well as two truly International conferences – outside India – at Columbo and Nairobi, which were greatly appreciated by plastics fraternity all over India. Chapters like Ahmedabad, Chennai, Vadodara, Mumbai, Bangalore gave big thrust to IPI's activities making IPI more vibrant and enrolled record breaking new members into IPI fold. We also started special Students' Chapters of IPI and thereby enrolled 800 students to directly benefit from IPI activities. We also greatly expanded our Web-based activities making our IPI journal available as e-Journal, uploaded several ppt presentations given by eminent speakers at our Endowment Lecture series or at Technical seminars. All these are available today to IPI Members free of charge irrespective of where they stay or when do they want to read!

Introducing recorded webinars on our website was one of the most noteworthy activities of IPI, which was so well received and accepted by the Plastics Professionals, Students Community and Educational Institutes as well that we will definitely continue these.

Started under the aegis of TIPCO Endowment Webinars, thanks to a generous grant from TIPCO, we recorded and uploaded the following -6- webinars on our IPI website, www.ipiindia.com.

These Webinars were presented by different and young plastics professionals and experts representing plastics industry on vivid segments of plastics as given below:

Topics	Name of Speakers
A New Dimension in Extrusion Blow Moulding Technology	Mr. Bhavin Shah, Regional Manager, Ferromatik Milacron India Pvt. Ltd.
Colour & Additives Masterbatches	Mr. Hemant Minocha, Director, Rajiv Plastics Ltd.
Processing, Structural Properties of Carbon Nano Tube based Polymer Composites	Prof. Arup Bhattacharya, Associate Professor from IIT, Powai.
Thermoplastics Elastomers	Mr. Vishal Kadakia, Kadakia Plastics & Chemicals Pvt. Ltd.
Application of Plastics in Construction Industry	Mr. Prashant Trivedi, Sintex Industries Ltd.
Gharda Ultra Performance Polymers	Mr. Tushar Parida, Gharda Chemicals Ltd.

These Webinars evinced tremendous positive response from the plastics fraternity. Within -10- days of uploading, each Webinar got more than 100 hits and by now most have got more than 580 hits on our website. This shows the hunger and enthusiasm for new knowledge particularly in our industry and how IT savvy our members are! These Webinars were possible thanks to TIPCO Industries Ltd.'s Endowment and sponsorship by speakers' organisations. We convey our profound thanks to all of them for so willingly sponsoring them.



INDIAN PLASTICS FEDERATION



The largest international plastics exhibition of Eastern India, Indplas'12, concluded on a positive note with business worth Rs. 100 crore (USD \$ 20 M). Indplas'12 -6th International Exhibition on Plastics held at Science City, Kolkata from October 5 - 8, 2012 was a grand success where a total number of 271 exhibitors participated as compared to 237 exhibitors in the 5th edition. Exhibition was occupied with 4605 sq mtr (2700 sq mtr-5th edition in 2006). We had footfall of above 75000 visitors. The exhibition was supported by Taitra (a Government of Taiwan organisation) and 12 exhibitors from Taiwan participated in this year's Indplas, moreover exhibitors from China, South Korea and Italy also participated in Indplas' 12. A Taiwanese business delegation of 30 business people visited the exhibition. We also had visit by Consul General of the People's Republic of China in Kolkata Mr. Zhang Lizhong.

Amongst distinguished visitors were Dr Nayak DG/CIPET, Senior Office Bearers and members of all founder members of, Plastindia Foundation and other Supporting Associations.

Reliance Industries Ltd., Indian Oil Corp. Ltd., Dhunseri Tea and Polymers Ltd, Hindustan Mittal Energy Ltd, machinery manufacturers like Ferromatik Milacron, Lohia Starlinger, Electronica, Rajoo Engineers, Gujarat Machinery, Mamata Group and many others additive and master batch manufacturers as well as reprocessing machinery manufacturers participated in large number.

The National Committee of Plasticulture Applications in Horticulture (NCPAH) displayed the latest use of plastics in Horticulture and Agriculture with live demonstration. At the Indian Centre for Plastics in the Environment (ICPE) stall, the myths about plastics were clarified. Emphasis on plastic waste management was exhibited. Students from around 30 schools visited the exhibition on invitation. The students also visited the Theme Pavilion where the various uses of plastics in the field of Healthcare, Automobile, Aviation, Agriculture and many other areas of interest both in Household and Industry were showcased. Theme pavilion was jointly organized with CIPET. Proposed Elevation of IPF Knowledge Centre Building was also displayed both at IPF stall and THEME Pavilion.





