



Vinyl is an integral part
of our day to day life



From the desk of Editor

The world is still going through some tough times – the Russia-Ukraine war continues to linger, recession and energy continues to be the talking point in most business meetings.

There is continued slowdown in the global commodity markets due to recessionary fears in the Europe and the US, and a weak Chinese property sector which is the largest buyer of its minerals. In essence, there seems to be downside risks to demand as the global economy is tottering.

Now, let us look at the oil market – one of the main edifice on which our dear own PVC stands. Let me tell you that the claims of death of oil are exaggerated. Though renewables have become competitive, but oil will stick around for some more time.

Various think tanks project that renewable capacity may be increasing by about 75 percent by 2027 and perhaps much faster than earlier forecasts. Policy support is the main cause.

Eventually, renewables will edge most fossils out, but it is not going to happen in a hurry, as oil demand will yet grow from 95 Mln barrels/day in 2021 to 102 Mln barrels/day by 2030.

Renewables are galloping fast, but crude prices most likely will continue to fluctuate with spikes on its way out, as the world is still majorly dependent on this most critical energy source.

As regards PVC pricing is concerned, there was a broad weakening but thereafter it is strengthening again with renewed demand. The requirements from the medical and construction sectors continue to be steady. We have heard that PVC sometimes subsidizes caustic soda production, but as caustic prices are showing sliding trends, a shift to PVC production could take place.

PVC demand continues to be good in India, with the economy doing well. The industry is agog with positive activities as usual.

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IVC News Letter: Quarterly Publication of IVC

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The information published in the newsletter is based on the data available in public domain and views expressed by the authors are not necessarily the views of Indian Vinyl Council.

All about the Indian Vinyl Council



The Indian Vinyl Council is set up and exclusively dedicated to the cause of entire PVC value chain. The objective of the forum is to serve all the stakeholders of Vinyl Family, i.e. the resin producers, additives and related chemical producers, converters, processing and ancillary equipment manufacturers, recyclers of Vinyl products and the end users. With the active and harmonious participation; the members, end users and the public at large will all stand to reap considerable benefits.

The Council will play a pivotal role as the hub of advocacy between the government (state and central), policy makers, regulatory bodies and industry stakeholders to pave the way for the industry by eliminating obstacles and opening the doors to expand the market for the Vinyl industry.

Adding greater momentum to the growth of the Vinyl industry through networking will also be one of the core responsibilities of the Council. It will work towards increasing access to the industry's leaders and enabling them to connect seamlessly with suppliers, academia, regulators, scientists and experts through seminars, conferences, technical meetings and other events.

One of our top priorities is to ensure the efficient diffusion of knowledge to all our members, on the state of art technology, market perspectives, statistics & information and details of global initiatives on sustainability... all relevant to the Vinyl and allied industries.

Our focused approach is to work towards the welfare of mankind and encourage responsible care in an environmentally sustainable manner as practiced and specified in circular economy principles and models.

We strongly believe in supporting & encouraging innovation, and training & skill development within the Vinyl value chain, to facilitate raising the competency and the level of industry to global standards.

We are also committed to developing technical standards for maintaining quality and consistency to enhance the acceptance of Poly Vinyl Chloride and related products and multiply its application in all spheres of life.

IVC Objectives

- To promote and advocate all round development of the entire Vinyl industry comprising of all elements of the Vinyl value chain
- To build a positive image of Vinyl products in eyes of the end-users as well as society at large.
- To assist and collaborate with the government and non-government bodies and statutory authorities for formulating industry related policies including codes and standards and seek representations from such bodies.
- To promote and support standardisation and quality assurance programmes to encourage regulatory compliances.
- To create awareness and educate the end users of the value proposition of PVC products including energy conservation, eco-friendliness and sustainability.
- To support and encourage innovation, training and skill development within the Vinyl value chain and thereby raise the level of industry to global standards.
- To institute and/or fund scientific and economic research in the industry connected with PVC and its products.
- To provide a forum for member associations to collaborate for broadening the market for PVC products.

Corporate Talk

Shri. Dr.HC Mario Schmidt
President :uPVC Windows and Doors
Manufacturers Association (UWDMA)



Interviewed by
Ms.Aruna Kumari: IVC- MC,Member

Dr HC Mario Schmidt, has been the Managing Director of Lingel Windows and Doors Technologies since 2006. He is also Company Director of Fensterbau Lingel Germany GmbH. With his immense knowledge in Mechanical Science, he has been able to add value to the company's innovation plans and has helped launch various new products. Mr. Mario Schmidt is also the President of uPVC Windows and Doors Manufacturers Association (UWDMA). He was recently bestowed with the honorary doctorate title for his work in skill development and management.

