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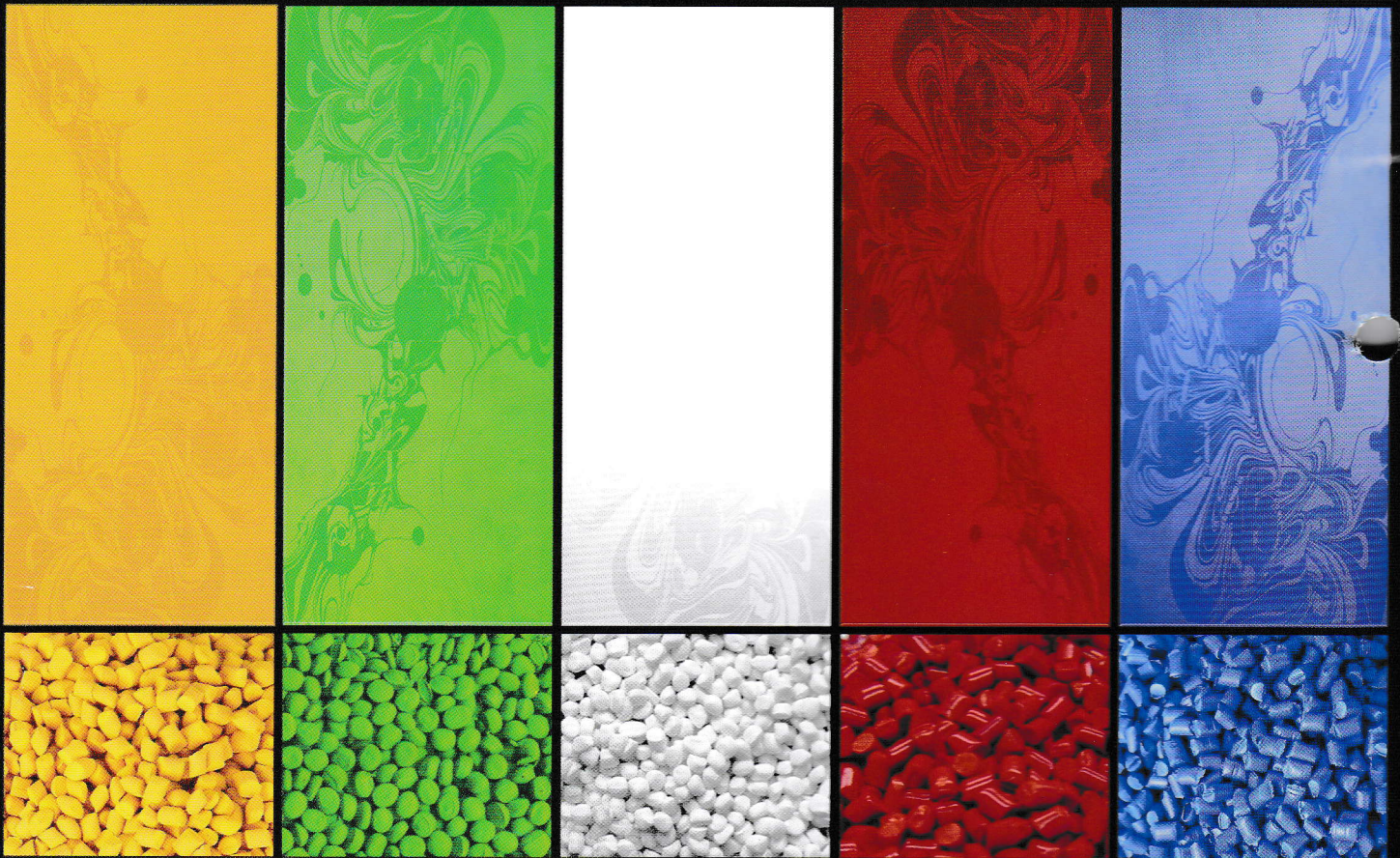


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PLASTICS INDIA

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Editorial



Green is the colour of celebrations in West Bengal. Trinamool supporters have taken to the streets with green abir (*coloured dust*). Women and men smear each other with abir as they celebrate Mamata's triumph in the elections this year. It is a victory for *Ma, Mati, Manush*. Change has become the buzzword in West Bengal. With trends of election results the TMC has gained a single majority and formed a government with Smt. Mamata Banerjee as the chief minister, dislodging the 34-year-old regime of Left Front with a historic win.

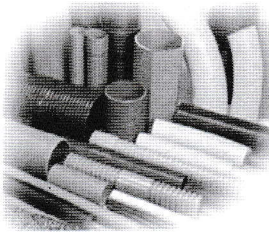


Trinamool alone have won in 185 seats while their ally Congress have won in 42 seats. Along with Congress, TMC has gained an absolute majority. The Left Front has won in 62. The 56-year-old single woman lives with her mother in Kalighat, a poor Kolkata neighbourhood close to a crematorium. The daughter of a teacher, she holds a MA, BEd and LLB, and also was trained in work education. She is known for her fiery temper and frugal lifestyle. A battle-hardened poll veteran, she certainly is. CPM acolytes famously fractured her skull leaving her hospitalised for many months. As she told Jim Yardley of the *New York Times*, "They have attacked me many times. From my belly to my back to my eyes, I'm covered in these things (scars)."

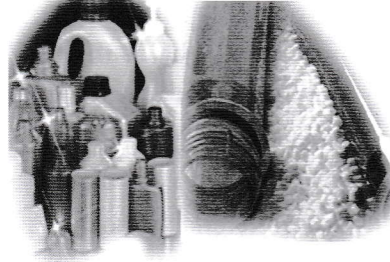
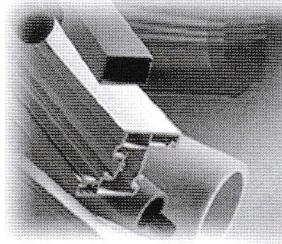
Many questions still remain over debutant CM Smt. Mamata's political agenda, but only time will tell if she lives up to the expectations of the people. So far, to her credit, she has remained humble despite winning by huge margins against a government that had made its dominance felt for 34 years. Thus, we are all ready to see how Smt. Mamta does justice with the industries of Bengal and the state as a whole, Bengal which was once called the Sonar Bangla...!!

Yours truly,

Pradip Nayyar
Editor



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PRESIDENTIAL ADDRESS



Dear Members,

With the completion of Elections in 4 States and a Union Territory, New Delhi will now start taking the unpleasant decisions that have been withheld due to political reasons.

The price of some petroleum products will certainly increase and there is lot of talk of disinvestment in some PSU's. A change in various State Governments is also expected as is being reported by the media. Irrespective of who comes to power, plastics will have to be the stable, safe and cost effective method of packaging.

In this issue I give some inputs on some new areas of development in the field of packaging technology.

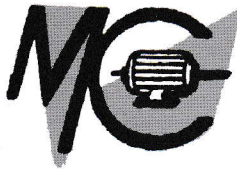
Food and drinks packaging is in a period of rapid change. Several developments have been introduced or are underway in plastics packaging that will aid in increasing shelf life of food and drinks. Scientists are developing a new packaging freshness coating for plastics packaging and they say that it could help increase the shelf life of food and drinks. It consists of a transparent coating made from a combination of clay and polymers that can be applied to plastics packaging materials. This could help keep products fresher for a longer period - for example, helping fizzy drinks and sodas stay bubbly for many months longer than usual. It will give consumers tastier, longer lasting foods and help boost the food packaging industry. The packaging coating combines montmorillonite clay particles - a soil ingredient used to make bricks - with a variety of polymers. Viewed under the microscope, it looks like bricks and mortar, leading the scientists to use the term 'nano bricks' to describe it. The researchers say the film - which is invisible to the naked eye, being thousands of times thinner than a human hair - is not only more cheaper than existing packaging coatings but is also more effective. It has been found that adding the 'nano bricks' coating to packaging, researchers help block oxygen more effectively than silicon oxide coatings used in packaging now. The use of metallized plastics - or plastics with a thin covering of metal or foil - to preserve foods allows oxygen to enter the food packaging, which increases the rate at which the contents inside spoil. The researchers have found that the 'nano bricks' packaging coating was 100 times less permeable than normal packaging. Using the film on plastic bottles helps slow the loss of carbon dioxide, helping sodas and other fizzy drinks stay bubbly for longer.

The new film combines particles of montmorillonite clay, a soil ingredient used to make bricks, with a variety of polymer materials. The resulting film is about 70% clay and contains a small amount of polymer, making it more eco-friendly than current plastics. The film is less than 100 nanometers thick and completely transparent to the naked-eye. When layered onto existing plastic packaging, it adds strength and provides an improved barrier to oxygen. Lab studies have demonstrated the film is 100 times less permeable to oxygen than existing silicon oxide coatings, which means it's likely to be a better oxygen barrier than a metal coating, whose permeability is similar to that of silicon oxide.

We are taking initiatives to have at least one technical lecture per month at the IPF conference room so that members are kept abreast of the changing times.

With warm regards

Sourabh Khemani
President



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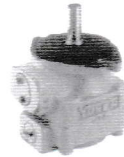
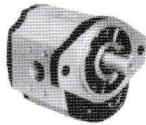
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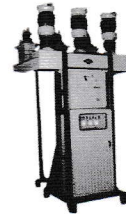
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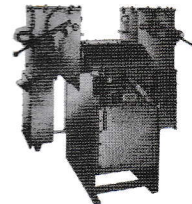
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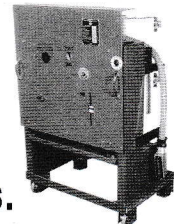


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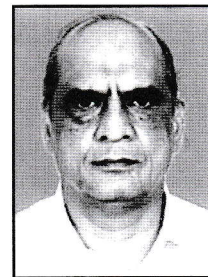
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From the Desk of

The Hony. Secretary



Dear Members

By the time this edition reaches you the elections in West Bengal will be over. All the speculation that has been going on for months as to how the various contestants will fare will be laid to rest. Irrespective of who comes to power, work will have to go on as usual.

IPF is looking into the feasibility of starting a Plastic Entrepreneur Development Programme (EDP) jointly with iLead near Milan Mela Exhibition Ground. Few senior members of the Federation visited iLead on 11th April 2011 where the classes will be initially held. On completion of IPF Knowledge Centre this EDP will be conducted in our Knowledge Centre.

On 23rd April 2011 a brainstorming session on IPF Knowledge Centre was held at Rotary Sadan. The objective of the session was to get new inputs for the development of the Knowledge Centre. Many stalwarts attended the session and some valuable inputs were received. For getting more inputs senior members of our Federation visited the ILPA Infrastructure Development Foundation at Bantala Leather Complex.