Two street shows were organised by college students related to environment and use of plastics as well as waste management. Live machinery were on display and visitors could see for themselves advanced machinery manufactured by Indian machinery manufacturers.

The fair was inaugurated by Janab Firhad Hakim, Hon'ble Minister of Municipal Affairs and Urban Development, Govt of West Bengal in presence of Special Guest Shri Alapan Bandopadhyay IAS, Principal Secretary, Commerce and Industries & Municipal Affairs, Govt of West Bengal, Shri Vivek Bharadwaj IAS, Chief Executive



Officer, KMDA, Shri Bipin Shah, President - Plastindia Foundation; Shri P R Singhvi, Vice Chairman & MD - Borouge (India) Pvt. Ltd., Shri S. Mitra - Executive Director - Petrochemicals, Indian Oil Corp. Ltd. and Shri N. K. Surana, CMD Kalpena Industries Ltd. were the Guest of Honours. All the Platinum Sponsors were handed over Mementos for their support.

At a Glittering Award Nite programme held on 5th October, 2012 in presence of leaders of the Founder Members of Plastindia Foundation and senior executives of Reliance, GSFC, HMEL as Guests of Honour

Six Awards to exhibitors under various categories were distributed as well GOLD and SILVER sponsors were felicitated by Guests of Honours.

On 6th October, 2012 GALA Nite was enjoyed by all exhibitors at a SUFI Nite over Cocktail Dinner. AIPMA President Mr Jayesh Rambhia felicitated Mr Rajesh Mohta, President of IPF and the Chairman Indplas '12 EOC, Mr Amar Seth for successful Indplas '12. Mr Amar Seth dedicated the Felicitation to entire Indplas '12 team and thanked the Team members.



Visitors from all over the country, mainly Eastern India and neighbouring countries like Bangladesh, Nepal, Myanmar, Bhutan, Thailand visited the exhibition in large numbers. Visitors from Italy, Iran and South Africa also visited the exhibition.

Team Indplas '12 thank all exhibitors and visitors for making Indplas '12 a grand success.

Looking forward to Indplas '15.

Founder Members Activities

An **IPF** Initiative a Road to Success

The journey continues...

A Green Solution for a Cost Effective Method of Resource Conservation & Disposal of Plastics Waste

Plastics touch us every day in our ordinary business of life. Although Plastics constitute only 3-4% of the entire solid waste to be disposed daily, due to its water and air barrier properties and overall non biodegradability, the proper disposal of Plastics Waste is of great concern. Due to the extensive work done by IPF in recent years, through seminars and workshops and live demonstration to various Municipalities in association with the Dept. of Environment, Govt. of West Bengal, disposal of this non-biodegradable material has been considered as an input in road construction along with other natural resources such as soil, stone aggregates, sand, bitumen etc.

Presently, six Municipalities took interest and have constructed asphalt road of 1 Km on a trial basis. No complaint has been received from any corner as yet. The constructed portion appears to be much smoother in comparison to roads constructed and/or maintained without Plastics Waste as an ingredient.

A brief report is given below:-

1. KALYANI MUNICIPALITY:

On 28th April 2009, 1 Km of asphalt road was constructed at Kalyani - from Vidyasagar Manch to IOC plant, Block A, Ward No. 15 - 16, mixed with Plastics Waste. The project was initiated by Kalyani Municipality, West Bengal Pollution Control Board and carried out jointly with Indian Plastics Federation. The process entailed the replacement of 10 - 15% of bitumen by Plastics Waste collected from the Municipal solid waste stream. IPF gave full technical guidance jointly with ICPE and sponsored the Plastics Waste to construct the road.



2. CHANDERNAGORE MUNICIPAL CORPORATION (CMC)

On 17th March, 2010, 1 Km of road was constructed at Dulepara main road in Ward No. 19 of Chandernagore Municipal Corporation using Plastics Waste. The MIC and the Chief Engineer of CMC were present during the construction. The contractors who were awarded the work order for constructing roads in other parts of the ward were also present during the time of construction so that they could construct the road themselves. CMC purchased the Plastics Waste and saved cost due to proportionate substitution of bitumen with Plastics Waste at the time of the laying. The condition of the road is perfect till date. IPF gave full technical guidance jointly with ICPE to construct the road.





