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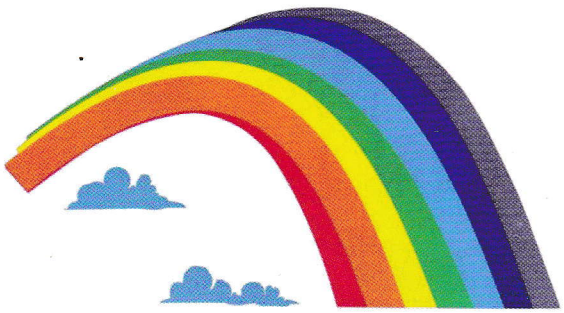


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A journal for the growth and development of plastics trade & industry



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**Editor : Sri Pradip Nayyar**



# Editorial

Dear Members,

Good day!

Let me first take this opportunity to convey my sincere thanks to all our members who have directly or indirectly helped us in organizing INDPLAS'12 and make it a grand success.

Success is about getting all that you wanted to have. The feelings success brings will make you walk proudly in the streets with your head up high while being happy and satisfied.

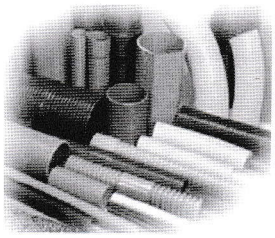
The road to success will probably be full of rejection, pain, hard work, disappointment as well as many other discouraging things but when you reach its end you will feel really happy and victorious. You will feel proud of yourself for overcoming all of these obstacles and for reaching your goals in spite of the many things that stood in your way.

Take up one idea. Make that one idea your life - think of it, dream of it, live on that idea. Let the brain, muscles, nerves, every part of your body, be full of that idea, and just leave every other idea alone. This is the way to success. And we have done that by making INDPLAS'12 a grand success with the help of all of you, who have participated, visited and who directly or indirectly involved.

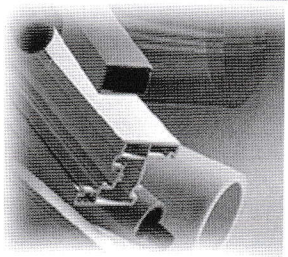
Once again thanks to all for the successful completion of INDPLAS'12 and look forward to INDPLAS'15.

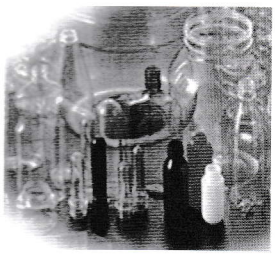
Yours truly,

**Pradip Nayyar**
Editor



# CONTENTS





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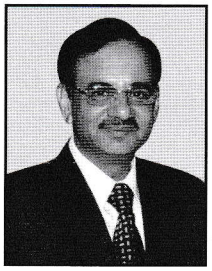

Dear Friends,

INDPLAS'12 – Our dream has became a reality. We executed it very nicely. Now it is the time for celebration. Team Indplas has delivered what others across the country did not expect from us. It was an international standard exhibition and I hope all of you must have liked it.

People from other parts of the country who visited Indplas12 were very pleased to see our team work. IPF is known for the team work and we have proved what team work can deliver.

We had around 271 exhibitors. Business to the tune of around Rs. 100 Crores has been finalized during the exhibition. This is a clear indication of a positive growth in the plastic sector in the eastern part of the country. It is also evident from the number of business visitors who had come to the exhibition.

It is now time to prepare for AGM, which is to take place sometime end of November 2012. Your views and observations regarding Indplas12 are required for overcoming our deficiencies, if any, in future shows.

I have no words with which I could express my thanks and gratitude to you.

Thank you, thank you and thank you very much.

With warn regards

**Rajesh Mohta**
*President*

# SECRETARIAL REPORT

Dear Members,

The season of festivals has already started in India. The Ganesh festival widely observed in Western India is over and Durga Puja widely observed in Eastern India will be complete by the time this volume is in your hands. IPF celebrated its own 4-day festival – Indplas'12 – 6th International Exhibition on Plastics from October 5 – 8, 2012 at Science City, Kolkata. Unlike the deities in other festivals that have human form, the deities in our festival were moulds, dies, master batches, additives, machinery and others used in promoting the plastic industry in India.

All the major names in the polymer industry participated in the exhibition viz. Haldia Petrochemicals Ltd, 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. NCPAH and ICPE also participated in the exhibition.

The exhibition was supported by Taitra (a Government of Taiwan organisation) and they brought exhibitors from Taiwan. In all 15 foreign Exhibitors participated.

The exhibition witnessed 75,000 footfall of business visitors in 4 days. Visitors from neighbouring countries like Bangladesh, Nepal, Myanmar, Bhutan, Thailand visited the exhibition. A few visitors also came from Italy, Iran and South Africa. It is estimated that the exhibition generated business of around Rs.100/- crores (USD $ 20 m).

The fair was inaugurated on 5th October 2012 at 3.30 pm at the Science City Mini Auditorium 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. During the inauguration function all the Platinum sponsors were felicitated.

The Gold and Silver sponsors were felicitated at the Award Nite held at Science City Mini Auditorium on 5th October 2012 evening. The Awards were distributed by the Guests of Honour. The Awards Nite was held along with an entertainment programme.

On 6th October 12 Indplas'12 Exhibition Organising Committee organised a Gala Nite for exhibitors with an excellent programme by sufi singer Syed Adil Hussaini.

Feed back received from exhibitors has been very encouraging. The exhibitors and visitors were very happy with the arrangements made and have expressed their desire to participate once again. The exhibition was a great success.

Apart from the exhibition the Federation also welcomed four new members into the IPF family.

With best wishes,

**Pradip Nayyar**
*Hony. Secretary*

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## Prabhat Barta – 06.10.12

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**शीघ्र हल होगी हल्दिया की समस्या**

**इंडप्लास-12 का उद्घाटन**

कोलकाता, संवाददाता

खुदरा क्षेत्र में प्रत्यक्ष विदेशी निवेश (एफडीआई) के खिलाफ आंदोलन कर रही तृणमूल कांग्रेस सुप्रीमो व मुख्यमंत्री ममता बनर्जी के सुर में सुर मिलाते हुए राज्य के शहरी विकास मंत्री फिरहाद हकीम ने भी केंद्र सरकार पर निशाना साधा। शुक्रवार को साइंस सिटी परिसर में 6वीं अंतरराष्ट्रीय प्लास्टिक प्रदर्शनी (इंडप्लास-12) का उद्घाटन करते हुए हकीम ने केंद्र सरकार का नाम न लेते हुए कहा कि केवल एफडीआई लाने से ही देश का विकास नहीं होगा। उसके लिए प्रौद्योगिकी विकास पर विशेष बल देने की जरूरत है क्योंकि चीन व दूसरे देशों की कंपनियां बाजार पर कब्जा जमाए हुए हैं। देश के प्लास्टिक उद्योग को विदेशों में महत्व मिले, इससे पहले ही अत्याधुनिक सुविधाओं से उन्नत चीन व अन्य देशों की कंपनियां वहां अपनी पैठ बना ले रही हैं। उन्होंने कहा कि राज्य सरकार लघु व मझोले उद्योगों को बढ़ावा देने पर विशेष बल दे रही है, क्योंकि इसमें ही सबसे ज्यादा रोजगार की संभावनाएं हैं। राज्य सरकार प्लास्टिक उद्योग को भी बढ़ावा देगी। हकीम ने कहा कि बंगाल उद्योग के लिए आदर्श राज्य है, क्योंकि यहां सकारात्मक सोच व व्यवहार वाले लोग रहते हैं। कई उद्योगपति यहां उद्योग लगाने को इच्छुक हैं। मंत्री ने हल्दिया डॉक काम्प्लेक्स में व्याप्त समस्या के शीघ्र समाधान का आश्वासन दिया। उधर, अंतरराष्ट्रीय प्लास्टिक प्रदर्शनी इंडप्लास-12 में 300 कंपनियों ने भाग लिया है। इसमें हल्दिया पेट्रो केमिकल्स लिमिटेड, इंडियन ऑयल कॉरपोरेशन, रिलायंस इंडिया लिमिटेड, हल्दिया डेवलपमेंट अथॉरिटी, एमएसएमई-डीआई एंड टेस्टिंग, टूल्स रूम, इंडियन इंस्टीट्यूट ऑफ पैकेजिंग, इंडस्ट्रीयल एक्सटेंशन ब्यूरो, गवर्नमेंट ऑफ गुजरात व आईपीआईसीओएल-ओडिशा आदि सहित कई कंपनियां शामिल हैं। इंडिया प्लास्टिक फेडरेशन के अध्यक्ष राजेश मोहता ने बताया कि प्लास्टिक उत्पाद को देश के बाहर विदेशों में बढ़ावा देने की योजना बनायी गयी है। बंगाल में 300 करोड़ निवेश के लिए माहौल तैयार किया जायेगा।


6वीं अंतरराष्ट्रीय प्लास्टिक प्रदर्शनी इंडप्लाट-12 का उद्घाटन करते राज्य के शहरी विकास मंत्री फिरहाद हकीम। पास में खड़े आलापन बंद्योपाध्याय, बिपिन साह, पीआर सिंघवी, प्रदीप नैयर व विवेक भारद्वाज सहित कई अन्य गणमान्य। • कौशिक साहा