On an invitation from IPF, Mr. P. S. Bhattacharyya, newly appointed as Managing Director of Haldia Petrochemicals Ltd. interacted with our Executive Committee members on 02/05/2011 in our Conference Hall. During the course of the interactive session, at the request of IPF Mr. Bhattacharyya gave his consent for IPF to print the name and logo of HPL on Indplas'12 Exhibition brochure and other promotional materials. Stall rent has already been finalised and printing of the second set of brochures will start shortly. For promotion of Indplas'12 Exhibition IPF has also decided to enter into a Barter Deal for complimentary stall, delegation visit, advertisement and publicity with China Taizhou Plastics Industry Association, China.

With Best Wishes

A handwritten signature in black ink, appearing to read 'R. Poddar'.

Ramawatar Poddar
Hony. Secretary

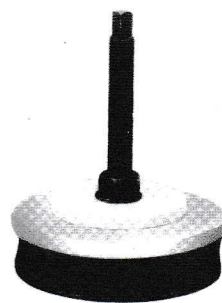
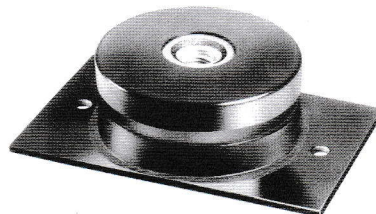
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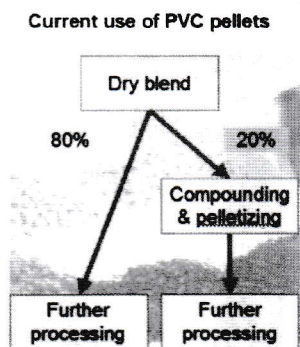
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Introduction : The PVC consumption worldwide in 2009 was about 28 million metric tons. Though product and usage have been criticized quite often, it has not lost any of its importance. The good properties of PVC in functional, economic and ecological aspects will expect an increase of per capita consumption in the next few years. The continuous innovations in fillers, additives, stabilizers and others combined with the various formulations allow PVC to be used in many areas with its individual properties.

Premixing of PVC has not changed much although there have been quite a few innovations in the mixer technologies and also in continuous mixing. Still state-of-the-art are premixes of PVC with additives in high speed mixers in combination with a cooler mixer if required by the following processing machine or for storage reason. The desired result is a good flowable powder, the "dry blend". In most cases, the dry blend is fed directly into the extrusion machine. Very few processes use the granulated form instead of the premix. This is the reason why only about 20% of all PVC dry blends are granulated. This is only a very small amount in comparison to other thermoplastics where up to 95% are granulated, although there are quite a few good arguments for this additional granulating step.



[Figure 1: Premixing against palletizing]

Granulating - what is the motivation?

Certain applications and machinery require the usage of PVC in granular form (Table 1 shows a few examples). The main objective for using granules in these processes is the

operational reliability, which is provided by the good flowability and dust-free transportation of the granules. Only this form allows a constant feed intake of PVC and a stable homogenous plastification. The same applies for injection molding machines where the even feed intake has direct influence on the shot weight and quality.

PVC	Application	Reason / production
Soft PVC	Medical applications such as blood bags, tubes, small profiles	Small extruders for production, low throughputs
	Cables	Quality, single screw extruders
	Shoe soles	Injection molding
Rigid PVC	Pipe fittings	Injection molding
	Small parts for medical usage	Injection molding
	Bottles	Blow molding

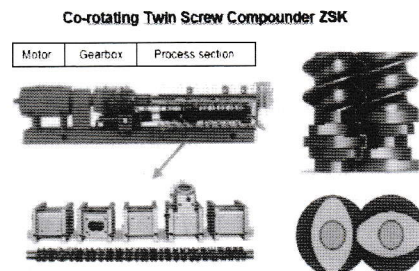
[Table 1: Applications for PVC granules]

The use of pellets makes it possible to use simpler and less expensive machines for final conversion into finished products. Color and formulation changes can be done in an easy and quick way since a pellet fed machine needs less cleaning after changeover of the products.

Twin screw extruder co-rotating (Kombiplast)

The characteristics of the twin screw extruder are the co-rotating screws with an intermeshing design. The screw components wipe each other with a sealed profile. This avoids dead corners and achieves almost complete self-cleaning. The screw set-up as well as the barrel set-up is in a modular design to meet the requirements needed by the process. Compounding and granulating PVC is normally done on machine lengths between 16 L/D and 20 L/D. The screw configuration specially designed for this process consists of conveying, mixing and kneading elements. Conveying elements transport the dry blend and also the plasticized/gelled product. Kneading blocks are primarily used for shear energy input, and for dispersive and low shear distributive mixing. The screw diameter of the conveying and mixing elements is identical.

Compounding and Pelletizing of PVC

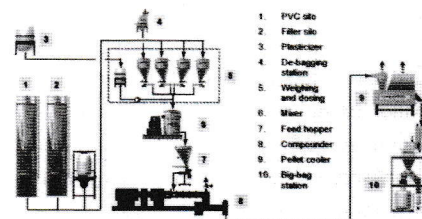


[Figure 2: Schematic layout of a co-rotating twin screw]

The development of the ZSK twin screw extruders started in the early 50s of the last century with low volume and low torque machines. By the continuous development of gear boxes, screw shafts and screw elements, the free volume and power density could be increased. The ZSK, for example, presently has a diameter ratio of 1.55 and specific torque of 13.6 Nm/cm³. A balanced relation between both is important.

Concept for granulating

A general overview beginning from the mixing, processing and granulating up to cooling or drying of the pellets will give an insight to the equipment needed for this task.



[Figure 3: Layout for granulating PVC]

MIXING:

The production of dry blend for granulating is identical or differs only marginally from the dry blend used for direct extrusion. The various components are taken from silos, tanks or containers and are transported into the high speed mixer - either manually or automatically by dosing systems. The high speed mixer is required to premix and distribute PVC, fillers, impact modifiers, reinforcing materials, plasticizer, stabilizer, lubrication, color, pigment and production

aids. Due to the high temperature, the plasticizer is absorbed into the PVC grain and volatiles like humidity can be evaporated by a vacuum nozzle. Depending on the formulation, mixer temperatures of 100°C and beyond are common. The hot mixture is then emptied directly into the inlet hopper of the compounding machine or - depending on the compounding equipment - cooled down in a slowly rotating cooler mixer as a second step. Control of the dry blend temperature is important and is to be kept constant as it has direct influence on the quality.

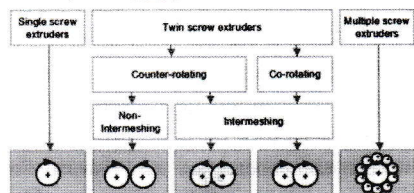
FEEDING:

There is one major benefit in using a twin screw extruder in terms of the way the different raw materials are fed. Instead of premixing all components prior to the compounding step, separate feeding of the raw material components is possible, e.g. color pigments or color masterbatches can be added separately without contaminating the equipment located upstream. Color and formulation changes can be done in an easy and quick way. In addition, separate dosing of the components offers a directly controllable influence on the product quality; with just one setup, a wide range of formulations can be processed and granulated.

COMPOUNDING:

Various types of processing machinery are employed. These include single step designs as in a counter-rotating twin screw extruder and two step designs including planetary roller extruder, Ko-Kneader (reciprocating single screw) and Kombiplast (co-rotating twin screw extruder followed by a single discharge extruder).

Extrudersystems Overview



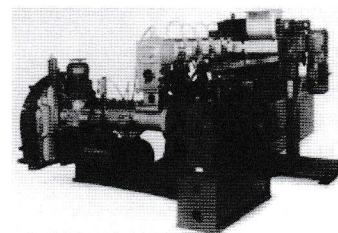
[Fig 4: Common machine systems for compounding PVC]

Only the co-rotating twin screw process will be described in this paper.

The raw materials (either as premix or separately added) are transported to a twin

screw side feeder (ZS-B) that also allows the use of a hot dry blend. The feed intake is specially designed with a high free volume of the screw and an optimized feed inlet with the variable screw speed of the ZS-B screws determining the resulting throughput rate. The mixture is conveyed to the first barrel of the twin screw extruder ZS-K where a rear vent helps to remove air from the powder premix.

Co-rotating Twin Screw Compounder ZSK Type „Kombiplast“



[Fig 5: Schematic layout of a co-rotating twin screw "Kombiplast"]

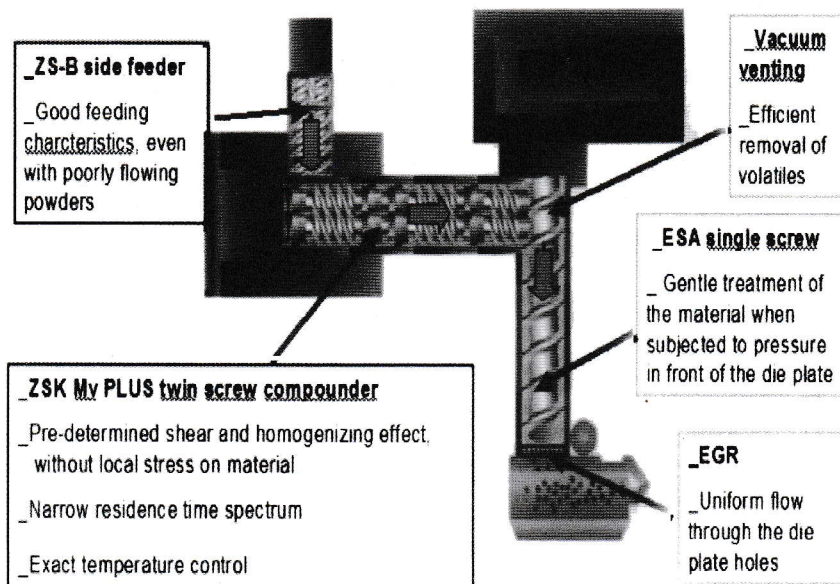
The premix is conveyed to the plastification zone where it is gelled until a crumbly (rigid PVC) or, more or less thoroughly plastified (flexible PVC) homogenous phase is reached.

DISCHARGE:

The mass is then transferred without creation of back pressure to the slowly rotating single discharge screw ES-A in a cascade design. Vacuum can be applied either directly in the barrel section of the twin screw, or in the transfer section between twin and single screw in order to evaporate humidity and further volatiles.

Both the twin and single screw extruders are electrically heated to have an exact temperature control, and cooling in the twin screw extruder is by water whereas in the single screw it is by air. The single discharge screw is required to generate pressure to overcome the resistance of the die plate. During processing, flexible PVC melt pumps are used for pressure build up especially when the machine is also designed to run Polyolefins besides PVC.