3. ASHOKNAGAR-KALYANGARH MUNICIPALITY (AKM)

On 18th March, 2010, 1 Km of the asphalt road using Plastics Waste was constructed in Ward No. 10, link road from Jirat Road to Sahid Sadan, by AKM. The formulation was similar to the one conducted at CMC. Seal coat was used at the top layer. IPF team's persuasion helped the civic authorities of AKM to take decision of disposing of the Plastics Waste in a scientific way and IPF and ICPE had jointly provided all technical assistance before and during the road construction.



IN BHATTACHARYA ROAD, KODALIA
 (NEAR KODALIA GIRLS' SCHOOL), WARD NO. 10
 THIS ROAD IS MADE FROM WASTE PLASTICS
 CONSTRUCTED BY
RAJPUR SONARPUR MUNICIPALITY
 WITH TECHNICAL COLLABORATION OF
IPF Indian Plastics Federation
 WASTE PLASTICS SUPPLIED BY M/S. H.C. PLASTIC

4. SALT LAKE MUNICIPALITY

A 50 metre x 5.5 metre long asphalt road using Plastics Waste was constructed near AMRI hospital on 17th May, 2012 by Salt Lake Municipality with technical assistance from IPF. The cost for the Plastics Waste was sponsored by PLASTINDIA FOUNDATION. The road till date is in good condition.



Founder Members Activities

5. PRINCE ANWAR SHAH ROAD BY-PASS CONNECTOR -NEAR JADAVPUR P.S.

A similar road of 500 metres length has been constructed on 3rd October, 2012 by Kolkata Metropolitan Development Authority near Jadavpur P.S. with technical assistance of IPF. The cost for the Plastics Waste was sponsored by PLASTINDIA FOUNDATION.

6. R. N. BHATTACHARYYA ROAD, KODALIA UNDER RAJPUR SONARPUR MUNICIPALITY

Another 1 Km road using the same technology was constructed on 5th January, 2013 at R. N. Bhattacharyya Road in Ward No. 20 of Rajpur-Sonarapur Municipality near Kodalia Girls School. Janab Firhad Hakim, Hon'ble Minister of Municipal Affairs and Urban Development, GoWB, inaugurated the road after construction work. IPF gave full technical guidance to construct the road and the cost for the Plastics Waste was sponsored by PLASTINDIA FOUNDATION.

Roads laid using Plastics Waste will have higher softening point and lower penetration point, less moisture absorptive capacity, better ductility, higher marshal stability value, better stripping

value, high compressive strength, high flexural strength and less bleeding during summer. Apart from this, the roads so laid are twice as strong as normal roads and resistant towards water stagnation and lesser bleeding.

The use of Plastics Waste in road construction has led to a win-win situation. On one side, the problem of disposal of Plastics Waste is mitigated and on the other side, the life of the roads is tremendously increased and saving of bitumen leads to saving of a resource as well as leads to cost saving too.

The CEO of KMDA has informed us that because of the various advantages exhibited by the use of Plastics Waste in road making, they are considering the introduction of Plastics Waste in the New Schedule for Road Construction to be issued by KMDA soon. This will lead to mass consumption of the Plastics Waste, which will become an important resource for all practical purposes.

Be open to change, knowing that God has something better in front of you. New levels of favour are in your future. We keep moving forward, opening new doors, and doing new things, because we're curious and curiosity keeps leading us down new paths.





THE ALL INDIA PLASTICS MANUFACTURERS' ASSOCIATION
AIPMA JOB - FAIR 2013
 on March 09, 2013
 Organized by : PLACEMENT CELL



GRAND SUCCESS
 14 Visiting Employers,
 182 Interviews
 and
 17 Successful Candidates with spot offers / second interview call



Thankyou ,

*Visiting Employers & Candidates for making our event grand success,
 In view of overwhelming response, We shall have more editions of
 AIPMA Job —fair very soon.....*





THE ALL INDIA PLASTICS MANUFACTURERS' ASSOCIATION
AIPMA JOB - FAIR 2013
on March 09, 2013
Organized by : **PLACEMENT CELL**

Post-Event Report

We at The All India Plastics Manufacturers' Association identified this hr/talent as key focus area that would drive the growth of plastic industry in future. AIPMA Job Fair for plastic industry professionals was first of its kind initiative by any polymer industry association in India specifically crafted to cater to man power requirements of the polymer Industry.