## Prayag – 07.10.12

# প্লাস্টিক প্যাকেজিং-এর প্রদর্শনী শুরু হল শহরে

প্রয়াগের প্রতিবেদন ঃ ভারতীয় প্যাকেজিং সংস্থা বা ইন্ডিয়ান ইন্সটিটিউট অব প্যাকেজিং-এর তরফ থেকে একটি বিশেষ আন্তর্জাতিক মানের প্যাকেজিং-এর উপর প্রদর্শনী আয়োজন করা হল শহরের সায়েন্স সিটি অডিটোরিয়াম হলে।

প্রদর্শনটি আয়োজনের মূল উদ্দেশ্য হল প্লাস্টিক প্যাকেজিং ব্যবস্থার উন্নতি সাধন। উদ্বোধন অনুষ্ঠানটিতে উপস্থিত ছিলেন খাদ্য প্রক্রিয়াকরণ ও হর্টিকালচার বিভাগের মুখ্যসচিব সি এম বাচুয়াত এবং প্লাস্টিক ফেডারেশনের চেয়ারম্যান অমর শেঠ।

এছাড়া উপস্থিত ছিলেন আইআইপি প্রধান প্রফেসর এন সি সাহা। প্রফেসর সাহা সংবাদ মাধ্যমকে জানান, ১৯৭৬ সালে সংগঠনটি তৈরি হওয়ার সঙ্গে সঙ্গে রাজ্য সরকারের সহযোগিতা নিয়ে ভারতীয় শিল্পের দৃষ্টিকোণ থেকে প্যাকেজিং শিল্পকে উন্নত করার ও আধুনিক করার ব্যাপারে সচেষ্ট রয়েছে সংস্থাটি।

যদিও অ্যালুমিনিয়াম ফয়েলেও পণ্য প্যাকেজিং-এর ব্যবস্থা থাকলেও প্লাস্টিকের ব্যবহার সর্বত্রই হওয়ায়, প্লাস্টিকের কু-প্রভাব এড়িয়ে পুনর্নবীকরণ যোগ্য প্লাস্টিকের মাধ্যমে নতুন প্রজন্মের উপযোগী প্যাকেজিং ব্যবস্থা গড়ে তোলায় সচেষ্ট সংস্থাটি। অনুষ্ঠানে যোগ দিতে আসা সকল বিশিষ্ট ব্যক্তি আগামী দিনে ফুড প্যাকেজিং-এর ব্যবস্থা উন্নতিকরণের বিষয়ে জোর দেন।

## The Bengal Post – 07.10.12

### Tuff launches PVC pipes in east

**Kolkata:** Vibgyor Group company, Tuff Tubes has launched PVC column pipes in eastern India at the sixth International Plastic Exhibition, Indplas'12. —PTI

# Press Clippings

## Dainik Viswamitra – 07.10.12


*इण्डियन इंस्टीच्यूट ऑफ पैकेजिंग की ओर से 'इण्डिया पैक २०१३' के जारी किए जाने के अवसर पर आयोजित संवाददाता सम्मेलन में विधान दास, ए.वी.पी.एस. चक्रवर्ती, इंडियन प्लास्टिक फेडरेशन, कोलकाता के चेयरमैन अमर सेठ एवं आईएएस सी.एम बच्छावत।* विश्वमित्र

## Prabhat Khabar – 07.10.12

# पैकेजिंग उद्योग को बढ़ावा के लिए प्रदर्शनी

**कोलकाता ■** पैकेजिंग उद्योग को बढ़ावा देने के लिए जनवरी में मुंबई में इंडियन पैक की ओर से पांचवीं अंतरराष्ट्रीय पैकेजिंग प्रदर्शनी लगायी जायेगी. प्रदर्शनी मुंबई के गोरेगांव में 28 से 31 जनवरी तक चलेगी. यह जानकारी शनिवार को भारतीय पैकेजिंग संस्थान के निदेशक एनसी साहा ने साइंस सीटी में इंडियनपैक की ओर से आयोजित एक कार्यक्रम में दी. उन्होंने बताया कि प्लास्टिक व पैकेजिंग संस्थान एक दूसरे के पूरक हैं. लोगों का यह मानना है कि प्लास्टिक से वातावरण को काफी नुकसान पहुंचता है, लेकिन उन्हें नहीं पता कि प्लास्टिक हमारे लिए कितना महत्वपूर्ण है. इसके जरिये हम खाद्य पदार्थों को बेहतर तरीके से पैक कर सकते हैं, जिससे काफी दिनों तक वे नष्ट नहीं होते हैं. प्लास्ट इंडिया फाउंडेशन के चेयरमैन बी साहा ने बताया कि प्लास्टिक हमारे जीवन के लिए काफी महत्पूर्ण है. भारत में एक वर्ष में आठ मिलियन टन प्लास्टिक का उपयोग होता है. सात से आठ वर्ष बाद भारत में इसका उपयोग बढ़ कर 15 मिलियन तक पहुंच सकता है. उन्होंने बताया कि इंडियन पैकेजिंग (आइआइपी) की ओर से पैकेजिंग में विभिन्न कोर्स शुरू किये जायेंगे. कार्यक्रम में इंडियन प्लास्टिक फेडरेशन (कोलकता) के अध्यक्ष अमर सेठ, आइआइपी (कोलकाता) के पूर्व अध्यक्ष पी दासगुप्ता आदि शामिल थे.

## Dainik Viswamitra – 07.10.12

# प्लास्टिक उद्योग के विकास पर ध्यान देगी सरकार

कोलकाता, ६ अक्टूबर (निप्र)। राज्य के शहरी विकास मंत्री फिरहाद हाकिम ने कहा कि राज्य सरकार प्लास्टिक उद्योग का विकास करने पर जोर दे रही है। इंडियन प्लास्टिक फेडरेशन (आईपीएफ) की ओर से आयोजित ६ठवीं इंडप्लस-१२ नामक प्रदर्शनी का उद्घाटन करते हुए हाकिम ने कहा कि राज्य सरकार के साथ-साथ केन्द्र सरकार को भी ध्यान देना होगा क्योंकि केवल एफडीआई लाने से नहीं होगा। अगर देश का विकास करना है तो लघु उद्योग का विकास करना बहुत ही जरूरी है। लघु उद्योग में रोजगार की अधिक संभावनाएं हैं। शहरी विकास मंत्री ने कहा कि राज्य सरकार उद्योगों को बढ़ावा देने के लिए लगातार कोशिश कर रही है। कई जगहों पर उद्योग की स्थापना कर रही है। हाकिम ने कहा कि प्लास्टिक उद्योग सबसे पहले पश्चिम बंगाल में ही शुरू हुआ था। गत ३४ वर्ष से राज्य सरकार की उदासीनता के कारण प्लास्टिक उद्योग काफी पिछड़ गया है। अब धीरे-धीरे प्लास्टिक उद्योग का विकास हो रहा है। इस मौके पर कॉमर्स एंड इंडस्ट्रीज एण्ड म्युनिसिपल एफियर्स डिपार्टमेंट के प्रिंसिपल सेक्रेटरी अलापन बंद्योपाध्याय ने कहा कि प्लास्टिक उद्योग के विकास में राज्य सरकार काफी जोर दे रही है। इस तरह का कार्यक्रम करने से प्लास्टिक उद्योग को काफी बढ़ावा मिलेगा। इस मौके पर कोलकाता मेट्रोपालिटन डेवलपमेंट अथॉरिटी के सीईओ विवेक भारद्वाज, एम.के. सुराणा, इंडिया प्लास्टिक्स फेडरेशन के अध्यक्ष राजेश मोहता सहित कई लोगों ने अपनी बातें रखीं। इंडप्लस-१२ एक्जिविशन ऑर्गनाइजेशन कमेटी एण्ड आईपीएफ नोलेज सेंटर के चेयरमैन अमर सेठ ने एक्जिविशन के बारे में विस्तारपूर्वक जानकारियां दीं। इस मौके पर विपिन साहा, पी.आर. सिंघवी, एस. मित्रा, एम.के. सुराणा तथा सौरभ खेमानी सहित कई लोग उपस्थित थे।

Indplas '12
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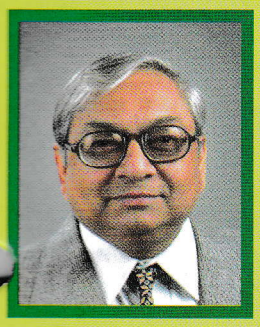
IPF Indian Plastics Federation

## From The Desk of Amar Seth ,Chairman Indplas '12 EOC.

## INDPLAS '12 generates business of Rs 100 crores



**Kolkata, October 15, 2012:** 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 (2700sq mtr-5th edition in 2006). We had footfall of above 75000 visitors.The exhibition was supported by Taitra (a Government of Taiwan organisation) & 12 exhibitors from Taiwan participated in this year's Indplas, moreover exhibitors from China, South Korea & 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 & other Supporting Associations.