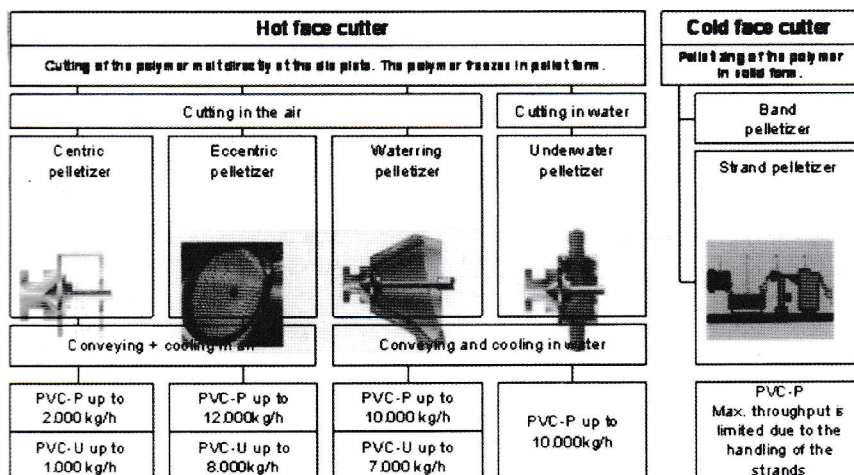
The critical aspect is the viscosity and shore hardness of the extruded product as well as the filler content. Once the viscosity has reached a certain level, lubrication of the bearings is not guaranteed. High filler content can lead to excessive wear in the bearings and cogs.



[Figure 6: Schematic layout of a co-rotating twin screw "Kombiplast"]

PELLETIZING:

A variety of granulating systems for PVC is available depending on the process and market requirements: Dry Cut (eccentric, centric), Wet Cut (eccentric, centric) and Under Water Cut.



[Diagram 1: Granulating Systems]

The PVC "melt" is cut either in air w/o water film or completely under water into pellets and transported to a pellet cooler or dryer where the temperature is brought down to about 10°C to 20°C above room temperature. From there it is transported to storage / mixing silos or to bagging. Hot die face, dry cut pelletizing has been historically used for years for the full range of PVC compounds, both rigid and flexible. Especially high throughputs are granulated with a full die plate of an eccentric granulating system.

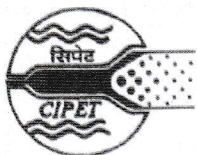
This system includes an offset, multi-hole pelletizer die plate, electric heated die ring, pelletizer arm assembly with 2 or 3 knife blades, pelletizer casing or hood with bottom discharge and a fluidized bed air-type pellet cooler. Limitations to cooling can be seen in very warm climates where ambient air temperature is high. High output rates can also be limited if the pellets start sticking or agglomerating.

Eccentric granulators offer the possibility of bringing the die very close to the screw tip to minimize the dead space. Finding an optimum between a good flow of the die and the allowed amount of product in front of the die plate which can cause decomposition is important.

It is important that the pelletizer can be swung away or disassembled easily and fast. The same is important for the die plate: After each production run, the hot PVC should be removed from the machine. If necessary, remaining product can be removed before the next start and this is especially important for rigid grades.

The still hot granules from the eccentric granulator are transported pneumatically to the fluidizing bed. The pneumatic conveying is not only realized with a pressure or suction operation but also with a combination of pressure and suction, whereas the suction ventilator is set in-between the granulator and fluidizing bed to chop up agglomerates.

Source : Polymer Society



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Infrastructure Development

Infrastructure is the basic physical and organizational structure needed for the operation of a society or enterprise, and the services and facilities necessary for an economy to function. Progress of any nation is measured by the adequacy and quality of infrastructure development and facilities provided to the citizens. India has re-emerged as one of the fastest growing economies in the world in the last few years. India could unleash its full potential, provided it improves the infrastructure facilities which are at present not sufficient to meet the growing demand of the economy.

Need for Sustainable Infrastructure

Infrastructure sector is the largest consumer of materials & energy and is the major contributor of Green House Gases (GHG). Recent studies show that the three largest sources of infrastructure-related greenhouse gas emissions typically are:

- Landfills due to methane emissions.
- Water distribution due to energy consumption.
- Wastewater treatment due to energy consumption.

To control the GHG emission, many countries in the world are working towards developing strategies for sustainable future. Developing sustainable infrastructure is one of the practices many countries are adopting.

Sustainable infrastructure practices intend to increase the efficiency to use of natural resources, reduce operating costs, improve public health and reduce environmental impact.

Under this strategy, various practices are suggested like:

- Water conservation
- Waste recycling
- Energy-efficient pumps and distribution and collection systems
- Energy-efficient wastewater treatment systems

Plastic Pipes for Sustainable Infrastructure

- Energy production from biosolids
- Heating and cooling from wastewater heat recovery etc.

Sustainability through Plastics

Plastics have proved themselves towards sustainable development due to the following:

- Energy efficient materials - utilize less energy at raw material manufacturing, production, transportation and installation stages
- Material use - natural resource saving through recycling
- Low emission processes - low GHG production during manufacturing and usage
- Low waste production - durable and recyclable
- Economic recovery - plastics can be recycled or used to regain intermediate raw materials or used for thermal recovery through incineration
- Disposal of residues - due to recyclability put less burden for disposal

Plastics in Infrastructure

Plastics have become an indispensable part of the infrastructure industry. The infrastructure industry is the second largest consumer of plastics after packaging. Varieties of plastic products used in various sectors of infrastructure development include:

Sector	Plastic Products
Water management	Pipes, water tanks, plastic linings for canals, ponds, geomembranes, septic tanks, irrigation and landscape management
Transportation	Geotextiles, automotive parts, traffic management devices
Communication	Cables, pipes for cable ducting
Energy	Pipes for gas transport, electrical cables
Building & Construction	Pipes, plumbing fixtures, sidings, floorings, windows and doors, gratings, railings

Among all the infrastructure sector applications pipes contribute the major share. Pipes made of traditional materials have been used in these applications for many years. However, plastics pipes have established

themselves in this area as well on account of advantages including-

Energy conservation: Due to smooth inner surface, the energy required to pump water is less than in traditional material pipes. It also prevents incrustation and microbial growth which retains the inner diameter of the pipe over the service life. This in turn does not change the pumping energy requirement, saving electricity for the nation.

The Energy Conservation Building Code (ECBC) released by Govt. of India recommends the use of energy efficient and energy conserving products in buildings. Hence usage of plastic pipes has got major attention in building and construction sector.

Most of the plastics utilize much lesser energy during their entire lifecycle and their contribution to green house gas emission is substantially low making them energy efficient and ecofriendly.

Environment Friendly: Manufacturing process of majority of the traditional material pipes utilizes very high energy. Most of the energy generating plants utilizing coal or oil as source of energy generates lot of carbon dioxide and other gases which destruct the ecological balance.

Resource Conservation: Manufacturing of plastic pipes requires much lower energy than many of the traditional materials. For its own manufacturing, PVC puts the least pressure on petroleum resources as more than 50% of its raw material requirement is met with abundantly available common salt.

Corrosion Resistance: Plastic pipes are typically immune to electrochemical reactions caused by acids, bases and salts that cause corrosion in other traditional materials used for pipes. Thus they are more cost efficient than traditional pipes, without the need for protective coatings, liners or any cathodic protection.

Coefficient of Friction: The smoother inner surface of plastics pipes reduces fluid friction and resistance to flow. This hydraulic smoothness virtually eliminates tuberculation and incrustation in water transportation pipes. The end result is more efficient pipeline design with minimum maintenance.

Light Weight: Plastics pipes offer an excellent strength to weight ratio, thus facilitate lower manpower, installation and transportation costs.

Flexibility: The low modulus of elasticity of plastic pipes allows them to exhibit better performance to combat water hammer in pressure applications. Due to their flexibility they withstand unequal soil settlement without breakages or leakages.

Longer Lengths: Plastic pipes are generally available in 6 to 12 meter lengths. Smaller diameter PE pipes (up to 110 mm OD) are available even in coil form. These longer lengths reduce number of joints, thus providing faster and more efficient installation, and easy handling.

Water Quality: The non-corrosive nature of plastics pipes, their resistance to chemical attack and to biofilm formation help in retaining the water quality.

Leakproof Joints: Plastic pipes are available with variety of jointing methods, which are simple, easy and when taken up properly, provide leakproof joints that reduce wastages and contamination of water. Root intrusion, which is a common problem in traditional material sewerage pipes, is thus eliminated in plastics pipes. Leakproof joints provide safety in gas transport applications for PE pipes.

Chemical Resistance: Plastic pipes are resistant to a wide range of chemical reagents in required service temperatures and are suitable for fluids having wide range of pH value 2 to 14.

Abrasion Resistance: Plastic pipes exhibit very good resistance to wear and abrasion and thus have proven more durable than many traditional material pipes for transport

of abrasive slurries. Plastic pipes are commonly used for sand stowing application in mining industry

Low Thermal Conductivity: Plastic pipes are able to maintain uniform temperatures in transporting hot or cold water/air used for various applications in buildings. As a result plastic pipes are replacing metal pipes in plumbing and HVAC applications.

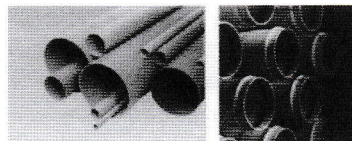
Impact Strength: Under normal conditions, Plastic pipes possess good resistance to impact damage.

Various types of Pipes used in Infrastructure Applications

Water Supply Pipes:

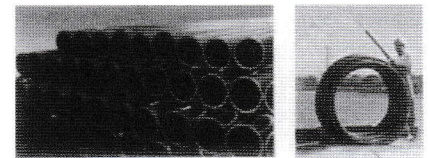
Generally PVC and Polyethylene pipes are used for this application.

PVC Water supply pipes : These pipes manufactured as per Indian standard are light grey in colour and are available with pressure ratings in the range of 2.5 - 12.5 Kg/cm² and diameters ranging between 20 and 630 mm. They are available in 6 meter length and are with three types of ends - plain end, socketed pipe for elastomeric ring jointing and socketed pipe for solvent cement jointing.



Polyethylene pipes for water supply : Polyethylene (PE) pipes for water supply manufactured as per Indian standard are available in black colour with diameter ranging from 20 mm to 1400 mm with pressure rating of 2.5 - 16 Kg/cm² in material grades of PE 80 and PE 100. They are available as straight lengths of 6 to 12 meters or in coils of 150 to 2000 meters depending upon the pipe diameter.

PE pipes are normally joined by butt fusion or electrofusion jointing system. Compression fittings (Push-fit) are available for 20 to 110 mm diameter pipes.



PVC pipes for Borewell Applications

In borewell-tubewell sector, the inherent disadvantages of traditional material pipes viz. corrosion, deterioration of screens, result in abandonment of wells and, even worse, contamination of the water source. Plastic pipes have made inroads in this sector as well.