AIPMA Job Fair 2013 was held on March 09, 2013 at AIPMA Auditorium, AIPMA House, Andheri (East), Mumbai. It was the first edition and President Dr. Asutosh Gor presided the function, Hon. Secretary Mr. Hiten Bheda conducted the event and in presidential speech Dr. Asutosh Gor spoke on future of our industry followed by Mr. Jayesh Rambhia, Chairman Plastivision Arabia addressed the audience on upcoming event of AIPMA and event was inaugurated by lighting of lamp.

Our inauguration ceremony was graced by Visiting heads of several Institutions from polymer academia world namely MIT–Pune, MIT Aurangabad etc.. Support and wishes were received from several institutions like CIPET, LD College of engineering Ahmedabad, College of Engineering & Technology Kolkatta, etc..

We had 14 visiting employer companies participating from all sections of industry i.e. Raw-material, Compounds/additives, injection molding, blow molding, roto-molding, extrusion (pipe & blown film), machinery manufacturers Etc.. Although many more employer companies were on waiting list to participate but we could not accommodate them as we had limitations of our venue. Companies like Finolex Pipes, Borghi Brush Machinery (Italy), Luk Plastics Ltd (Bajaj Steel Group, Nagpur), Kuloday Technopack Pvt. Ltd., etc... along with others participated as visiting employers

Almost 80 job-openings were floated by visiting employers, out of which 90% job-openings demanded 2-15 experience in the industry to which our AIPMA job-fair addressed the requirement and matched befitting candidates with employers.

Popularity of our AIPMA Job Fair can be judged by over 2000 request from candidates wanting to attend but to make this an "Event with an agenda" for all employers & candidates we did not accommodate all.

182 interviews were conducted in the event and 17 candidates were selected for second round of interview or received spot offers this translates into success rate of 80% with employers confirming that their goal/target for attending AIPMA Job-fair 2013 was fully achieved and they have obtained the right candidates for their jobs.

All participants appreciated the logistics provided in terms of private air- conditioned chamber allocated to each visiting employer giving them privacy to conduct interviews and refreshments extended to all candidates and employers along with their representatives.

Secretary General Ms. Umaa Gupta and entire staff of AIPMA was involved with full dedication to execute the event and Mr. Harshad Desai, Chairman Service Committee personally visited the event and granted us the entire infrastructure under his committee for the event and Mr. Anand Oza gave us guidance on execution of the event. We at AIPMA Placement Cell appreciate and are grateful to all for their support.

Our Objective to serve the polymer industry in HR/Manpower arena with a non-commercial, service oriented & cost effective model was achieved and Benefits of team work at AIPMA went to all participants and now the overwhelming response and positive end result of event encourages us to continue having such AIPMA Job-fairs frequently at various locations across country.

I applaud the support of AIPMA President, Office Bearers and efforts of Members of Placement Cell Committee without whom this event would not have been successful.

KISHORE SAMPAT
Chairman –AIPMA Placement Cell
placement@aipma.net



CENTRAL INSTITUTE OF PLASTICS ENGINEERING & TECHNOLOGY

(i) International Conference – APM 2013 at Lucknow from March 1-3, 2013

The fourth in the series of “International Conference on Advancements in Polymeric Materials (APM,2013)” with the theme of Innovation in Materials and Product Development was organized at CIPET, Lucknow during March 01-03, 2013. The Conference was inaugurated by Shri Indrajit Pal, I.A.S., Secretary, Dept. of Chemicals & Petrochemicals, Govt. of India. The Conference witnessed 11 plenary lectures, 65 invited lectures and 100 oral presentations. There were delegates from countries like Australia, Singapore, Malaysia, Brazil, USA, Germany, etc.