Polymer manufacturers like Haldia Petrochemicals Ltd, 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 Health care, 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 Memontos 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.

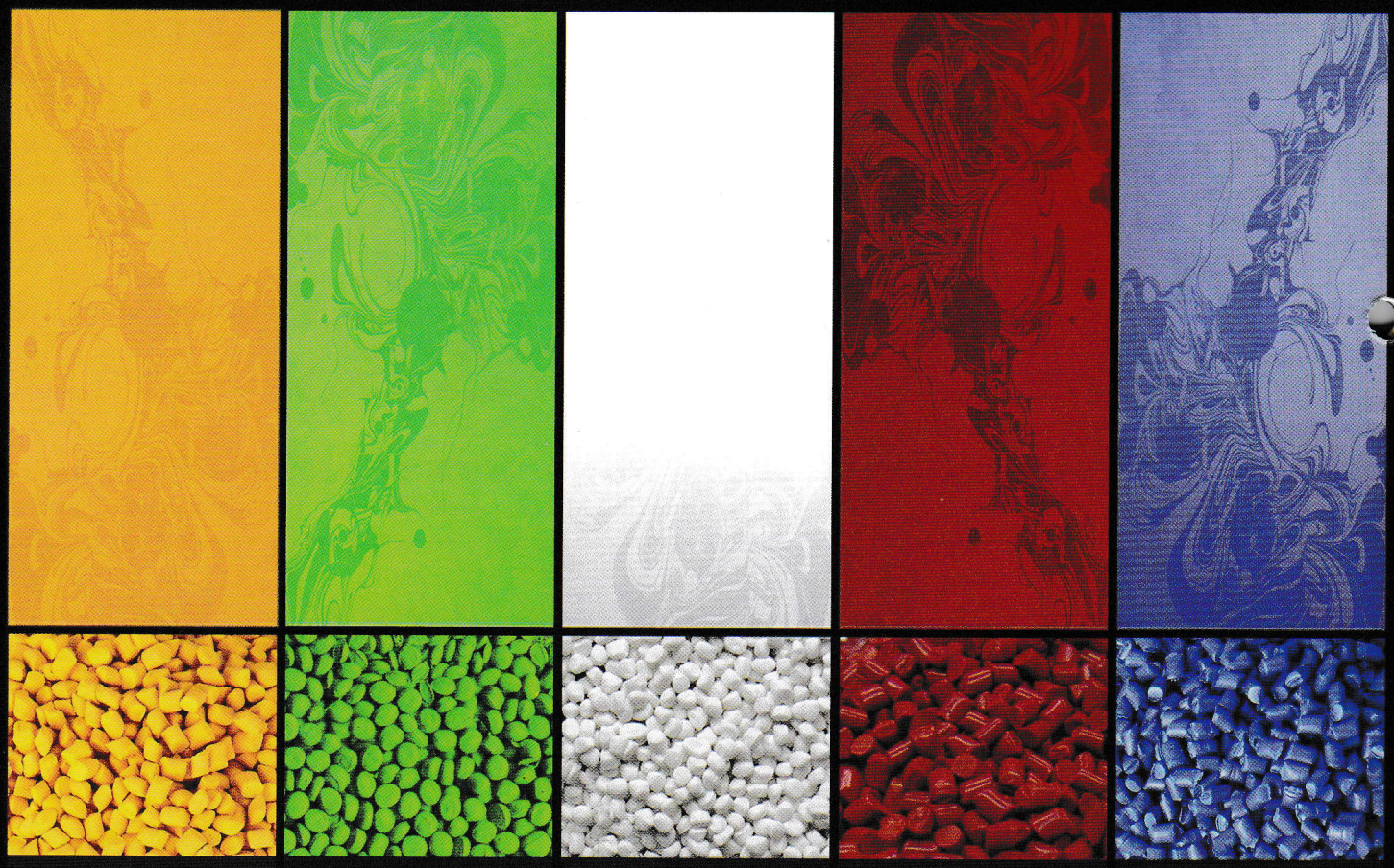
Visitors from all over the country, mainly Eastern India and neighbouring countries like Bangladesh, Nepal, Myanmar, Bhutan, Thailand visited the exhibition in large numbers. Visitors from Italy, Iran and South Africa also visited the exhibition.

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

Looking forward to Indplas'15.

# SHRACHI RENU POLYMER

SHRACHI



## Products Details

Colour Master Batch • White Master Batch
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# GLIMPSES OF INDPLAS 12 EXHIBITION AT KOLKATA




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RAJESH MOHTA


AMAR SETH


PORTED BY:


Thanks for visiting Indplas '12


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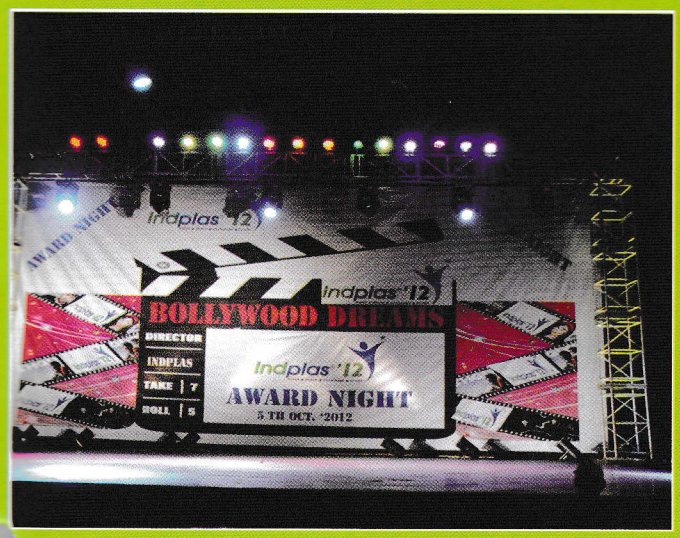
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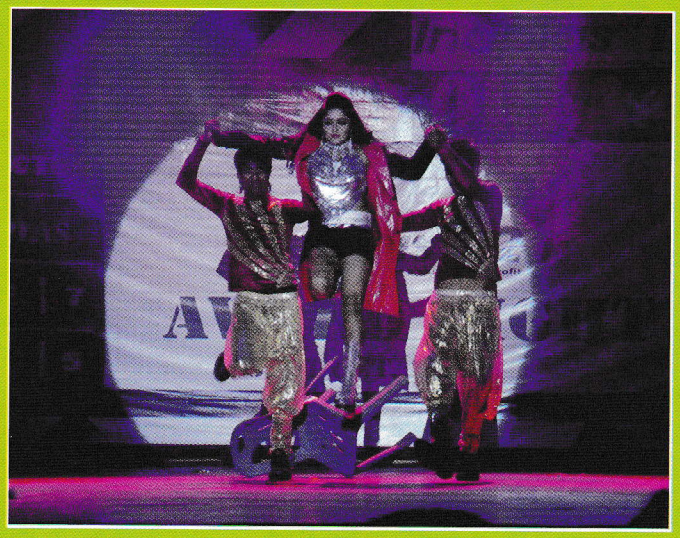