PVC casing pipes manufactured as per Indian Standard are of 3 types.

Types of PVC Casing Pipes

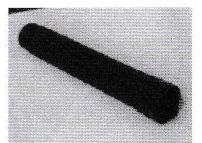
Plain Pipes : These can be used as extension pipes to screen pipe. They are of two types: C. S. Pipe: For shallow-depth (up to 80 m) C. M. Pipe: For medium-depth (up to 250 m)



Screen Pipes : These pipes may be plain screen (PS) or ribbed screen (RS). They have transverse slots and are used in bore wells, from the water-table level downwards.



Ribbed Screen Pipes : These pipes have longitudinal ribs and transverse slots. The ribs keep granulated soil away from the slots, and increase the permeability rating to more than double when compared to plain screen pipes.



As per Indian standard these pipes are of blue colour and normally available in diameters ranging from 40 mm to 400 mm and 1 to 4 meter lengths.

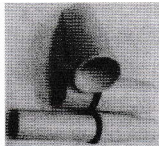
Raiser and Column Pipes

These pipes are used in the borewell/tubewell applications for submersible pumping of water from borewell/tubewell or in pumping

mains. Column pipes are used in the tubewells to pump the water and are connected to the pump. These pipes are available from 48 to 219 mm diameters and with length of 3 meters. The strength of the pipes is very high so as to carry the load of the submersible pump. These pipes are provided with unique joint design and locking system to restrict the torque movement. Due to lightweight they are easy to handle, install and assemble/disassemble. These are manufactured as per ASTM 1785.



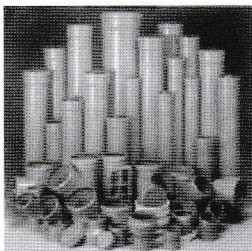
Raiser pipes are used to carry water to the ground surface. These pipes are connected in series by threads with elastomeric seals. Normally these pipes are available from 25 to 125 mm diameter and with length of 3 meters.



Sewerage Pipes

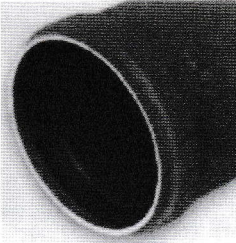
Sewerage pipes are of two types : House service connections (HSC) which collect the waste from the houses/buildings and transfer to the sewer mains through chambers. Sewer mains are the lines which collect the waste from the HSC and carry to the treatment plants.

PVC Sewerage Pipes : These pipes manufactured as per Indian standard are intended for underground (buried) non-pressure gravity drain and sewer applications for transportation of soil and waste discharge of domestic origin, surface water (storm water) and industrial effluent. Pipes are available in dark brown colour with diameter ranging from 110 mm to 630 mm with standard dimension ratios (SDR) 51, 41 and 34. Their Normal length is 6 mtr. Pipes are available with two types of



ends - socketed pipe for elastomeric ring jointing and socketed pipe for solvent cement jointing.

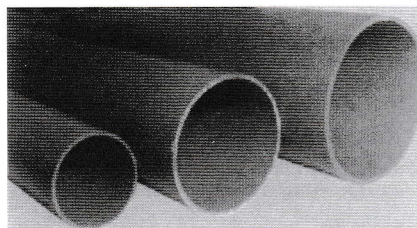
Foamcore PVC Pipes : Foamcore PVC pipe is a multilayer (three layer) pipe with integral skin layers and the middle "Sandwich" layer with uniformly distributed foamed structure. Foamcore pipe permits possible raw material savings of up to 30 %, with a cost reduction of up to 25 % compared to solid wall pipes maintaining the ring stiffness.



Weight reduction due to foamed structure of the pipe further provides ease in handling and installation with lower transportation and installation cost. Due to good insulation properties these pipes provide noise reduction in SWR applications and popularly known as 'Silent pipes'.

These pipes are manufactured as per British standard no. 13476 and are available with diameters ranging between 110 to 315 mm with three different stiffness classes SN2, SN4, and SN8. Normally these pipes are available with 6 meter length.

Structured Wall PVC Pipes : These pipes come with unique wall structure having number of holes across the pipe circumference in longitudinal direction. As a result, these pipes are lighter (upto 30%) and less expensive than solid wall PVC pipes of similar stiffness. 'I' beam structure distributes the load more evenly providing stiffness. As the weight of the pipes is lesser

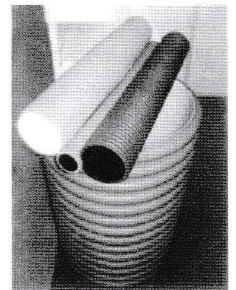


than solid wall pipes, they provide ease in handling and installation with low transportation and installation cost. These pipes are ideally suited for sewerage

applications for house service connections and sewer mains and can also be used for cable ducting and SWR applications. These pipes are manufactured as per British standard no. 13476 and are available with diameters ranging between 110 to 400 mm with three different stiffness classes SN2, SN4, and SN8. Normally these pipes are available with 6 meter length.

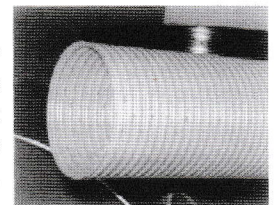
Polyethylene pipes for Sewerage : These pipes are manufactured as per Indian Standard and available in black colour with diameter range 63 to 1000 mm and are available as straight lengths of 6 to 12 meters or in coils of 150 to 300 meters depending upon the pipe diameter. PE pipes are normally jointed by butt fusion or electrofusion jointing system.

Double Wall Corrugated Polyethylene Pipes: Corrugated polyethylene pipes are an excellent choice for gravity flow or low-head pipeline situations. Corrugations on exterior surface of the pipe provide structural stability with weight reduction. Double wall corrugated pipe is a full circular dual-wall cross section, with an outer corrugated pipe wall and a smooth inner liner.



Corrugated Polyethylene Pipes for Subsurface Drainage

Corrugated PE pipe can also be produced with perforations which allow subsurface water to be collected and transported to locations for discharge. Subdrainage systems are used to collect leachate under landfill sites. These systems are also used to control underground water transport and to encourage proper surface water percolation in golf courses, athletic fields, hillside development projects and in



Contd. to Page - 23

GLIMPSES

HOLI MEET

A **Holi Meet** was organised at **IPF Conference Hall** on 18th March, 2011. Many members of the Executive Committee participated in the same. A small social programme was organised on this occasion. Thandai & snacks were served to the members present. A few photographs of the Meet is given.



MSME AWARENESS SEMINAR

A **MSME Awareness Seminar** was held on 9th April 2011 at **EIRC Auditorium, ICWAI, Kolkata**. **Shri Sourabh Khemani** made a presentation on the theme "**Plastic Industries – a promising horizon in MSME sector – areas to be assisted**". The presentation was well received by the audience. Others on the dais were **Mr. Ram Nath, Chief General Manager - SIDBI**, **Mr. S. Sarkar, DGM - U Co Bank**, **Mrs. Rina Chakraborty, Asstt. Director - MSME Development Institute** & **Mr. Harijiban Banerjee, Past- President, ICWAI**.



MSME AWARENESS SEMINAR

BRAINSTORMING SESSION ON IPF KNOWLEDGE CENTRE HELD AT ROTARY SADAN ON 23RD APRIL 2011

Shri Sourabh Khemani, President IPF, initiated the Brainstorming Session and welcomed the members present for accepting our invitation to attend this session. After his introductory address he requested the Chairman of the 'IPF Knowledge Centre' Sub Committee Shri Amar Seth to speak on the subject matter.

Shri Amar Seth made a power point presentation on the various ideas that had already been received from different sources and content available till date. Shri Amar Seth then requested for new ideas i.e. other than those already received that may be incorporated in the Knowledge Centre. The members and experts present gave their suggestions and the same is being compiled for finalization.





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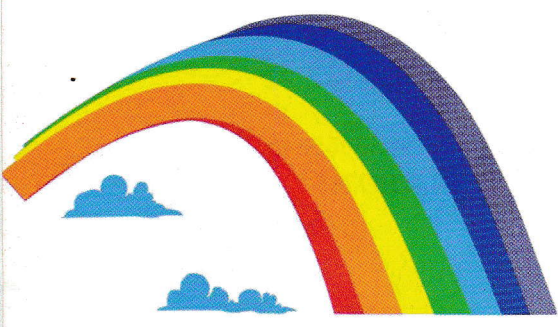
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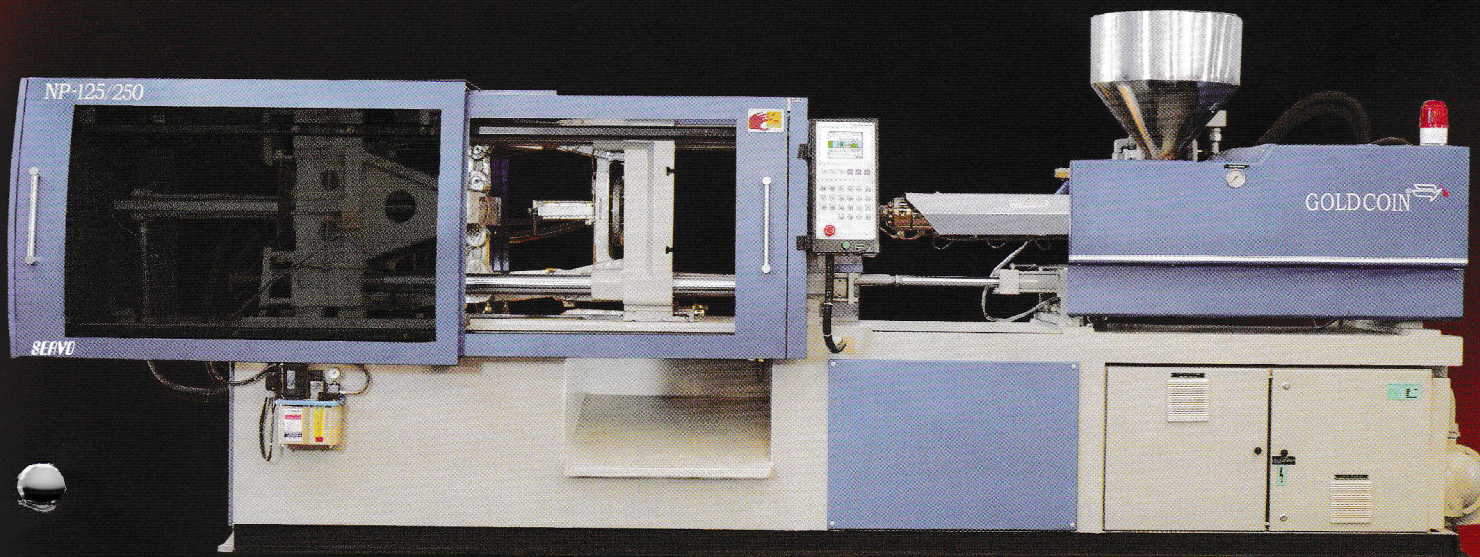
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agricultural fields. Often, subdrainage systems are used to lower the groundwater table. Perforated corrugated PE pipe is often used to control water levels in agricultural land.