(Inaugural session of APM 2013 at CIPET, Lucknow)



(Prof. Ramani Narayan , Michigan State University, USA delivering a lecture during plenary session)

(ii) TechFeast 2013

The Annual Technical event – 2nd in the series exclusively for the undergraduate and postgraduate students of CIPET was organized at CIPET, Lucknow from March 01-02, 2013. Events like Poster Presentation, Elocution Competition and Quiz Program were organized during TechFeast 2013.



(A view of Poster Presentation)



(A view of Elocution Competition)

Founder Members Activities

(iii) Technical Seminar on “Plastics Recycling and Waste Management” at Varanasi on 22nd Feb., 2013

In order to bring awareness about the issues related Plastics Recycling and Waste Management, a technical seminar was organized at Varanasi on 22nd Feb., 2013. Eminent speakers from leading plastics industries / association / organization / institution gave presentation on topics which includes:

- Plastic Waste Management – Threats & Opportunities by Shri Arvind Mehta, Executive Director (Asian Continent), CIPAD’s Board & Chairman of the Advisory Board of Plastivision India 2013
- Plastics – Benefits to Environment: Issues and Solutions by Shri T.K. Bandopadhyay, ICPE Secretariat, Mumbai
- Waste to Wealth by Shri K. Sankar, Managing Partner, Shree Renga Polymers, Karur
- New Trends in Plastic Waste to Energy Conversion by Dr. Dagshyani, HARITA – NTI Limited, Chennai
- Plastics Waste Management – CIPET’s Initiatives by Shri S. Sugumar, Chief Manager (Technical), CIPET Head Office & Dr. Smita Mohanty, Scientist, LARPM, R&D wing of CIPET
- Use of Waste Plastic in Road Construction by Shri A. Lohia, Indian Plastics Federation, Kolkata

About 120 delegates participated in the seminar. The participants included the Varanasi Civil Authorities, officials from related State and Central Government departments and NGOs.



(Deliberation during the Technical Session)

(iv) Seminar on “Plastics Recycling and Waste Management” at Hyderabad on 25th March, 2013

In order to bring awareness about the issues related Plastics recycling and waste management, a national seminar was organized at Hyderabad on 25th March, 2013. Eminent speakers from leading plastics industries/association/organization/institution gave presentation on topics which includes:

- Plastics Waste Management – Key note address by Shri Ravi Kant, Ex- I.A.S., Director, Ramky Enviro Engineers Ltd., Hyderabad
- Plastics Waste Management – Threats & Opportunities by Shri Vijay Merchant, Member of ICPE, Mumbai
- Recycling of E-waste Plastics – Shri P. Parthasarathy, Managing Director, E-Parisaraa Pvt. Ltd., Bengaluru
- Waste to Wealth – Shri K.Sankar, Managing Partner, Shree Renga Polymer, Karur
- Polymer Energy Technology – Transverse flow catalytic conversion of Waste Plastics to fuel – Shri S. Sampath, Chief Executive, Samki Teck Resources, Hyderabad

About 180 people participated in the seminar. The participants included the Hyderabad Civil Authorities, officials from related State and Central Government departments and NGOs.



(Inauguration of Technical Seminar by Smt Neelkamal Darbari, I.A.S., Joint Secretary (PC), Dept. of Chemicals & Petrochemicals, Govt. of India)

(v) Global Interaction

MoU was signed with UNESP, Sao Paulo, Brazil on 21st March, 2013 at Sao Paulo to facilitate Faculty/Student exchange program, Bilateral R&D initiatives in the niche areas of Polymer Science & Technology.



(Releasing of Seminar Proceedings)



CIPET delegation at the Seminar

Events & Happenings

Visit to PACE Conference, Prague

Visit to Prague for Pace Conference was a great learning curve. Very selective executives from Multinational Companies and decision makers were called which either function as Supplier or Purchasers. Focused B2B meeting were held with possible suppliers in order to create Vender – Vendee relationships. The buzz word of sustainability is being practiced in terms of source reduction and preservation of natural resources were discussed unabated. Companies like Marks & Spencer's which has 12500 merchandises on sale are committing 25 % reduction in packaging materials, as corporate goals. The discussion on Carbon Credit and progress through Coal fracking, biopolymers and utility of renewable resources were discussed at depth. The conference was only by invitation which brought in extra glamour in terms of interaction.