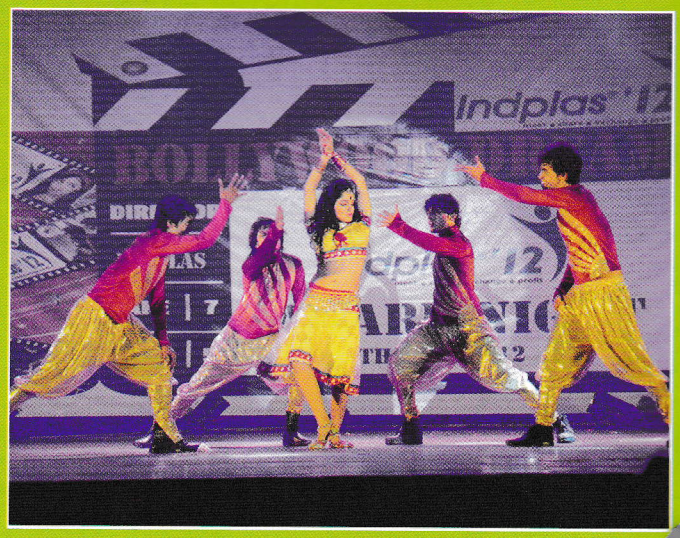
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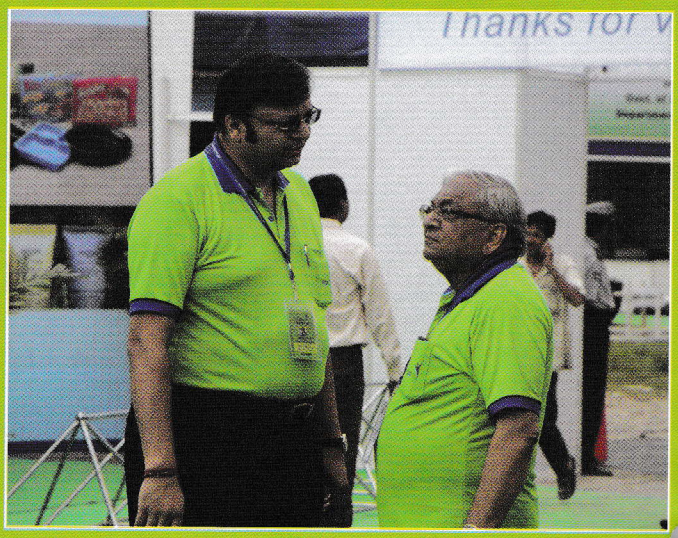
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**Date : 28 November - 2 December, 2012**
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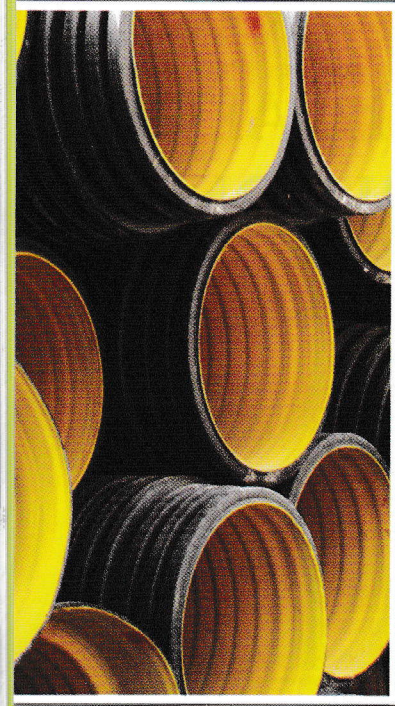
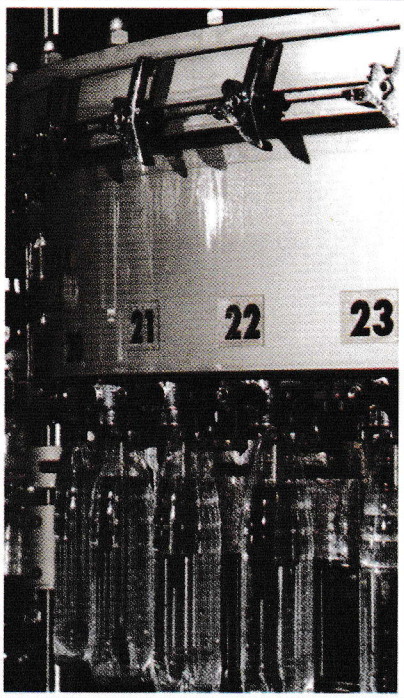

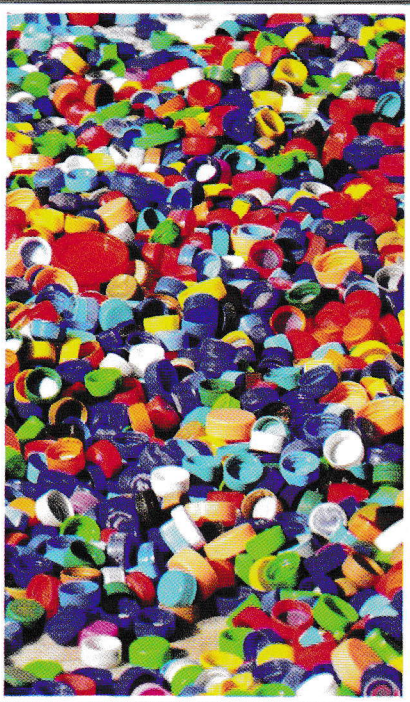
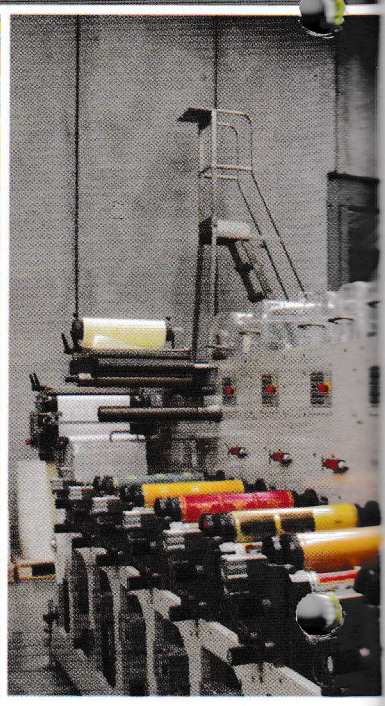

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## FLAME RETADANTS

# A new, versatile flame retardant for olefinic & styrenic polymers

**Mr. Shamik Shah**
VP - Sales & Marketing
Monachem Additives Pvt. Ltd.
Vadodara, India.

**Subramaniam Narayan** and **Marshall Moore** of **Great Lakes Solutions** introduce ***Emerald 1000.***

Known for its excellent efficiency and versatility as a flame retardant (FR), decabromodiphenyl ether (decaBDE) has been widely used in electronics, wire and cable, insulation, textiles, transportation, and other applications for several decades. It is rapidly being phased out, however, due to a combination of restrictions that have been placed on its use in Europe and the US and voluntary industry initiative to halt the production and sale of the product in the US by major manufacturers.[1]

Emerald 1000, a newly developed polymeric brominated FR from Great Lakes Solutions, a Chemtura business, has been demonstrated to be effective in a wide variety of resins including high impact polystyrene (HIPS), acrylonitrile-butadiene-styrene (ABS) polypropylene (PP) and polyethylenes (PEs). Introduced at K2010, this new FR is one of first products in the business' new Emerald product line. The trade name signifies that the new product is an output of Great Lakes Solutions' 'Greener Innovation' strategy, which is focused on designing products that deliver superior performance while having an improved environmental profile.

The new FR is an excellent alternative to decaBDE and provides greater efficiency and performance advantages over other commercial alternatives based on results of studies conducted by Great Lakes Solutions. Emerald 1000 has a high bromine content, compared to other potential alternatives, which implies a higher efficiency as a flame retardant. This is significant because the efficiency of a FR additive is proportional to its bromine content.

In addition to being engineered as a more sustainable alternative, Emerald 1000 also offers the advantage of being a 'drop-in' replacement. The additive has been designed to be a free-flowing powder with a high bromine content, high thermal stability and excellent compatibility with a variety of plastics and polymer dispersion. Furthermore, it requires little if any changes to formulation or manufacturing processes and is effective in most applications where decaBDE was used.

The new FR has specifically been designed to exhibit improved compatibility with many different polymer systems. Unlike decaBDE, which disperses into a polymer as a discrete particle without any softening, Emerald 1000 partially softens during melt compounding at the typical process temperatures of most styrenic and olefinic resins. This characteristic provides improved compatibility and thus improved physical properties.

Some other alternative FRs, such as the compound identified as 'FR3' in the examples below, melt below the polymer processing temperatures, which results in a plasticising effect, a behaviour commonly referred to as 'melt blending'. The use of melt blending additives can lead to a depression of the material's heat deflection temperature (HDT), a measure of heat resistance under load, or adversely affect other properties, such as the impact strength of the resulting blend.

Because Emerald 1000 has been designed to have the same effect on physical properties and melt viscosity in a plastic formulation as decaBDE, it is advantageous for compounders, fabricators and end-users who wish to maintain a balance of performance characteristics such as impact strength, tensile properties, heat deflection temperature, and melt flow when developing new formulations.

Great Lakes Solutions' Application Research Laboratory compared the performance of Emerald 1000 to

DecaBDE (FR1) and three other commercial alternatives - decabromodiphenyl ethane (FR2), tris (tribromophenyl) cyanurate (FR3) and brominated epoxy oligomer (FR4). Whilst the role of these additives is to provide resistance to ignition and to slow the burning of the plastic once ignited, much of the consideration given to the choice of FR concerns its affect on the physical properties of the formulation once the target flame performance is achieved.

An industry standard screening test for fire resistance in plastics used for electronics applications is Underwriters Laboratories (UL) Test 94, the Standard for Safety of Flammability of Plastic Materials for Parts in Devices & Appliances. Following this standard, the flammability of a plastic material is assigned one of several flammability ratings depending on its burning behaviour.[2]

In the studies described below, plastics were formulated with various FR additives and the required corresponding loading of antimony trioxide (ATO) synergist in order to achieve a V0 rating according to the UL 94 standard. The efficiency of each FR was thus determined by the quantity required to achieve this performance. The effect of the additive on the physical properties of the plastics was also compared.

Emerald 1000 was found to demonstrate higher efficiency in terms of required bromine content to achieve V0 performance when compared with other commercial FR s. In HIPS, as shown in Table 1, V0 performance was achieved at 12% loading for the new additive, as well as FR1 and FR2.

Having demonstrated the efficacy and efficiency of Emerald 1000, a comparison of the resulting physical properties of the FR formulation in these resins was studied. In each case, a battery of standard physical property tests was conducted. As the name implies, impact strength testing evaluates the resistance to breakage, i.e. the toughness of the plastic.

Two tests were employed in these studies. The Notched Izod Impact test (ASTM D256) and the Gardner or Dart impact test (ASTM D5420) provide complimentary testing of impact strength by two different fracture mechanisms. The impact strength comparison is of particular interest because it is a property that is typically more sensitive to the addition of FRs.