SWR pipes

SWR pipes are most widely used pipes in buildings to carry soil, waste and rain water. These pipes are also used for rain water harvesting system. The accessories for rain water harvesting systems such as gutters, fittings etc are also readily available.

PVC SWR Pipes : These pipes manufactured as per Indian Standard are classified into two types A and B where Type A pipes are used in ventilation pipe work and rain water applications and Type B pipes are used in soil and waste discharge systems. The colour of the pipes is dark grey on account of adequate UV stability to the pipes with diameter ranging from 40 to 160 mm. Pipes are available in nominal length upto 6 meters either plain or with sliding/grooved socket.



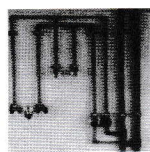
Plumbing Pipes

Plumbing Pipes are used in buildings for normal or hot and cold water supply connections. PVC pipes are used for normal temperature water supply while for hot water supply plastic pipes such as PP-R and CPVC pipes are gaining more and more acceptance.

PVC Plumbing pipes : PVC Plumbing pipes are manufactured as per ASTM 1785. These pipes are of three types Schedule 40, Schedule 80 and Schedule 120 and are available in normal length of 3 meter. PVC plumbing pipes are available with outer diameters ranging from about 10 to 610 mm

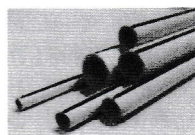
Polypropylene (PP-R) Pipes : PP-R pipes are used for hot and cold water conveyance. They can deliver hot water at 90°C with a pressure up to 25 Kg/cm². These pipes are manufactured from random copolymer

polypropylene as per Indian standard and are available in diameter range of 16 to 200 mm with standard length of 3/6/12 meters and /or tailor made coil form up to 110 mm diameter.



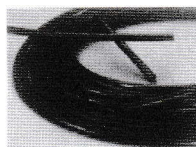
Chlorinated PVC (CPVC) Pipes

CPVC pipes are usually used for hot and cold water plumbing systems and are recommended to use for water transport up to 90°C. These pipes manufactured as per Indian standard are available in diameter range of 15 to 150 mm and three pressure classes viz. Class 1 (SDR 11), Class 2 (SDR 13.5) and Class 3 (SDR 17). Pipes are normally available with standard lengths of 3, 5 or 6 meters.



Polyethylene pipes for Garden Irrigation systems

For maintenance of parks and gardens, systems such as sprinkler and drip irrigation are available. Polyethylene laterals manufactured as per Indian Standard are black in colour to achieve UV stability. They are available with outside diameter from 12 to 32 mm with pressure rating 2.5, 4 and 6 Kg/cm². The pipes are supplied as coils of 25, 50, 100, 150 and 200 meters. PE laterals are normally jointed with press fit joint systems or available accessories.



Polyethylene Pipes for the supply of Gaseous Fuels

PE pipes are gaining popularity for gas distribution applications due to their several advantages such as, flexibility, leakproof



joints, pressure bearing capacity, inert nature and corrosion resistance. Availability in long coils makes them easy to install. These pipes manufactured from PE80 and PE100 materials with diameters ranging from 16 to 630 mm with SDR 9, 11, 14 and 17.6. The colour of the pipes manufactured from PE 80 grade is yellow and that of PE 100 is orange. PE pipes are normally jointed by electrofusion jointing system as per Petroleum & Natural Gas Regulatory Board (PNGRB) norms.

Pipes for Telecommunication and Electrical Cable ducting

Conduit or duct provides a clear, protected pathway for cables. Advances in cable technologies, as well as the expense of repairing sensitive cable materials like fiber optic cable, have driven preferences for protective conduit over that of direct burial. PVC and PE conduits provide mechanical protection as well as protection from moisture or chemicals. Furthermore, the permanent pathway provided by conduit also facilitates future installations of additional cable or duct.

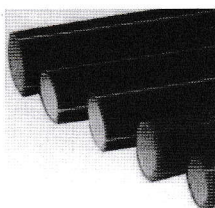
PVC Pipes for use as Cable ducting for underground cable installations

These pipes manufactured as per Indian standard are available in diameters 50 and 110 mm with standard length of 6 meters. These white coloured pipes are of three different classes viz. CL 50, CL 110A and CL 110B. Class CL 50 is suitable to be encased in concrete or for burial in sand, CL 110A is suitable to be encased in concrete and CL 110B for burial in sand. Class 110A and 110B are distinguished by the colour of circumferential band provided at the end. For CL 110A colour of band is blue while for CL 110B it is green.

Polyethylene Pipes for Cable ducting

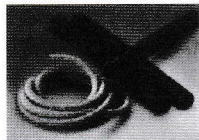
PE pipes have also emerged as the material of choice for cable ducting due to its distinct

advantages in Installation options, versatility and toughness. PE conduit can be installed below ground by a variety of methods, including open trench, plowing, continuous trenching and directional drilling. Also, its flexibility and availability in continuous coiled lengths facilitates installation into existing conduits or ducts as inner duct. PE ducts also provide resistance to brittleness over long period of usage and low temperature impact resistance. PE ducts are manufactured as per ASTM F2160 and are available with diameter range from 32 to 50 mm.



PVC Pipes for Electrical conduit applications

Conduits provide protection to the wires and cables in electrical installation. Due to self extinguishing characteristics, PVC has become a choice of material for this application. Secondly the smooth inside surface helps in easier and faster wire drawing as compared to the traditional material conduits. These conduits, manufactured as per Indian Standard are available with diameter range from 20 to 50 mm and 3 meters length.



PE pipes for Heating, Ventilation and Air Conditioning (HVAC) Application

Due to low thermal conductivity, PE pipes are used for HVAC applications. Other advantages of PE pipes in this application are easy temperature maintenance due to insulating nature, corrosion resistance, easy installation and leakproof joints.



Plastic Pipes for Trenchless Installations

Trenchless technology, often referred to as "no dig", is a rapidly growing engineering industry all over the world. The specific feature of the technology is that it eliminates the need for surface excavation. It reduces environmental damage and costs associated with underground work and also avoid other problems such as traffic diversion/congestion. Trenchless technology systems are also used for the installation, replacement and renovation/rehabilitation of underground pipes where personnel entry is not possible.

Advantages of Plastic Pipes in Trenchless applications :

- Flexible enough to take contours
- Able to bend or flex without breaking, making them ideally suited to handle ground movements caused by unstable, shifting soils and earthquakes.
- Require very low pull force due to smooth outer surface and lower weights
- Can be made foldable and expandable
- Stiff to permit their direct connection to mechanical valves, non-plastic fittings, etc.
- Have relatively small carbon footprint when compared to many of the traditional material pipes.

Technique	Specific benefit of plastic pipe
Horizontal directional drilling	Ease in installation due to lower pull force required
Pipe bursting	Flexibility, toughness and long continuously welded lengths to achieve cost effective long life replacement options.
Slip lining	Temporary diameter change, expandable to form a tight fit against the wall of the original pipe. long lengths due to coiled or welded joints
Micro tunneling	Ease in pipe jacking due to smooth external surface

List of Relevant Indian Standards on PVC, PE, PP-R and CPVC Pipes useful in Building & Construction (The latest revision of relevant BIS standard should be referred to.)

IS 4985 - Unplasticized PVC Pipes for Potable Water Supply- Specification

IS 12818 - Unplasticized PVC Screen and Casing Pipes for Bore/Tubewell - Specification

IS 15328 - Unplasticized Non-pressure Polyvinyl Chloride (PVC-U) Pipes for Use in Underground Drainage and Sewerage Systems - Specification.

IS 13592 - Unplasticized Polyvinyl Chloride (UPVC) Pipes for Soil and Waste Discharge System inside Buildings including Ventilation and Rain Water System - Specification.

IS 14787- Unplasticized PVC Pipes (Ducts) for underground telecommunications cable installation Specification.

IS 9537- Specifications for Conduits for Electrical Installations

IS 7834- Specification for injection moulded PVC fittings with solvent cement joints for water supplies

IS 10124 - Specification for fabricated PVC fittings for potable water supplies

IS 14735 - Unplasticized Polyvinyl Chloride (UPVC) Injection Moulded Fittings for Soil and Waste Discharge System for Inside and Outside Buildings including Ventilation and Rain Water System - Specification.

IS 7634 (Part-III)- Code of Practice For Plastics Pipe Work For Potable Water Supplies - Laying and Jointing of Unplasticized PVC Pipes.

IS 4984 - High Density Polyethylene Pipes for Water Supply

IS 14333 - High Density Polyethylene Pipes for Sewerage.

IS 12786 - Irrigation Equipment - Polyethylene Pipes for Irrigation Laterals.

IS 14885 - Polyethylene Pipes for the Supply of Gaseous Fuels.

IS 7634 Part II - Code of Practice For Plastics Pipe work for Potable Water Supplies - Laying and Joining of Polyethylene Pipes.

IS 15801 - Polypropylene Random Copolymer Pipes for Hot & Cold Water Supplies

IS 15778-Chlorinated Polyvinyl Chloride (CPVC) Pipes for Potable Hot and Cold Water Supplies.

Availability of pipes

BIS license holding units manufacturing consistently good quality pipes are available across the country. Besides trained installation agencies having state-of-art machinery for installation & maintenance of the system, some of the pipe manufacturers also undertake turnkey jobs..

Developments in Plastic Pipes

To further improve the performance of the system, to optimize the cost and to widen the scope of applications, various technical developments are undertaken by plastic pipe processors. Some of these developments include impact modified PVC pipes and oriented PVC pipes for high pressure water supply, multilayer scratch resistant polyethylene pipes for gas & water transport as well as trenchless applications, pipes for rehabilitation of old existing pipelines, low noise pipes for soil and waste system.

Oriented PVC Pipes (PVC-O Pipes) :

PVC-O pipe starts as PVC compound that is first extruded into PVC pipe and then physically modified to become PVC-O pipe. The physical modification i.e. orientation causes realignment of the molecular structure from random orientation to radial orientation. This produces a true laminated wall structure, significantly increasing mechanical strength and toughness.

Features and Benefits :

- High burst strength - increased material strength allows reduced wall thickness and therefore a reduced pipe weight per meter.
- High impact resistance - Provides better protection against damage during storage, handling and installation than conventional UPVC pipes.
- Resistance to low temperatures- Increased toughness allows pipe installation at temperatures down to -20°C.