Visit to University of Massachusetts, Lowell

Our effort to initiate Plastindia International University (PIU) with University of Massachusetts, Lowell is now on the roller board. The 80 million dollar Polymer Engineering model is a monument in itself. All the faculty members including their business school are wanting to contribute over growth and Joint Ventures. Their

perception and our dream are finding a common wavelength to create a second campus away from USA. We now eagerly await the formal approval from Government of Gujarat for our Plastindia Foundation International University. Let's hope that our next generation will earn dividends from this action. **"POWER IS KNOWLEDGE"**

Visit to Koplas 2013

The visit to Koplas 2013 was an eye opener, particularly for Mould making Industry. An excellent show with respect to Machining Centres, Metterlogy and Precision Engineering. The Rubber Molding machinery was also unique and robotics is in full swing.

Sometimes it is a wonder "Do they ever need human hands apart from human brains?"

Vinyl 2013

Elite Plus Business Services (EPBS), jointly with Chemicals & Petrochemicals Manufacturers' Association (CPMA) organized the 3rd International PVC & Chlor –Alkali Conference, an exciting two-day event, in Mumbai on April 11 & 12, 2013.

The event was jointly supported by All India Plastic Manufacturers Association (AIPMA) and PlastIndia Foundation.



Mr. Bipin Shah, President Plastindia Foundation at the PACE Conference, Prague.



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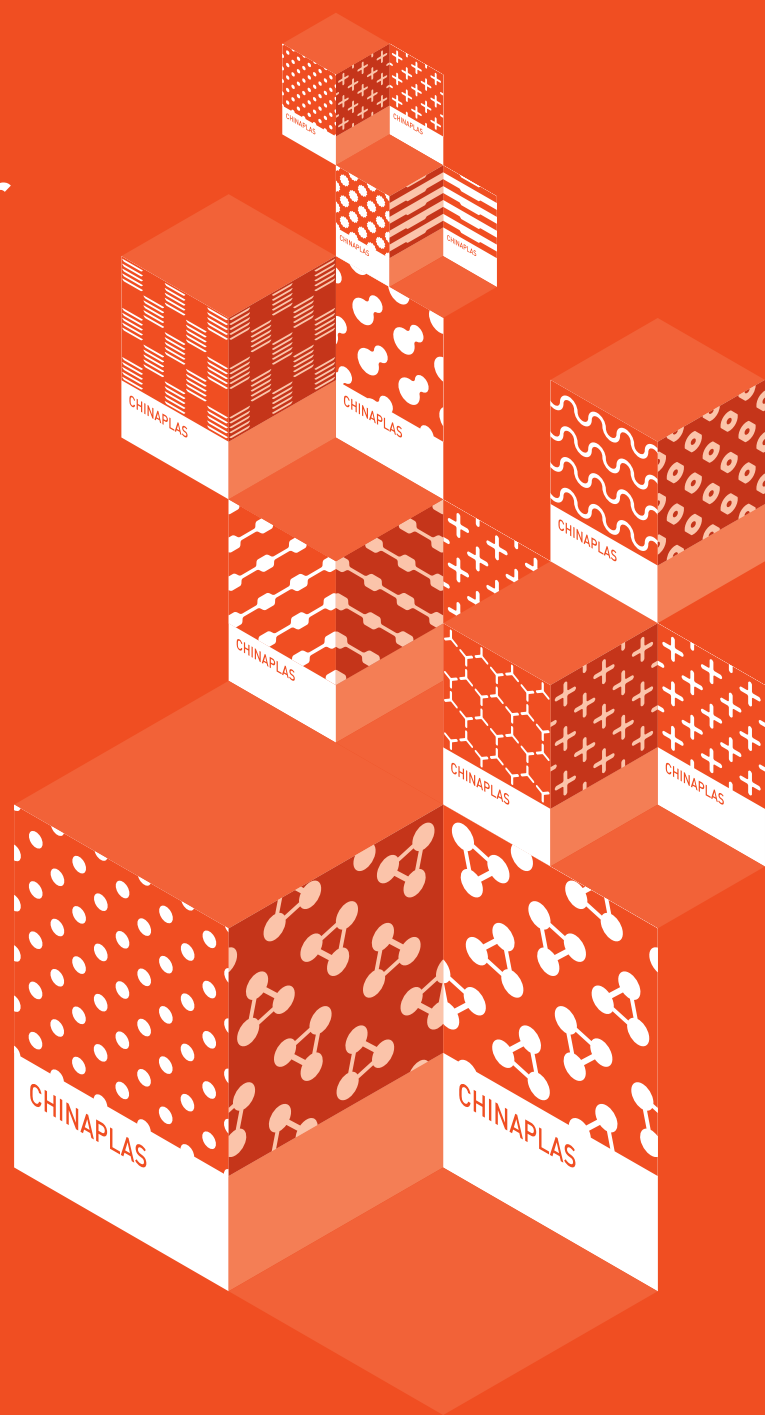
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Foundation Activities