HDT (ASTM D648) is an important characteristic for plastics used in applications that experience prolonged exposure to elevated temperatures, such as electronics housings or automotive parts. This property can be either positively or negatively affected by various FRs. An alternate method for predicting service temperature is the Vicat softening point (ASTM D1525), in which the temperature at which a plastic softens is determined.

Mechanical properties were evaluated as well, including tensile (ASTM D638) and flexural (ASTM D790) properties. Finally, the rheological, or melt viscosity profiles, were also compared. When developing a 'replacement' formulation for an existing application, maintaining comparable rheological properties is often critical. A significant change in melt viscosity can result in a need to change conditions or even equipment in the fabrication operation, which can lead to added cost and development time.

**HIPS & ABS**

In HIPS Emerald 1000 offers very good impact resistance, both in the notched Izod impact strength test and in the falling dart, or Gardner impact test (Table 1). As indicated, Emerald 1000, FR1 and FR2 were tested at a loading of 12%. FR3 was tested at a higher loading to compensate for its lower bromine content. All formulations also contained 4% ATO, which is typically used as a synergist with brominated FRs in thermoplastic formulations.

Properties evaluated included the melt flow index (MFI) and Vicat softening point, which is an indication of the temperature at which moulded parts may deform. The MFI results indicates that Emerald 1000 will result in a minimal change in the melt processing conditions as compared to DecaBDE, while the Vicat test indicates that in HIPS formulations, the new additive will have at least the same level of resistance to heat-induced warpage.

Similarly in ABS resin, Emerald 1000 exhibited good efficiency in terms of the loading level required to achieve a V0 rating in the UL-94 vertical burn test. It also showed good compatibility with the polymer, leading to good retention of physical properties The properties summarised in Table 2 indicate that Emerald 1000 offers good impact resistance while maintaining a high heat deflection temperature (HDT), strain at break and tensile properties.

**PP & PE**

The flammability and mechanical properties of Emerald 1000 in a PP copolymer are summarised in Table 3. A comparable balance of melt flow, tensile strength, elongation and impact properties are achieved when compared to FR1 and FR2. Emerald 1000 was also found to be equally effective as a FR in talc-filled polyolefins and can be extended to other filled systems.

A further test of the efficiency of the new FR was also conducted. PP copolymers containing equal amounts of FR and synergist for three different additives were subjected to the limiting oxygen index test (LOI), which measures the amount of oxygen required to maintain a flame as a sample is burned. A higher percentage of oxygen being required so sustain a flame during the test indicates greater fire resistance.

Emerald 1000 was determined to have a slightly higher LOI value (Table 3) than the other FR systems in PP. Therefore, it may be possible to use reduced loadings of the new FR,

depending on the specific formulation.

For wire and cable applications where HDPE is widely used, Emerald 1000 has been found to be a good drop-in replacement for decabromodiphenyl ether (FR1) and decabromodiphenyl ethane (FR2). The basic properties of Emerald 1000 in HDPE are shown in Table 4. It can be clearly seen that the new additive provides equivalent or better performance than the traditional FR s.

**Recyclability**

Recyclability of thermoplastics used for production of injection moulded parts is essential both at the beginning and end of the life-cycle of the parts in order to minimise cost in the manufacturing operation and to manage post-consumer waste. Emerald 1000 exhibits excellent recyclability and good property retention after multiple cycling in injection moulded materials.

In a study conducted with Emerald 1000, a total of five injection moulding cycles were carried out in which 25% of a moulded HIPS formulation from sprue and gate was ground and added back into the next cycle. Excellent property retention was seen in the UL-94 flammability tests, Notched Izod Impact tests and colour evaluations.

The rheological stability of the HIPS formulation containing Emerald 1000 is illustrated in Figure 1. After five cycles, no apparent change in the viscosity to shear rate curve can be seen.

**Conclusion**

As the transition from DecaBDE to alternatives continues over the coming months and years, there will be increasing demand for effective alternatives. The studies presented in this article demonstrate that Emerald 1000 provides an excellent option for DecaBDE replacement with a better overall match to its physical and rheological properties than other available alternatives. Extensive evaluations of Emerald 1000 are ongoing as Great Lakes Solutions prepares for commercial production.

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# Dynomax making a push into medical molding

Wheeling-based company Dynomax Inc. plans during 2012's first quarter to boost its capacity to process thermoset and fluorosilicone resins with three new Arburg injection molding machines: two 110-ton electrics and one 28-ton hydraulic.The company is making a "strong push into medical" molding and tool making, said Mark Zic, director of business development. Currently, "we are doing some small runs" in the medical market, he said. Currently, Dynomax operates 13 hydraulic and seven electric presses with a total clamping-force range of 38-110 tons, shot sizes of 0.6-7.6 ounces and various vertical and horizontal configurations.

# UFP Technologies launches new branding

Georgetown based UFP Technologies Inc., a producer of custom-engineered foam components, products and specialty packaging, has unveiled its new unified brand. All of the company's various brands and product lines, including United Foam, Molded Fiber, Simco Automotive, United Case, and others, will now be marketed under the UFP Technologies brand name."Over the past eight years, we have doubled our sales, entered new markets, and added many important capabilities," said Mitch Rock, vice president of sales and marketing.

# Sorona Polymer – Sustainable Polymer

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**Abstract:**

Polyester is one of the great man made fiber discoveries of forties and has been manufactured on industrial scale. They are the first choice for apparels. Modification of polyester is a factor in research of fibers that have new characteristics and enhanced performance. Sorona is considered to be most important fiber after polyester period. In this article we have reveiwed about various sources of raw materials for Sorona which include two chemical and one biological method. Also we have stated various properties, advantages and different applications of sorona fiber.

## 1. INTRODUCTION:

For thousands of years, the use of fibers was limited by the inherent qualities available in the natural world. Cotton wrinkled from wear and washings, silk required delicate handling while wool shrank and was eaten up by moth. Several efforts were taken to remove these defects, out of which introduction of synthetic fiber was one successful attempt. With the continuously growing requirements of human beings, fiber industry evolved by the development of synthetic fiber. Today, in terms of total fibers produced globally, share of synthetic fibers is larger than all natural fibers put together[1]. But, such fibers increased dependency on crude oil as they are manufactured from fossil oil derivatives. The fact remains that the fibers from such source are non-biodegradable and process of manufacturing is non-ecofriendly[2].

Awareness on environment and ever increasing demand for sustainable textiles has put pressure on researchers to search for eco-friendly options in the fiber world. Especially, in the developed countries demand for organic, green or eco-friendly products were never so large and high growth rates reported by several news and research reports. Responding to environmental, sustainability, business and market needs, Du-Pont company has comm-ercialized a new polymer platform, SORONA, based on propanediol (1,3-PDO)[3]

Sorona polymer can easily be transformed into fiber and other articles to offer unique properties and fulfill customer's needs. The elasticity and dyeability of sorona are better than those of fibers belonging to polyester family which makes it useful in engineering plastics, films, carpets and clothing materials. For these reasons, sorona based fibres are considered as the most promising candidates for replacement of PET.

## 2. SORONA POLYMER :

It is polymer created by DuPont, based on 1,3-PDO. Sorona is poly(trimethylene terephthalate) ( PTT or 3GT), a condensation product of 1,3-PDO and terephthalic acid (TPA) or dimethyl terephthalate (DMT). Sorona belongs to poly-ester family among which poly(ethylene terephthalate)(PET or 2GT) & poly (butylene terephtha-late)(PBT or 4GT) are important member. Corterra is the trade name for sorona[4]. Sorona is one of the important new materials for fiber & fabric produced from it are softer, elastic, anti-static, durable & so on. Synthesis of sorona remained non-commercial for long time for economical reason. One of the starting material i.e. 1, 3-PDO was very expensive which made PTT difficult to be comm-ercialized[5]. Recently, methods have been established for producing 1,3-PDO in commercial quantity from petrochemical sources as well as some renewable sources via biological processes.

It has been observed that sorona from the renewable sources has better environmental footprint & has several advantages over other polymers like

1 The overall PTT polymerization process is more energy efficient than other polymers.[6]

2 Greenhouse gas emission in the manufacture of bio-PDO has been demonstrated to be about 40% less than for petrochemical PDO.

3 Further processing of PTT also saves energy due to lower temperature required for both remelting and dyeing.

4 Recycling of PTT is much easier due to absence of heavy metals in the product & lower processing tempe-ratures, compared to PET & Nylon[7].

## 3. POLYMER MANUFACTURING :

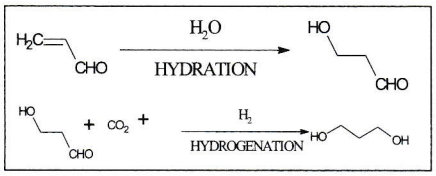
Raw material for PTT manufacturing are 1,3-PDO and DMT or TPA. DMT or TPA can be obtained from petro-chemical sources. PDO can be obtained from petrochemical sources as well as from some renewable sources. PDO obtained from renewable sources is known as Bio-

PDO. Recently, method has been developed for producing Bio-PDO from corn sugar and has been found effective.