- **Resistance to point loading-** The layered wall structure reduces the premature failure by restricting crack propagation.
- **Light weight** - lighter than UPVC pipes providing ease in handling and installations.
- **Improved hydraulic capacity** - Reduced wall thickness results in larger bore compared to conventional UPVC pipe.

Applications :

Pumped water reticulation systems
Rising sewer mains and installations
Suitable in the mining environment.
Industrial applications for chemical slurry transport
Agriculture water distribution



Impact Modified PVC Pipes : PVC-M pipes are high performance pipes with lower wall thickness and superior physical characteristics including higher impact resistance, greater ductility, reduced weight and an increase in hydraulic capacity.

PVC-M is formed by the addition of compatible modifying agents to the PVC matrix which significantly improve toughness, impact and resistance to crack growth.

The wall thickness and mass of PVC-M pressure pipes are approximately 30% less than the equivalent UPVC pipes, with obvious advantages in hydraulic capacity, transport, handling and installation. Due to its flexibility, it is very easy to handle during installation; the pipes can be cold bent.

Restrained Joints for PVC Pipes

The thrust forces must be counterbalanced to prevent joint separation. Normally this is achieved by using concrete thrust blocks or mechanical joint restraint devices or a combination of the two. **Restrained joint** is a

joint where restraining mechanism is incorporated to normal flexible Push-On-Joints.

By using restrained joints, the resultant thrust force is transferred to the surrounding soil by the pipeline itself. In a properly designed pipeline using restrained joints, the bearing strength of the soil and the frictional resistance between the pipe and soil balance the thrust forces. Thus pipeline becomes its own thrust block.

The new generation of joint restraints for PVC pipe-to-pipe connections is developed internationally. This required minimal skills to assemble being a standard spigot-socket jointing system. In these joints metal ring is provided to grip the inserted pipe and standard Rieber seal is used to prevent water leakages.

These developments are well established in Europe and America. Many of these products have good potential in India and efforts are being made to bring them to India.

Conclusion

Plastics pipes are an integral part of the infrastructure development as they take care of transportation of various commodities and help to maintain the health and hygiene of citizens. With their inherent properties and advantages, they score over the traditional material pipes. Through the usage of quality plastic pipes one can ensure expected performance of the systems during their entire service life with natural resource conservation and energy saving in the energy hungry world.

Source : Polymer Society

Build Your Own Home with Plastics

Plastics In Building And Construction: Providing Energy-Efficient Solutions



From residential homes to commercial buildings, hospitals and schools, architects and designers rely on plastics to help maximize durability and improve energy efficiency and performance.

Properly installed plastic building products can help reduce energy and maintenance costs and potentially reduce a homeowner's carbon footprint. In fact, a one-year study found that the use of plastic building materials saved 467.2 trillion Btu of energy over alternative construction materials. That's enough energy saved over the course of a year to meet the average energy needs of 4.6 million U.S. households!

Here are just a few of the ways that plastics help save energy at home:

- From rigid polystyrene foam insulation panels (expanded or extruded) that can help homeowners save hundreds of dollars each year on heating and cooling bills, to plastic wrap that can reduce infiltration of outside air by 10-50 percent, plastic can help drastically reduce the energy required to heat or cool homes. Insulation:
- Applying polymeric based caulks and sealants is a quick, easy fix for drafty windows. If replacement

windows are needed, use vinyl window frames, which decrease

condensation and help homes maintain an even temperature, cutting down on extra heating and air conditioning usage. This helps reduce the greenhouse gas emissions associated with energy generation. Windows:

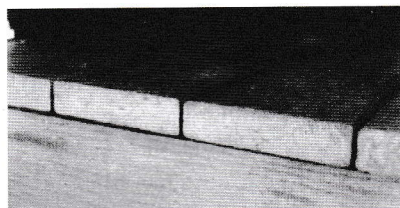
- Roofing systems made with plastics, such as vinyl or TPO single-ply membranes for the outer surface in combination with rigid polyiso board or spray polyurethane foam under neath, offer energy savings, durability and moisture control. These kinds of roofing systems typically have a light colored, reflective coating in warm climates, which reduces the amount of heat transported inside the building through thermal bridges (created when materials that are poor insulators come into contact, allowing heat to flow through the path created.) The cooler the building, the less air conditioning is required and therefore, less energy is consumed. Roofing:
- Lumber made from recycled plastics and plastic-wood composites can outlast traditional materials and requires less

maintenance. Composite lumber is resistant to weathering, requiring less material to be used over time, which saves energy. It is also eco-friendly as much of the lumber is made from recycled materials and/or can be recycled. Composite Lumber:

- Using cross-linked polyethylene piping (called PEX), which is lighter and more flexible than other materials, allows for multiple feed lines throughout a house, which allows hot water to arrive faster to a sink or shower which can significantly save water. Piping:

Whether you're doing a complete eco-renovation or looking for smaller ways to save energy at home, plastics help make it possible. For each of the above examples, energy and cost savings vary. Please check with your local retailer on pricing and availability of products.

Plastic Composite Decking: a Low Maintenance Option



Outdoor areas such as backyard decks and patios can add square footage (and value!) to your home and are great places to relax and to entertain. Whether building or renovating a deck, look for plastic composite lumber, some of which is made from recycled plastics from grocery bags and plastic containers.

Why plastic? Plastic composite decks are easy to maintain and are durable enough to outlast many decks made from wood! Plastic composite decks also hold up well to outdoor conditions, which means you can spend more time enjoying your deck

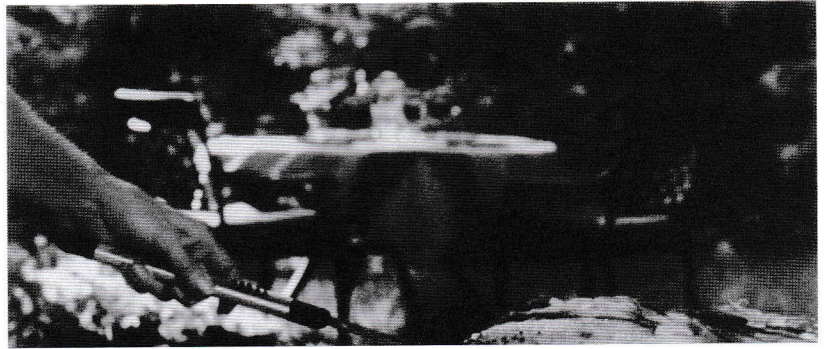
instead of maintaining it and paying for repairs.

While plastic composite decking is virtually maintenance free, it does require some cleaning from time to time. Here's how to go about it for the most common deck-damagers:

- **General Dirt and Debris:** The affected area can be sprayed off with a hose to remove surface debris. Use warm, soapy water and a stiff-bristle brush or broom to remove dirt and debris from the embossing pattern.
- **Tannin Due to Debris:** Remove all debris from the deck using a hose or broom. Once the deck surface is dry, apply a "deck brightener" as directed by the manufacturer.
- **Ice and Snow:** A plastic shovel may be used to remove snow from the deck. Use calcium chloride or rock salt to melt the snow and ice from the deck surface.
- **Oil/Grease/Food:** All food spills should be removed as soon as possible (the surface must be cleaned within seven days to maintain the stain warranty). To remove, spray off with a hose and use warm, soapy water and a stiff-bristle brush or broom to remove spills from embossing pattern.
- **Mold and Mildew:** Mold can feed on debris such as pollen and dirt that remains on the deck surface or between planks. Use a hose and warm, soapy water with a stiff-bristle brush to remove the mold and its food source.

Plastics in the Backyard

This year a quarter of Americans plan to make outdoor home improvements to get ready for springtime and warmer weather. So as barbeque season approaches, it's a good time to take stock of your outdoor



deck, furniture and dishware and consider how plastics can help ease time-consuming maintenance chores. If you're thinking about adding a deck (or replacing your tired old one), check out plastic composite lumber for decking and rails. Composite lumber, made from plastics and wood waste, is the easy-care solution. It's generally stain-resistant, water-resistant, ultra violet (UV) light-resistant and impervious to insects – and much easier to clean than stained wood decking. Plastic composite decking also means happier little toes, since there are no more wood splinters — a common problem with all-wood decking.

Some plastic composite lumber actually is made in part from recycled plastic bags. In fact, more than 300 million pounds of plastic bags and wraps are used annually to make durable composite lumber for decking. Feel free to share those eco-credentials with your environ mentally aware neighbors at your first deck party!

You likewise can reduce upkeep by upgrading to outdoor furniture made from plastic composite materials. Patio chairs, dining tables and other furniture can be made to resemble painted wood in look and feel. Yet just like plastic composite decking, this furniture doesn't require painting or staining and resists warping, cracking or splintering for lower maintenance.

Now that you have sturdy, easy to care for decking and furniture, you may

want to look for the same qualities in your outdoor dishware. Plastic dishware is resilient enough to stand up to your outdoor barbeques, kids parties and everyday dinners and can even be stylish enough for your evening soirees. And since it is shatter resistant, you can help protect your family and friends from injury when the inevitable accident happens

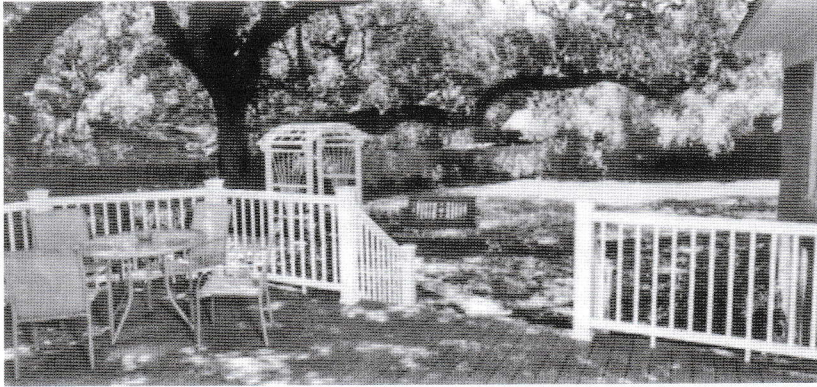
From decks to furniture to dishware, plastic products have moved outdoors in a big way, making our lives a little more carefree and reeing up time for family, friends and fun.

Decking with Plastics

The beautiful summer weather means barbecues, grilling and outdoor fun. A great way to make your home an entertaining mecca for family and friends is to have a well-built deck. Besides adding to the atmosphere of your backyard, a deck actually increases the square footage of your home.

But before you run out and buy materials for this new space, here are a few things you should consider:

- First things first: make sure you know what you can and cannot do based on your local building codes. This is especially true for all you do-it-yourselfers out there. Structural stability, location and size are main factors to consider before the first post goes in place.