1. How do you perceive the current economic outlook for uPVC market in India?

Looking back to the year 2020, due to Covid19 and the country-wide lockdown disruptions, nothing could be forecasted. 2021 followed with massive Covid wave as well as huge price hikes. The challenges on the businesses were even much more critical. Consumers expecting a cut in prices and supply chain had to pick up. There were all round disruptions.

The minimum increase throughout all the raw materials were around 33%. But on the other hand most of the projects were delayed by almost 2 years. The year 2022 turned into a game changer. With stable raw material prices and a countrywide order back log during 2022. I am not aware of any industry player who did not do extremely well. I presume that the positive business environment continues in 2023.

2. Over the years, you have seen a gradual transition from traditional materials like wood to Aluminum and later to uPVC windows. What are your thoughts on uPVC window Industry ten years from now?

Important for the future of our industry will be the standardization. And this I mean not only window sizes; it is also about the process of fabrication and installation as well as the monitoring of the quality of the incoming materials.

Happy to share that after our 12 years of hard work, finally the first uPVC profile standards, will shortly be in place. In the absence of this standard since 2016, uWDMA introduced their fabrication guidelines which includes the quality parameters as well as many European

reference standards to assure that the best products are reaching to the Indian consumers. Now it's a crucial time that the focus goes to the window manufacturers / fabricators. Considering that the value chain from the raw material to the processing to the final product, the number of players are increasing. This means at the grassroots level, it's very important to watch, guide and control this process.

Overall, I am 100 percent sure that the uPVC industry will further grow during the next 10 years. It's our duty that the growth is organic and the quality remains as a key parameter for the growth. This growth will change the overall market further from the unorganized sector where the doors and window Industry was during the past, to an acknowledged factory-based industry.

3. What are your views on improvements in terms of materials used, standards followed etc. for the growth of uPVC windows in India?

Here I'm having a long-term opinion. As already mentioned, the Indian standards on profiles are going to come soon, and the work on the window performance standards is going to follow shortly. Especially at the window performance standards, the benchmark of passing is very high. Here I'm personally highlighting this fact to all the industry stake holders. However, I feel that still this message hasn't been taken seriously. To give a small example, the proposed performance standard of water tightness during a high wind load testing, I doubt that any of the existing uPVC as well as Aluminium system, will reach to the highest classification. On one hand, that's a super good news as it is the European style that is the demand from the government and standards set, will be the main driver of innovations. On the other

hand, I doubt that many of the smaller profile system providers will be able to find technical solutions to this fact. My personal request since the last one year to all the system suppliers, please get your own systems tested and utilize the time till the standard will be in place to make your internal R&D.

To summarize, a tight Standards, which as per my personal opinion are good and may keep the growth stagnant for a while, till all the players are upgrading their systems. But in the long run, it will assure of best performance. The opposite way would be a tremendous short-term growth due to demand and not regulated by quality parameters. Here within India itself, we have many case studies how those products / markets failed in the long run.

4. When do you see the market moving from a cost sensitive place to a quality sensitive one?

There are two key factors, awareness by customers and standardization. I have already explained the importance of standards. Let us put some light on customer awareness. Important for any consumer, whatever is promised is delivered and how the products perform in the long run. A big market opened up is the replacement markets. Sometimes it is very sad to see that the installed uPVC windows are replaced by another brand of uPVC windows due to poor quality or performance and failure of the earlier installed windows. (I am, however, not in favour of specific mention of Lingel windows, which might give an impression of IVC is promoting Lingel windows as the best). It may be stated here that the lifetime of uPVC windows may be considered as minimum of 30 years.

One more point that our industry missed badly to position our product as a life style product. Till date it is often seen as a part of the basic structure of the building and hidden behind the curtain. Noticing that consumer is ready to invest more on a curtain covering our windows than the window product itself, it's clear to me that there is a huge scope still available to change the way customers are looking at our products. Once this dream is achieved, the cost parameters loses its importance over the life style factor.

5. You are one of the few people who have seen the Indian market and has a great sense for the European market. How would you compare both the markets?

Important to highlight the window fixing details. As insulation of buildings is one of the key demands by European governments, the windows - especially the frame design gets completely changed. For larger windows and doors, the so-called extension profiles are

as heavy as the frame and profiles in total. Visualizing this fact means that for one window the amount / volumes / weight is two times sold. To explain this further we can look at the glass industry. From single glass to double glass to triple glass, the glass area remains same but the quantum changes up to 3 times.

Coming to the next point, shading, security and privacy. Almost every door or window will have either a roller shutter or a venetian blind inbuilt. This fact creates a huge opportunity to the window industry in Europe. From the total revenue point the window or door cost will be around one third to maximum fifty percent only. The balance revenue goes to the explained extension profiles as well as roller shutter / venetian blinds, the special window sills inside and outside as well as the high technical installation process with many different sealing tapes, foam and cover strips.