### 3.1 PDO FROM CHEMICAL SOURCES :

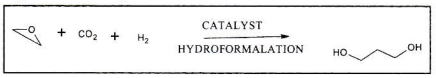
Initially, PDO was synthesized & marketed by Degussa[8] in small quantities as fine chemical. This route first selectively hydrates acrolein, producing intermediates 3-hydroxy propionaldehyde that can be used to produce PDO by catalytic hydro- genation (Scheme 1)

**SCHEME 1: Synthesis of 1,3-PDO using hydrogenation process**




Recently, a widely acceptable route for producing PDO has been introduced by company called Shell. This route produces PDO by hydroformylation of ethylene oxide with synthesis gas (Scheme 2)

**SCHEME 2: Synthesis of 1,3- PDO using hydroformylation**




### 3.2 PDO FROM BIO-LOGICAL PROCESS:

Bio-PDO is the PDO developed from biological sources. Need for bio-PDO developed from several factors like

1 Difficulty & cost of producing "polymer & fiber grade" PDO

2 Sustainability of renewable feedstock vs. non-renewable feedstock.

3 Efficiency of bio-PDO processes showed that they are economically competitive with established processes.

First raw material used for producing bio-PDO is corn sugar[9], well known as plentiful & inexpensive raw material. Conversion of glucose to PDO was observed to occur in two stages: first by yeast to intermediate product, glycerol, then by bacteria to PDO. Recently, a bio-catalyst has also been developed to do both steps in single fermentation stage.

### 3.3 PTT SYNTHESIS:

A schematic diagram of a typical continuous polymerization is shown in figure 1[10]. PDO, DMT, catalyst & additives are fed to the ester exchanger. Reaction by-product, methanol is seperated & removed from the transesterification process. Reaction products are fed to flasher where most of the excess PDO is removed & recovered. Next is the prepolymer-isation where - reaction takes place, & more PDO is recovered. Polymer is sent to finisher under vacuum, further increasing the molecular weight of the polymer. Polymer is extruded, water cooled & cut into pellets & packed for shipping. Here, the esterification temperature should be controlled between 215 °C & 235 °C. The polycondensation can be carried out between 250 °C & 270 °C under vacuum. Ethylene glycol titanate can be used as catalyst in esterification reaction while antimony acetate catalyst for polycon-densation reaction[11].

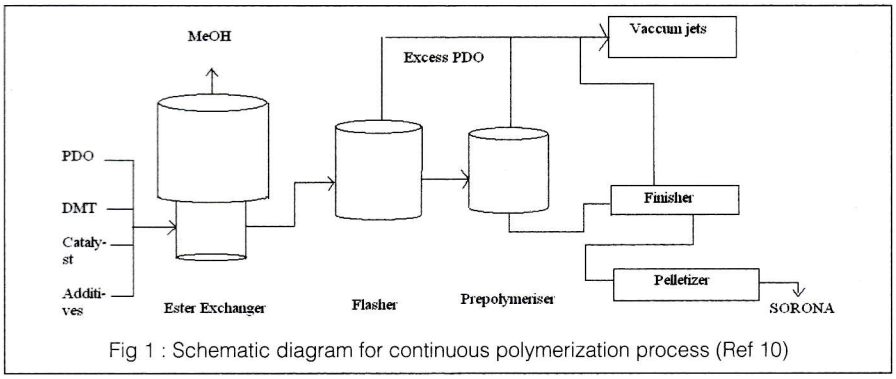
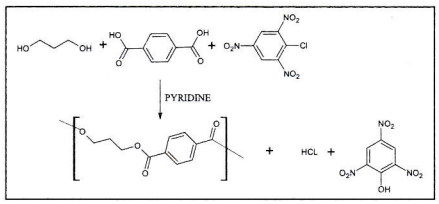



Fig 1 : Schematic diagram for continuous polymerization process (Ref 10)

Synthesis of PTT using TA & 1,3-PDO is also possible in presence of picryl chloride using pyridine as solvent. This reaction is carried out for 15 hours, giving PTT with 85% yield.




### 3.4 REMELTING:

As with most of the polymers, PTT is also sold in the form of pellets to customers. These pellets are then remelted to molten polymer & cast, spun or processed into intermediates or end use products. Since, remelting & processing of PTT is more sensitive to moisture & other impurities, special efforts are taken to ensure PTT is clean, dry & free of other polymers. Pellets must be dried to <40 ppm moisture before drying, also a nitrogen environ-ment is recommended for drying.

## 4. POLYMER PROPERTIES:

It is linear semicrystalline polymer with a melting temperature of 228 °C and a glass transition temperature of 50 °C.

**a) Durability/Resilience:**

Fiber durability, which in carpet applications is measured by the resiliency of the fiber and its ability to recover from compression, is together with stain resistance the most important property that consumers look. This property is inherently better in fibers made from PTT vs. PET, because of PTT's chemistry and molecular design. PET and PTT crystallize into triclinic unit cells during fiber formation. However, the glycol portion of their chemical chains crystallizes into different conformations. The two methylene units in the glycol portion of PET are arranged Trans to each other, whereas the three methylene units in PTT are arranged in a gauche-gauche conformation[12]. Because of the methylene diol's conformations, PTT chains are contracted by 24.7% while the PET chain is fully extended. Also the benzene ring of the terephthalic ester groups of PET are oriented parallel to each other in every chemical repeating unit. However, the orientation of PTT's benzene ring in the successive terephthalic ester units is at an angle to each other, thus PTT molecular chain forms a 2/1 helix, which is made up of two repeating units per turn which introduces a zigzag shape to the polymer chain. This difference is illustrated in fig 2[13] which compares the molecular structures of PET and PTT. As a result of this structure, compressive forces translate at the molecular level to bending and twisting of bonds, rather than just stretching. The molecular structure of PTT is more like a coil spring compared to a straight wire structure in the case of PET polyester. Therefore, PTT fiber can take an additional

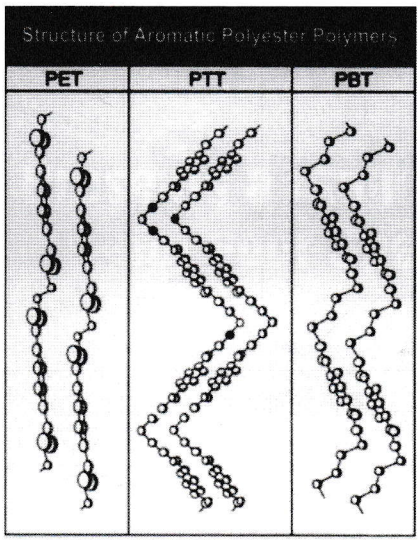



Fig 2. Molecular shape of PTT (Ref 13)

level of applied strain and recover completely.

Accordingly, when a PET fiber is subjected to compression forces in carpet applications (e.g. when carpet is walked on or subjected to carpet industry tests that simulate foot traffic), the molecular chain structure of PET changes and develops a larger permanent set or crystal deformation which is not completely recoverable. This causes consumer carpet made from PET polyester to develop a crushed appearance where the carpet fibers do not continue to stand up as they did when the PET carpet was new. In the case of PTT, compression forces in carpet applications cause the molecular chain structure to deform.

However, the crystalline structure is able to recover without developing a permanent set. The carpet fibers continue to stand up and appear new for a significantly longer period of time.[14]

**b) Softness :**

Softness is important to the consumer for both carpet and apparel applications. Consumers judge the softness of a residential carpet by touching or walking on the upright twisted fibers or yarns. The ease with which the yarns bend over is a measure of softness. Consumers judge the softness of a fabric by assessing its hand or drape (the ease with which conforms to the shape of the body). The degree of softness in both cases is proportional to the amount of force required to bend the fiber. The laboratory measurement of the amount of force required to bend a fiber is known as fiber modulus, which can also ascertain the relative softness of the resulting fabric or article. The lower modulus of PTT fibers over PET fibers is explained on a molecular level by the lower crystalline modulus of PTT. The odd number of carbon atoms in the tri-methylene constituent of PTT results in different chain conformations for PTT as compared to PET. PTT conformation is more helical or spring like, whereas PET is straighter like a wire. Naturally, more force is needed to deform a straight wire while very little force is required to deform a coil spring to the same extent, therefore, PTT with coil spring structure has a very low crystal modulus, 2.5 GPa vs. 107 GPa for PTT and PET crystals, respectively15. As a result, the crystals of PTT are relatively weaker and easier to bend compared to PET and the fiber made from this polymer has lower modulus. Evidence of this different crystalline modulus caused by molecular structure differences is apparent also in the higher glass transition temperatures (Tg) and crystalline melting temperatures (Tm) of PET vs. PTT. These higher temperatures generally correspond to stiffer molecular structures.

Some of the other properties of PTT are also compared with some polymers in the following table 1[16].

From the above table it is clear that along with excellent stretch recovery PTT also provides other advantages like excellent physical and chemical properties, dimensional stability, low moisture absorption, easy care, good weather resistance, easy process ability and recyclability.