- Don't overbuild the deck. A huge deck next to a small house looks odd and can even detract, rather than add, to the resale value of your home. That's why designers generally scale the size of the deck to the size of the home. If you really think you need a lot of extra space, build the deck in several layers. This will break up the expanse and also add some character to your entertaining area.
- A low maintenance deck could be well worth a little extra cost—especially if you do a lot of entertaining. The deck needs to be able to stand up to traffic, moving furniture back and forth, kids, pets, line dancing... you get the picture.
- Shy away from boring lines in the deck boards. Mix and match the layout to create some diagonal patterns, inlaid designs or other features to bring some life to your deck. Give it personality!

Consider functionality. Adding built-in benches, planters, even built-in cup holders in the railing can enhance your entertaining space.

To further hit home the necessity for a low maintenance deck, consider composite plastic decking. While it looks just like wood, composite lumber usually is a combination of plastic and wood, which means that you get the benefits of durable, weather-resistant plastic with the look of

wood. Plastic composite lumber can be partially made from recycled plastic, such as grocery bags, molded to look like real wood planks, pillars and railings and installed exactly the same way as wood materials.

So what's the big deal? Well, plastic composite decking has remarkable advantages. Wood decks may be susceptible to damage caused by the weather, things like sun, humidity, rain, snow and extreme temperatures, which can cause warping, splitting, splintering and rotting. Decks made from plastic composites hold up really well to weather, which means you can spend more time enjoying your deck instead of maintaining it and paying for repairs. And if your family enjoys going barefoot, plastic decking lets you stop worrying about splinters and slivers!

Finally, for homes without decks, don't forget that even the simplest additions can create a fabulous entertaining area outside, even if only for one or two people. A spot for a couple of chairs and an outdoor fireplace, maybe a water feature or a bench (made from plastic composite lumber!) beneath an arbor can provide a very nice spot to enjoy the outdoors.

Plastics + Windows = Money And Energy Savings

Many homeowners are looking for do-it-yourself (DIY) projects that help increase energy efficiency and save

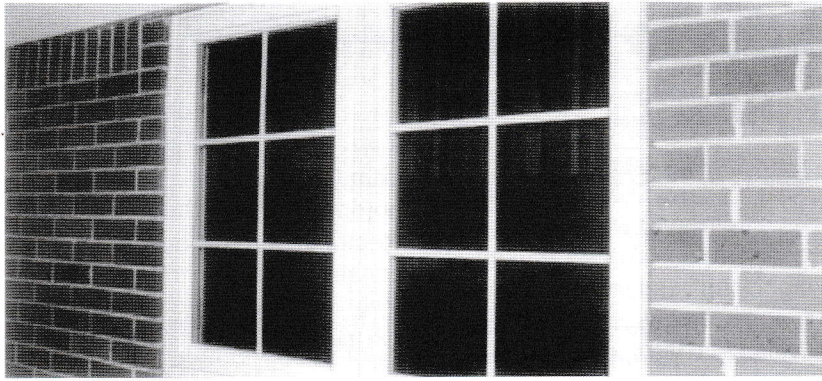
money. Installing a programmable thermostat and switching to compact fluorescent light bulbs can help, but homeowners interested in even more energy and money savings should start with the windows.

Here are a few ways that plastics can help:

Stop the leaks – Air leaks from windows and frames can cost a bundle, but a variety of plastic sealants can help keep dollars from slipping through the cracks. Applying caulks and other sealants around window panes, frames and sills is a quick, easy fix for drafty windows. Sometimes a simple plastic foam weather strip is all that's needed. Heavy-duty, clear plastic sheets can be tightly sealed to the window frames (usually applied during winter months) to help increase the insulating ability of windows and to reduce any drafts. And cans of spray polyurethane foam can help fill large and small holes.

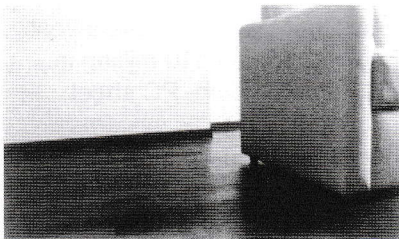
Take cover – Window treatments are not simply for decoration or privacy. Use light colored blinds, shades or drapes to block the sun's rays from heating up the house during the summer, especially on south and west facing windows, and to help keep out cold air in the winter. Close them at night during winter and open them in the daytime to help regulate heat. For great value, try durable vinyl blinds and shades or look for drapes with a room-darkening, insulated vinyl panel. Vinyl awnings installed above outdoor windows also help keep out the sun's heat and harmful rays, as do reflective plastic films that can be installed on the window panes by handy homeowners.

Go modern – Replacing older, inefficient windows may be more than a DIY job, but it's a great way to upgrade and modernize a home that pays big dividends in the long run. Installing durable, low-maintenance, double-glazed windows with vinyl frames can help reduce energy use and heating and cooling costs. In fact, vinyl



window frames save the U.S. nearly 2 trillion BTU's of energy every year — that's enough to meet the yearly electrical needs of 18,000 single family homes, according to Franklin Associates. Less energy used for heating and cooling also translates into fewer greenhouse gas emissions. Check with your local window salesperson, a tax advisor or go to www.energystar.gov to check on federal or state tax credits for installing new, energy efficient windows.

Flooring Solutions Made Possible by Plastics



Replacing old flooring is a great way to update the look of a room — and there are plenty of options for homeowners. Luxury vinyl tile, luxury vinyl planks, and plastic-composite laminate flooring are great choices because they're fast to install, chic, easy on the feet, and affordable.

The Pros of Plastic Flooring

Installation With Less Hassle: Luxury vinyl tile and planks, as well as plastic-composite laminates, can be installed quickly over most hard floors. Only the pieces around the edge need adhesives or nails, making these floors easy to install, repair and replace

Decisions: These plastic floorings mimic the look of alternatives that cost significantly more, such as ceramic tile, wood, slate, and marble. Luxury vinyl tiles can even be grouted for a finished look.

Cleaning Made Easy: Some floors require the periodic use of special cleaners, polishes, or waxes. But these plastic floorings generally need little more than a dust mop and water or a gentle floor cleaner to keep them clean and maintain shine

Warm and Quiet: These plastic floorings are also warmer to the touch than many other materials and decrease sound reverberations, a major plus for cold climate dwellers, pet owners, and families with children.

Replace Flooring Yourself— With Plastics

One of the most effective ways to update your home is to replace dated, worn-out flooring. It's now easier than ever to install new flooring yourself, thanks in part to plastics. Installing plastic-composite laminate flooring and the newer luxury vinyl tiles and planks — all of which resemble wood, tile, marble and other traditional materials — is a do-it-yourself job for the handy homeowner.

Plastic-composite laminate flooring is readily installed over almost any existing, hard floor surface. Each piece

simply locks into another, so even a large room can be installed in an afternoon! And thanks to plastics, composite flooring is durable and both stain- and moisture-resistant, which means it requires little maintenance and works well in just about any room of the home.

Luxury vinyl tile — a tough, durable tile that's already proved itself for many years in commercial settings — is thicker and made entirely of plastics with a beautiful finished look to rival traditional materials. It also locks into place over existing flooring for a do-it-yourself project.

Here are a few tips to keep in mind when choosing these floorings for your home

Save time

Luxury vinyl flooring resembles ceramic tile typically used in bathrooms and other rooms where moisture may be an issue ... but without the challenging, time-consuming installation process that requires grout and precise positioning. It can be installed with grout for a look like ceramic tile or without grout to improve water resistance.

Be creative

Luxury vinyl floor tiles are available that look like stone, slate, or veined marble, in a variety of colors. The durability and stain-resistance make this the perfect surface for any kitchen — and it's easy to clean and maintain.

Save Money

Nothing complements a beautiful meal like a beautiful dining room. Hardwood flooring has long been a hallmark of elegant dining, but you can get the look by installing plastic-composite laminate or luxury vinyl flooring — without breaking the bank.

Source : Polymer Business

Bayer shifts PC business to China; plans €1 billion investment there in plastics

In an acknowledgement that the majority of the world's polycarbonate demand stems from plastics processors in the Asia/Pacific region, and will for years to come, one of the leading suppliers of the materials, Bayer MaterialScience, is shifting the headquarters of its global polycarbonate activities from the company HQ in Germany to Shanghai. The company is investing more than €3 billion in its Shanghai facility on a number of projects, with at least a third of that in its plastics, coatings and adhesives business unit.

Bayer's polycarbonate (PC) is marketed under the Makrolon brand name. This new €1 billion in announced capital expenditures for Bayer's Shanghai plant will significantly expand the company's polyurethane (PUR) and PC capacities in China, as the supplier aims to increase its group sales in Greater China to around €5 billion by 2015. About half of those sales are to be driven by its MaterialScience group, the name for its plastics, adhesives and coatings business. To put that in perspective, Bayer MaterialScience's total FY 2009 sales were €7.5 billion, of which Greater China sales were €2.1 billion. The MaterialScience unit accounted for €1.2 billion.

Among projects green-lighted with the investment will be a more-than-doubling, to one million tonnes/yr, of its capacity there for the polyurethane precursor material, methylene diphenyl diisocyanate (MDI). Also, capacity for PC will increase to 500,000 tonnes per annum from the current 200,000

tonnes/yr at the Shanghai site.

The company said its investment also would be used to significantly strengthen its research and development activities in China, and fund the move of the headquarters of its PC business unit from Leverkusen, Germany to Shanghai. "The expansion of our capacities in China is an important step in strengthening our presence in the emerging economies," stated Bayer AG's management board chairman, Marijn Dekkers. Added Patrick Thomas, CEO of Bayer MaterialScience, "For us, it is strategically important to have the necessary capacities in the Asia/Pacific region to meet constantly rising demand."

In terms of sales, China is the second most important country in the world for Bayer MaterialScience, behind the U.S. and ahead of Germany. The company already had announced a €2.1 billion investment in Shanghai as part of a long-term project lasting until 2012. Together with the newly announced expansions, this means a total investment of more than €3 billion. Five separate projects are planned to increase production capacity at the Shanghai Chemical Industry Park. For PC, a new facility is scheduled to be built with a capacity of 200,000 tonnes/yr, and the capacity of the existing PC plant there will be increased by 100,000 to 300,000 tonnes/yr. According to Bayer the Asia/Pacific region currently accounts for around 60% of the world's total polycarbonate market, with the greatest demand coming

from China. The plastic is used predominantly in the automotive, electrical and electronics, and construction industries.