Once we are able to implement few of these ideas here in India, the revenue of the system providers and fabrication companies will receive a huge jump

6. With the evolution of newer materials like WPC, engineered wood, thermal break aluminum, what would be the future of uPVC windows?

As in Europe the market share of uPVC windows is above 50%. I am confident that uPVC is going to remain significant and will have a growing market share here in India.

Speaking for Lingel, we had to unfortunately learn that especially at the high-end residences, architects these days are widely proposing Aluminum over the uPVC. It is again up to our own uPVC industry to show and educate all the stake-holders that uPVC is available in various price categories. Looking at the Aluminum market it took a long time for the system to be widely accepted. The same evolution is yet awaited at our uPVC sector. It is important for us to highlight that there are many criteria how windows can be performance based and differentiated.

7. What's your take on sustainability: how can right windows give a boost to sustainable building?

We at Lingel kept supporting sustainable / green initiatives since 2012. I personally attended lots of seminars as sponsor, speaker or guest. My personal take-home after 10 years is that the word "sustainable" in itself needs to be actually still defined because all the stakeholders of the fenestration industry are calling their products sustainable. Same we witness with all other building material products too. Therefore, it would be ideal to have a general definition on how to define sustainability based on parameters that it does not turn into just a marketing tool.

My personal interpretation:

- Source your raw material from sources with a controlled waste and recycling management
- Have your own recycling management
- Assure that your product after its life cycle will be recyclable and the raw material can be reused
- Take care that there will be less maintenance work for your product during its lifetime
- Assure that consumers can reach you for any kind of maintenance work at any given point of time

8. What is the goal of UWDMA? Are you satisfied with what you have achieved till date and what do you think needs to be done to take the Industry into the next decade?

Being part of the journey from day one, way back in 2007, I personally have one of the longest attachments with UWDMA. Regarding the question of the satisfaction level there are a lot's of 'Yes's' and of course few NO's as well. What mainly fills me with lots of joy is the fact that we (UWDMA) made it till here. Running an association based on personal commitments and time contribution without any revenue creation by its members, is not an easy task.

During those last 15 years we saw many different or similar initiatives coming and surrendering. I feel further on behalf of UWDMA, very privileged that we are since many years recognized as the main industry body, the voice of our uPVC industry. As we know the industry grew during these years and the key players of the Indian industry maintained close connections with the larger vision of our industry.

UWDMA is working with the BIS since 2012 and has already updated the profile standard. The same is going to be introduced shortly. We were working with the BEE and as UWDMA and we could raise our concerns on the star rating of windows.

This step was very important as the proposals were purely based on glazing and kept the importance of the correct frame material and air leakage behind. Still, we are looking with a positive spirit ahead that the star rating process will be revamped one day covering all the relevant criteria.

Another successful story is our skill development vertical. Initially we joined hands with the glazing academy of India while having a 'train the trainer' program with

different ITI's. Later the game changer started while getting connected with the German embassy body GIZ. From there we were connected with various stakeholders of different Indian state and central ministries to further spread the awareness. Proudly we are running two skill development centers till date and in future many more will be coming.

As a drawback point of UWDMA, of course there is always the pressure on ourselves, why only this much, why not more. But whoever is following us closely could witness that after having since 2019 new successor Shobita Mishra with us, many initiatives and connections have been made, and the existing programs have been strengthened a lot. So overall I am very positive in this regard.

9. Would you agree that lack of awareness is the most important roadblock to the growth of this Industry? Would taking up initiatives in the Govt sector help?

Detailed awareness to differentiated designs and window options, are not available yet with the consumers. As an example, everyone knows the meaning of the product "car" and everyone knows a part of the different car brands, the performance level of different car models as a measure of performance and pricing. This detailed knowledge is unfortunately as of now not with the consumers and even largely not with architects and decision makers.

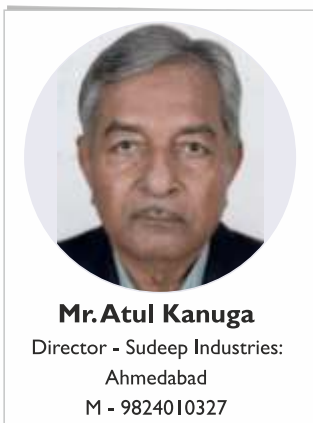
Help from the government would and should be for the saving of energy by making related to our fenestration industry minimum criteria of u - values of the frame and glass (energy loss) or parameters of allowed air leakages by doors and windows as mandatory. Any regulation of the market in this direction would help our industry a lot.

10. What is your final message to the uPVC windows Industry?

My dear industry friends, stay focused, keep on innovating, keep the consumer as the main focus of all your developments. Let us always highlight the importance of the manufacturer and let us assure that all manufacturers are working on similar quality standards. Further, let us never forget to highlight the achievements by all our technicians in factories and at the project sites who are actually doing the job.