## 5. ADVANTAGES OF SORONA POLYMER:

### 5.1 Spinning:

Low melting temperature than PET/ Nylon 6,6 helps in lowering the energy cost. Since melt temperature is similar to nylon 6, PTT can be spun on spinning machines originally built for nylon 6 and polypropylene. Fiber cross sections other than circular can also achieved with PTT to get desired attributes.

### 5.2 Wind up:

Higher stretch and recovery makes winder setup easier for PTT. Standard wind up units used in industry can be used for PTT.

### 5.3 Dyeing:

Effectively disperse dyed fibers can be obtained at atmospheric boil (1000C) without any carriers or pressurization. Once dyed, fabric exhibits deeper shades and superior wash fastness[17].

### 5.4 Films:

PTT can be cast into films by optimizing the process conditions used for polypropylene and nylon 6. This optimization is required to eliminate film brittleness of cast films. PTT can be modified (i.e. copolymerized) or blended with other commercially available polymers (2GT and 4GT) to make films with variety of properties.

Table 1 : Comparison of properties of Sorona with other fibers (Ref. 16)

| Fiber property | Nylon 6,6 | Nylon 6 | Acrylic | PET | SORONA | PLA | Rayon | Cotton | Silk |
|---|---|---|---|---|---|---|---|---|---|
| Specific Gravity | 1.14 | 1.14 | 1.18 | 1.39 | 1.33 | 1.25 | 1.52 | 1.52 | 1.34 |
| Tg (°C) | 40-55 | 40-60 | - | 70-80 | 45-55 | 55-60 | - | - | - |
| Tm (°C) | 265 | 220 | 320 (degrades) | 260 | 228 | 130-175 | - | - | - |
| Tenacity (g/d) | 6-10 | 5.5 | 4 | 6 | 4-5 | 6 | 2.5 | 4 | 4 |
| Moisture regain (%) | 4 | 4.1 | 1-2 | 0.2-0.4 | 0.2-0.3 | 0.4-0.6 | 11 | 7.5 | 10 |
| Elastic recovery (5% strain) | 89 | 89 | 50 | 65 | 100 | 93 | 32 | 52 | 52 |
| Refractive Index | 1.54 | 1.52 | 1.5 | 1.54 | 1.57 | 1.35-1.45 | 1.52 | 1.53 | 1.54 |

### 5.5 Other advantages:

PTT is highly resistant to most stains and hence no need for surface treatments with additives or coatings. PTT also resists UV degradation better than other fibres, shows lower pilling, low water absorption and also lower electrostatic charging.

## 6. APPLICATIONS AND END USES:

In the end use performance, sorona polymer show mechanical properties better than nylon. In combination (blend) sorona exhibit chemical properties better than PET.

### 6.1 Apparel / Carpet:

Due to its softness & natural hand, printability, elasticity & easy dyeability, sorona can be significantly used for apparels. Its resistance to chlorine & UV also makes it important in the sports market. It can be blended with some natural or synthetic fibers to improve softness, stretch recovery & other functional attributes. Carpet with variety of colors & styles with good dye uniformity can be obtained with sorona. Its properties like superior bulk, resilience, texture retention, stain resistance, easy dry & softer feed make it beneficial for carpet.

### 6.2 Films:

Sorona, either as in modified or blended with other polymers can successfully be used in films to obtain the desired advantages & increased value. A combination of properties of sorona like oxygen & water vapour barrier, printability, heat sealability provides advantages in food packaging applications.

### 6.2 Nonwovens:

Nonwovens are softer, flexible air permeable and have better elastic recovery than PET. Nonwoven application is in filter media.

### 6.3 Composites:

To increase bending strength, tensile strength, glass fiber or natural fiber can be incorporated in sorona[18]

## 7. CONCLUSION:

Sorona polymer provides functionality and attributes different from other polymeric material in textile world. Since, the production process of bio-PDO has been successfully commercialized, rapid growth in this area is expected. Also, sorona polymerization process is claimed to consume lower energy which makes it a sustainable polymer a competitive substitute for other polymer. Thus Sorona manufacturing is estimated to be competitive with other similar types of commercially available polymers. Finally, it can be said that sorona is well poised to gain acceptance in the textile market as a speciality polymer that brings unique properties to the end products that are valued by consumers.

# Pune gets its first road made from plastic waste

The Pune Cantonment Board (PCB) recently repaired half a km of the road outside Hutchings High School by integrating plastic with tar known as polymer-modified bitumen, thus making good use of discarded plastic and preventing further damage to the environment. This move has been carried out with the advocacy of Central Pollution Control Board (CPCB) to prevent the persistent problem of potholes on the roads and to increase the resistance to water at a lower construction cost. ndtv. com reported, PCB Vice President, Prasad Kedari said, "It's comparatively cheaper than the usual road making cost and since it is on a trial basis we are planning to carry it out on roads that are not used extensively. This is our new initiative." Such road constructions were earlier carried out in the South and this is the first time it has been experimented in the city. "By using plastic we are recycling it and preventing further damage to the environment," he added.

According to the contractors, 90% of bitumen is amalgamated with 10% of plastic that includes everyday waste ranging from carry bags to miscellaneous items like biscuit and gutka packets. These products are shredded into small pieces and mixed with the liquid before laying it on the road. Contractors say that the cost of the entire process is not more than Rs. 325 per metre.

# Clariant unveils Exolit® EP 150 and EP 200 for epoxy resins

Two pioneering, low dosage non-halogenated flame retardants for epoxy resins to the electrical and electronics (E&E) industry have been unveiled by Clariant. Cutting-edge Exolit® EP 150 and EP 200, developed specifically for epoxy laminates, set a new benchmark in high-efficiency halogen-free flame retardants for printed circuit boards. The reactive flame retardants are currently available as laboratory product samples. Exolit EP 150 and EP 200 have unmatched high phosphorous contents of 25% and 29% respectively which enables only a low dosage of flame retardant to be used to reach the desired fire protection effect. For example, UL 94 V0 fire ratings can be achieved at a loading of 50% less than with conventional flame retardants. The Exolit EP products are easy to use, showing a broad compatibility with epoxy thermosets. Exolit EP 150 is a low viscosity liquid which makes it suitable as a flame retardant for infiltration processes. While Exolit EP 200 is available in solid form, it will melt at usual processing temperatures to provide the same user benefit. Laminates produced with Exolit EP flame retardant fulfill the mechanical, electric and electronic properties required by IPC test specifications. EP 150 and EP 200 are the latest additions to Clariant's highly-regarded Exolit non-halogenated range, known for its total resin flame retardant integrity even under harsh conditions and in sophisticated applications. With the non-halogenated laminate market share growing from 2% in 2004 to 13% in 2010, Clariant is expecting a lot of interest from potential customers in the efficiency-boosting Exolit EP grades. It has already begun the up-scaling process for commercial production.

"Clariant's Exolit EP grades meet the market preference for liquid flame retardants. But most importantly they outperform conventional flame retardants in terms of efficiency and, as such, offer exciting potential to printed circuit board manufacturers looking to switch to non-halogenated flame retardants and to be more efficient," comments Adrian Beard, head of flame retardants marketing, Clariant. "The full-house at our presentation in Taipei reinforces the high level of interest in non-halogenated flame retardants. We are looking forward to sampling the new grades with customers and hearing feedback based on their expertise and requirements."

# Axion sees potential for recycled film

Closed-loop recycling of post-consumer and retail waste plastic films could become a full-scale commercial reality in England within four years, according to Axion Consulting, a Manchester-based resource recovery specialist. Axion's research shows it is technically possible to manufacture commercially-useful products for the retail sector from mixed post-consumer film packaging. Refuse sacks, external hoardings, shelving and in-store displays are among various products that could be made from waste supermarket plastics and either sold or used within their store networks. Axion worked with three manufacturers – CeDo, Centriforce Products and Protomax Plastics – on a series of demonstration trials of post-consumer films sourced from a leading retailer's front and back of store collections. According to Axion director Roger Morton, the "great potential" shown by the studies should give manufacturers confidence to invest in production capability, which in turn would stimulate local authorities to accept waste plastic films in their recycling collections. He predicts this could happen within four years. "This is a tremendous step in the right direction to really grow film recycling capacity in the UK over the next few years," Morton said. "Consumers want to see their plastic waste given a new second life as they're now far more conscious of what they're throwing away. Ultimately, consumer demand will drive this whole closed-loop recycling process."

# Table manufacturer Lifetime Products wins patent fight in China

American plastic table manufacturer Lifetime Products Inc. said it has successfully taken its long-running patent infringement fight to China, winning its first court case there against a local manufacturer. Lifetime, based in Clearfield, Utah, announced Nov. 21 that it won a trademark infringement case in Shanghai courts against Zhejiang Lifan Furniture Co. Ltd., which it said was manufacturing folding tables using Lifetime's logo. Lifetime said the Shanghai Pudong New District People's Court ordered Lifan to cease and desist from using Lifetime's trademark, destroy the infringing molds and pay Lifetime a penalty of 150,000 Chinese yuan ($23,500). "This is a significant milestone for Lifetime Products, Inc. and U.S. manufacturers as a whole," said Lifetime President Richard Hendrickson. "This judgment marks the first time Lifetime has successfully enforced its Chinese intellectual property rights in a Chinese court."