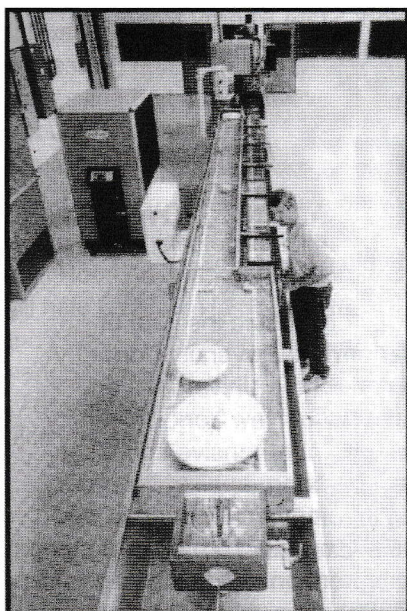
In addition to the new MDI plant with an annual production capacity of 500,000 tonnes, it also intends to expand the capacity of its present MDI facility from 350,000 to 500,000 tonnes/yr. Also planned is an investment in HDI production. HDI is used to make high-quality surface coatings. There are plans to expand the capacity of the existing HDI production to meet short-term market demand and the addition of another further 50,000-tonnes/year HDI facility is also planned.

These announcements come on the heels of the recent news that Bayer plans to invest by 2012 about €110 million in PC compounding, PC sheet extrusion and PUR systems houses in China.

Extrude better product at lower cost with improved plastic tube line

Share

Auxiliary equipment manufacturer Conair has made a number of changes to its cooling tank and other downstream equipment and controls, all geared to help processors of plastics tubing improve process stability, and provide stricter



Conair's Medline Multipass tank helps plastic tubing processors save material and extrude better product.

control of wall thickness, ovality and cut-to-length tolerances. Systems are available for extrusion of medical tubing and also for non-medical products like aquarium tubing, small-gauge irrigation tubing and pneumatic airway tubing.

Conair's Medline Multipass tank helps plastic tubing processors save material and extrude better product.

Within its multipass tank,

which sends the tubing along a back-and-forth path through cooling water, the company has integrated a vacuum-sizing chamber. Vacuum sizing is inherently more controllable than air-pressure sizing, explains Bob Bessemer, medical downstream extrusion sales manager for Conair. The manufacturer has been promoting vacuum sizing for almost two decades and has experience with lines for processing of flexible PVC, TPE, TPU and PE tubing.

"As the industry migrates from PVC to more expensive materials, savings of even a few percent in material use becomes very important," added Bessemer. He also notes that using a vacuum means tubing will be less affected by automated downstream functions such as cutting to length and coil winding. "Where processors might have avoided using these techniques because of their impact on overall tube tolerances," he says "they can now confidently institute these labor saving techniques and cut costs further while increasing productivity."

Also part of the MedLine Multipass tank is an oversized,

driven roller at the end of the tank which reverses the direction of the tube as it exits the vacuum chamber and begins a second pass through the tank. The roller's large diameter helps minimize the potential for tube distortion or flattening, and because it is driven by a closed-loop vector drive or digital servo, it acts as the primary puller in the line. Located close to the beginning of line, it minimizes the stretching that can occur when the primary puller is far down the extrusion line.

Glass bearings on non-driven rollers reduce drag and stretching as the tubing makes subsequent passes through the tank at line speeds that now sometimes approach 800 feet/minute. A load cell measures tension on the tubing. This device sends a signal to a secondary puller outside the tank to automatically adjust speed to maintain a consistent and repeatable tension and prevent shrinkage issues.

Two gauging units—an ultrasonic gauge upstream and a laser gauge at the downstream end—are linked to the pullers to automatically control wall thickness, concentricity and ovality of the tubing.

IPF PROPOSES KNOWLEDGE CENTRE

The proposed IPF Knowledge Centre is located near Kolkata at the Poly Park in Sankrail, near Kolkata city. The area of the Knowledge Centre is 1.02 acre that has been offered by WBIDC (WB Govt agency) for successfully initiating construction of a 50 acre Poly Park. IPF Knowledge Centre is conceptualized to offer trained manpower to the ever growing need of plastic industry. It will function as a supplementing tool for the realisation of the Policy of the Govt. of India towards overall economic growth of the country as well as towards employment generation. In addition to training, IPF will offer testing facility, Tool room facility, library etc with cooperation of CIPET. They also plan to set up a Demo unit for Re-

processing of mixed plastic scrap and many other industry related facilities. Various ways and means are adopted to generate funds, and holding of exhibition is one such way. With this goal in mind, IPF is organising Indplas'12 6th International Plastics Exhibition at Science City, Kolkata, from October 5-8, 2012. Substantial surplus from this exhibition will be utilised in funding construction of IPF Knowledge Centre. With a per capita consumption of only 3.5kg in the eastern region against all India per capita consumption of 8.0kg, and 30kg average worldwide, eastern India offers an excellent opportunity for growth of the plastic processing industry. Entrepreneurs located in different parts of the country can use this

platform to promote sales of their products and also set up new units to bridge the present gap between demand and supply of locally manufactured products. Indplas'12 will function as a catalyst to serve the growth of industry and knowledge.

* * *

Toyota Creates New Ecological Plastic

The automotive industry is constantly making efforts to create vehicles that are more eco-friendly. The public is used to receiving information about revolutionary new developments that offer significant changes.

However, there are certain projects that might seem less important at first glance, but these shouldn't be overlooked as they too can contribute to sustainable motoring. This is the case with Toyota's new Ecological Plastic, a material that is ready to be used in the carmaker's future models.

This is tougher, harder-wearing and more shrink resistant than previous bio-

plastics, being the first in the world to be made using bio-PET, which includes raw material derived from sugar cane.

The material was developed by Toyota and Toyota Tusho Corporation and will reduce the amount of petroleum-based products used in the production process, as well as cut vehicle full-life emissions by being more carbon-neutral.

"The new plastic's robust qualities make it suitable for use for vehicle liners, carpeting, seats and other interior surfaces. Its first application in a production model is for the luggage compartment liner in the new Lexus CT 200h, while

later next year Toyota proposes to introduce a model in which it will cover 80 per cent of the vehicle interior. Through its use in volume production, Toyota expects the new Ecological Plastic to match the cost-per-part performance of conventional, petroleum-based plastics," stated the press release.

Toyota has started developing and introducing bio-plastics 10 years ago. The latest major innovation offered by the company is the Ecological Plastic (2009), an injection moulded material derived from plants that is used for multiple elements of the third generation Prius.



INDIAN PLASTICS INSTITUTE (Kolkata Chapter) along with INDIAN PLASTICS FEDERATION



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For further details please contact directly to

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Polytechnic Institute of New York University (formerly Polytechnic University), an affiliate of New York University, is a comprehensive school of engineering, applied sciences, technology and research, and is rooted in a 156-year tradition of invention, innovation and entrepreneurship: i-squared-e. The institution, founded in 1854,

is the nation's second-oldest private engineering school. In addition to its main campus in New York City at MetroTech Center in downtown Brooklyn, it also offers programs at sites throughout the region and around the globe. Globally, NYU-Poly has programs in Israel, China and is an integral part of NYU's campus in Abu Dhabi. For more information, visit www.poly.edu.

PIECO "QUALITY WITH Since 1983 **INDIGENOUS TECHNOLOGY"**

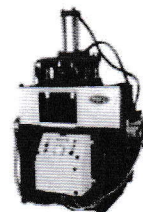
RANGE OF PRODUCTS

- PLASTICS SCRAP GRANULATOR
- DRY BLENDING CONICAL MIXERS
- DRY BLENDING VERTICAL MIXERS
- LUMP CUTTERS
- BLADE SHARPENERS
- AGGLOMERATORS
- MEDIUM SPEED GRANULATOR

PLASTICS SCRAP GRANULATOR
GRINDING CAPACITY :
10 Kgs./Hr. to 1000 Kgs./Hr.



Scrap Granulator



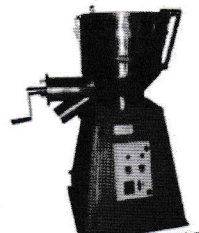
Lump Cutter



Dry Blending Machine Conical



Mini Granulator



Vertical Dry Blending Mixture

Mfg. by
PIECO Pioneer Engineering Corporation

Regd. Office : 218, Veena Dalvai Industrial Estate, Oshiwara, S.V. Road,
Jogeshwari (West), Mumbai - 400 102

Telephone : 022-26787168 / 28473787, Mobile : 9820998657

E-mail : dinesh@piecomachines.com, pieco@aol.in, Website : www.piecomachines.com

Factory : Plot No. A2/2218, G.I.D.C., III Phase, Vapi - 396195 Dist. Bulsar (Gujarat) (INDIA) Tel.: 0260-2431282, 2423895

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MONTHLY CIRCULAR OF THE FEDERATION

CIRCULAR NO. 44/2011 :

Sub: Membership of the Federation

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

1. a) Name & Address of the Applicant Firm : **M/S. RLJ WOVEN SACKS PVT. LTD.**
1A, Radiant Park
Building - 201, New Park Street
Kolkata - 700 017
- b) Class of membership : **Life Manufacturer Member**
- c) Proposed by : M/s Rajda Sales (Cal) Pvt. Ltd.
- d) Seconded by : M/s Stretch Plast
- e) Name of representative : Mr. Ankit Jain
- f) Items of manufacture : Manufacturer of PP-HDPE Woven Sacks
2. a) Name & Address of the Applicant Firm : **M/S WARIS ENTERPRISE**
17/10, Topsia Road
Kolkata - 700 039
- b) Class of membership : **Manufacturer Member**
- c) Proposed by : M/s Mahabir Plastic Industries
- d) Seconded by : M/s Stretch Plast
- e) Name of representative : Mr. Waris Ali
- f) Items of manufacture : Manufacturer of Re-processed Plastic Granules

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

CIRCULAR NO. 45/2011 :

Sub: Consumer Price Index Number for Industrial Workers for Kolkata for the months of January 2010 to February 2011

Month	Consumer Price Index	
	Base (1982 = 100)	Base (1960 = 100)
January, 2010	855	4053
February, 2010	850	4029
March, 2010	850	4029
April, 2010	860	4076
May, 2010	870	4124
June, 2010	881	4176
July, 2010	896	4247
August, 2010	896	4247
September, 2010	901	4271
October, 2010	906	4294
November, 2010	906	4294
December, 2010	922	4370
January, 2011	922	4370
February, 2011	911	4318



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- Moulded Goods
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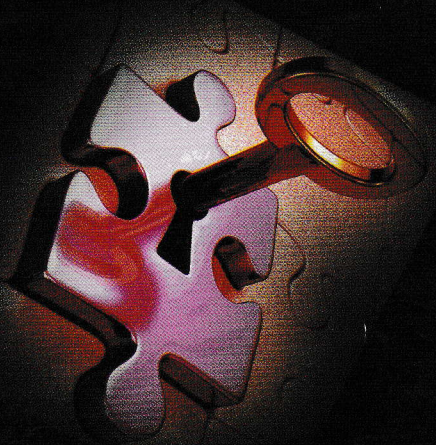
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