PlastIndia Foundation provides platform to boost tie-ups with European cluster

The European cluster, Wiintech aims to explore technology transfer & trade opportunities in India

Mumbai, March XX 2013: PlastIndia Foundation held an interactive session with Wiintech to boost the growth of small and medium entrepreneurs. In India, there is a dire need for technology development, innovation and knowledge in the field of chemicals and material sectors.

With this initiative, PlastIndia created a qualitative and quantitative platform for SMEs to work together, derive a motivation and explore the progressive technology and mass volume production areas in the international arena.

Speaking on the occasion Mr. Bipin Shah, President of PlastIndia Foundation says, "We have received an overwhelming response from the industry. This is the first exposure of Plastindia with Wiintech and we are certain that the industrial tie-up will be evolved after this fruitful day. India has the potential to become the supply hub in the silk route between China and the Middle East."

"Wiintech in general and NEPIC in particular, have exposure which is known to Plastindia with their success stories and we would like to build bridges based on this method, approach and experience in Plastic Industry when this is possible and achievable", he added.

The Wiintech cluster aims to initiate opportunities for business development between European clusters and the Indian partner organizations which includes setting up research and development partnerships as well as encouraging technology transfer and trade arrangement. Wiintech's focus is on the global expanding markets in clean tech such as Renewable Energy , High efficiency building and construction , Recycling , Green transportation, Water and Air treatment, Waste-Management, New and renewable materials etc.

It links the European leading world-clusters belonging to the chemical and material sectors combining their expertise with the purpose to address the complete range of technological and business topics in the clean technology space. The network links eight European leading world-class clusters belonging to the chemical and materials sector i.e. Poolnet , Plastival , Chemie-Cluster Bayern , Clusterland , Plastipolis, Proplast, Veneto Nanotech, NEPIC etc. There are more than 2500 companies and research centres working in the materials and clean technologies sectors. The different partner clusters bring project on their own expertise and specialism to address the complete range of technological and business topics in the clean technology space.



In discussions with the Wiintech team at PIF office



Europe meets India at PIF office



Wiintech Presentation



Mr R A Lohia, Vice President, PIF addressing the team

Welcome to the land of opportunities. Welcome to India

8 million tons of Plastics consumed annually.

Within a decade per capita consumption of Plastics in India will be double to that of the world.

With India's current per capita consumption of Plastics at just 8 kgs compared to 42 kg of China and 65 kgs of USA, India offers uninhabited growth potential.



Welcome to Plastindia Foundation. Your gateway to the India.

Plastindia Foundation is an apex body that represents the entire Plastics Industry of India. 7 leading associations of Indian Plastics Industry - all with their respective interestes have come together to form Plastindia Foundation to pursue a common and a larger goal - 'Progress through Plastics'. And in this pursuit Plastindia Foindation has 4 keys initiatives:

- PLASTINDIA Exhibitions - One of the largest exhibitions of Plastics in the world
- PLASTINDIA INTERNATIONAL UNIVERSITY - One of its kind educational Institute in India that will help meet the global demand for skilled as well as technical and management work force
- PLASTINDIA Placticulture - To propogate usage of Plastics in agriculture and increase crop yied
- Solid Waste Management - To propagatate & educate the importance of recycling and plastic waste management.

Plastindia Foundation is committed to play a significant role as a catalyst for growth and development of the Plastics Industry in India. Explore your growth potential. Welcome to India. Welcome to Plastindia Foundation

For any queries regarding joint ventures, alliance, trade exchange or the Indian market do feel free to contact us.

* The above data is pertaining to the Plastic Industry in India.

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