# Agri-Industrial Plastics adds capacity for tanks

Fairfield-based Agri-Industrial Plastics Co. is adding two new Kautex blow molding machines as it continues increasing capacity to serve non-automotive fuel tank markets including lawn and garden equipment, all-terrain vehicles, snowmobiles, off-highway motorcycles and marine applications.The machines will be used to produce six-layer fuel tanks that meet the latest Environmental Protection Agency's emission regulations, officials said. "We continue to evaluate our capacity," said Mick Stielow, sales manager, in a Nov. 18 telephone interview. Fairfield-based Agri-Industrial added two other machines in 2010 to prepare for 2011 production. "We're systematically planning for capacity expansion every step of the way," Stielow said. "We'll have a total of five by the end of next summer.

# Recycled plastic Ecosheet in demand

Luton-based 2K manufacturing is doubling production of its Ecosheet recycled plastic board to meet demand from the agricultural sector. The plywood replacement board is made entirely from unwanted waste plastic sourced from farms, businesses and homes. Farm applications for the board include animal housing for a range of livestock including outdoor pig units. Agricultural merchants now stocking EcoSheet include CPF, CFF, Wynnstay and Bridgmans.

# Centro bags top Rotoplas award

A plastic burial vault made by Centro Inc. won two awards — Product of the Year and Conversion — at the Association of Rotational Molders' Rotoplas conference. Formed Plastics Inc. of Carle Place, N.Y., also picked up two awards, for recycled content and innovation. ARM also announced three student awards. All Rotoplas attendees voted on Product of the Year candidates at the trade show and conference, held Nov. 1-3 in Rosemont. Centro displayed one of the vaults in the product competition area. People stopped to watch a video showing tests that included a backhoe pushing down on one of the buried vaults.Centro began molding the vault for Batesville Casket Co. about a year ago, said Brian Olesen, president and CEO of the rotomolder based in North Liberty, Iowa.Centro bought a new Ferry 330 rotomolding machine, which the molder helped design, to mold the burial vault at Centro's plant in Claremont, N.C. The company molds the vault from linear low density polyethylene and fills it with PE foam. Eight molded-in inserts allow above-ground assembly. Lakeland Mold Co. made the cast aluminum mold.

# MONTHLY CIRCULAR OF THE FEDERATION

**CIRCULAR NO. 64/2012 :** **20th October 2012**

**Sub: Membership of the Federation**

The Federation has received the following application for membership of the Federation :

| | | | |
|---|---|---|---|
| 1. a) | Name & Address of the Applicant Firm | : | **M/S. MAHABIR POLYFABS PVT. LTD.**<br>9/2A, Topsia Road (South),<br>Pushpanjali Chambers, 5th Floor<br>Kolkata - 700 046 |
| b) | Class of membership | : | **Life Dealer Member** |
| c) | Proposed by | : | M/s. K K Polycolor Asia Ltd. |
| d) | Seconded by | : | M/s. Vishambara Investment Pvt. Ltd. |
| e) | Name of representative | : | Mr. Nilesh Maskara |
| f) | Items dealt in | : | Dealer of PP Woven Fabric / Sacks. |

(Circulated in terms of Article 15 of the Articles of Association of the Federation)

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**CIRCULAR NO. 65/2012 :**

**Sub: Consumer Price Index Number for Industrial Workers for Kolkata for the months of January to June 2012**

| Month | Consumer Price Index | |
|---|---|---|
| | Base (1982 = 100) | Base (1960 = 100) |
| January, 2012 | 942 | 4465 |
| February, 2012 | 952 | 4512 |
| March, 2012 | 973 | 4612 |
| April, 2012 | 1004 | 4759 |
| May, 2012 | 1009 | 4783 |
| June, 2012 | 1024 | 4854 |


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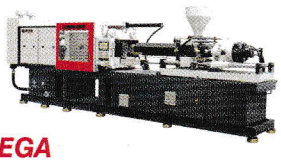
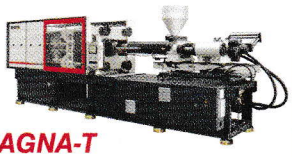
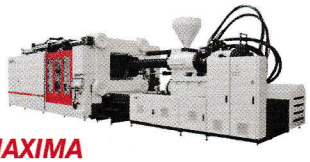


**OMEGA**
Hydraulic Injection Moulding Machine 80 to 910 Ton



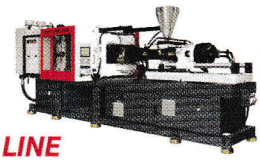
**MAGNA-T**
Toggle Injection Moulding Machine 50 to 500 ton

**ELEKTRON**
All Electric Machine 50 to 350 Ton



**MAXIMA**
Two Platen Injection Moulding Machine 500 to 3000 Ton

**MT ACCUPACK**
Toggle Injection Moulding Machine 110 to 500 Ton



**PVC LINE**
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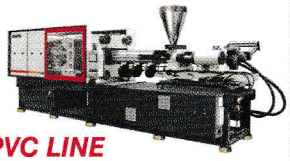
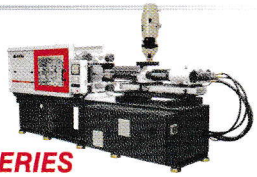


**CPVC LINE**
Toggle Injection Moulding Machine 110 to 500 Ton



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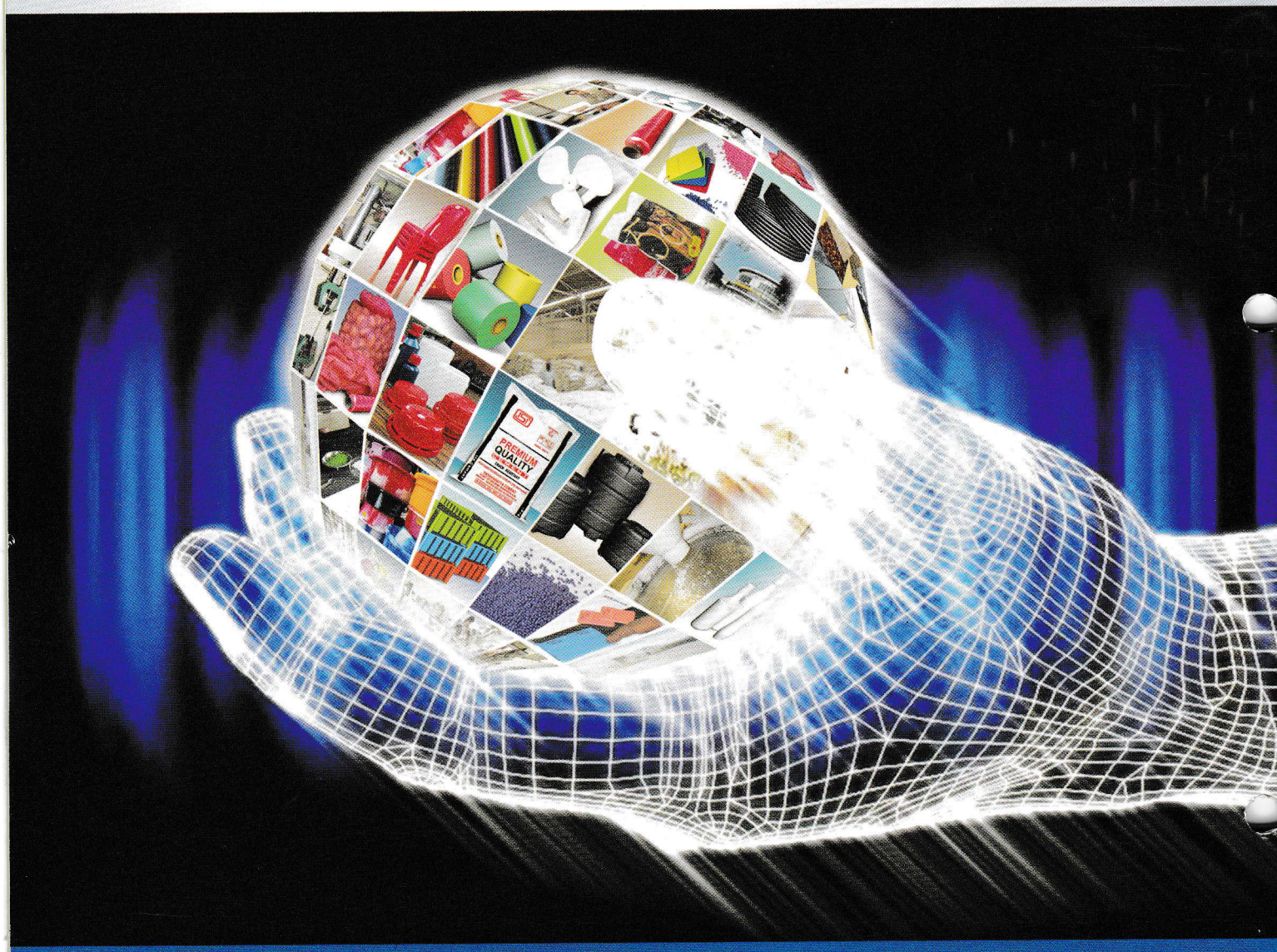


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