It's the vision and work of UWDMA to cater and serve everyone under one umbrella so that knowledge can be shared and transferred.

Process Technologies: PVC Compounding



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Poly Vinyl Chloride (PVC) also known as wonder plastics, is one of the most versatile commodity of thermoplastic polymers after Polyethylene and Polypropylene. It is durable, easily workable with options of processing and achieving varied physical properties, which find applications in sectors like medical, electrical, household, toys, packaging, construction, agriculture and most importantly in water and liquid transportation.

Before PVC can be made into finished products, it always requires conversion into a compound by the incorporation of stabilizers, plasticizers, lubricants, fillers and many other functional additives. Since safety and hygiene are crucial criteria for most of the PVC products used in daily life, the selection of these chemicals shall be done with upmost care and knowledge as the formulations are different from product to product or sector to sector, equally important are the compounding process, types of machinery and process conditions to be selected to get the desired compound for specific application.

PVC which is very tough material has its processing temperature very close to the degradation temperature. Thus it is essential to compound PVC with stabilizer and other additives to make it processable and to achieve the desired end quality.

PVC due to its molecular structure has also the tendency to accommodate higher rate of additives and fillers into its compounds looking at the end desired properties. Further, due to the presence of Chlorine in its molecular structure, makes it a fire resistant polymer.

PVC compound components

Some of the Major contributors of PVC compound are:

Stabilizers – As the degradation temperature and processing temperature of PVC range is too narrow, in the processing of PVC resin, Stabilizers play an important role. PVC has to be stabilized against the action of heat required at processing temperatures. A majority of Stabilizers contain metal elements which react with HCl and inhibit further degradation. They are Metal Salts, Soaps or Complexes. Stabilization of PVC is a vast subject and these are the most important ingredient in any PVC formulations.

Plasticizers: PVC products could be made either from rigid or soft (flexible) compounds. According to the content of plasticizer, PVC compounds are often classified into:

- *Rigid and Semi-rigid PVC compound* – where Plasticizer content is in-between 10 % and 30%. They find application for manufacturing PVC pipe, profile, sheet etc.
- *Soft PVC compound* – where Plasticizer content is above 30%. Applications found in manufacturing PVC sealing strips, hoses, cables, films, artificial leather, soles, toys etc.

Plasticizers are further classified as:

- *Primary Plasticizers* – They are family of Phthalate plasticizers which makes the hard PVC resin softer. Primary plasticizers have good compatibility and can be absorbed in PVC resin in large quantities as per the needed flexibilities.
- *Secondary Plasticizers and extenders* – They have limited compatibility. Their main purpose is to optimize the compound

costs. In special cases some properties like Viscosity, Plasticizing efficiency and fire redundancy are improved. The most common Secondary Plasticizers are the Chlorinated Paraffin, waxes or Paraffin Oils.

Lubricants – Lubricants are of two types viz external lubricants which prevent hot PVC from sticking to metal surfaces while processing; and internal lubricants which reduce the friction within the polymer molecules and decrease the melt viscosity. They are a must with suspension resin compounds but have a much lesser role in Plastisol. Stearic Acid, Waxes including High Molecular waxes and many complex esters are commonly used.

Fillers – Fillers are inert inorganic powders whose major role is to reduce costs and sometime improving finish of the product. Though additions of fillers, especially in high dosages, adversely affect most desirable properties, and therefore are rightly viewed as cheapening agents for PVC. The addition levels need to be optimized looking at the required end properties of the product as well as economics. The commonly used filler is Calcium Carbonate.

Impact Modifier – A family of Acrylic and MBS copolymers. They act like rubber and improve resistance to shock loads in rigid PVC products. Chlorinated Polyethylene (CPE) is widely used as an Impact modifier in PVC Pipe.

Apart from these, various other additives like UV Stabilizers, Fire Retardants (to further enhance its inherent properties), Foaming agents, Pigments, Colour, Master Batches etc. are added during the compounding as per the formulation requirement. Since PVC compounds find in critical applications for which safety, hygiene, compatibility and finally meeting the product performance requirements are important, the PVC compounding need a great understanding of science of compounding though it looks a simple process. Global restriction of usage of heavy metals and other chemistry of materials of health hazards have led PVC processors to look at the health and environment friendly additives to be used along with PVC in their processing.

Resin Selection:

- Various grades of PVC are available looking at its process of manufacturing (Emulsion/Suspension/Bulk) and molecular weight;
- Selection of PVC grades and compounding needs to be done as per needed applications;
- There are various molecular weight grades available. Though, the most commonly used are K-67 (Higher Molecular weight) and K-57 (Low molecular weight);
- Lower K Value PVC will have lower melt viscosity and thus is easy to process. Hence conveniently being used to manufacture Rigid Products;
- Higher K Value PVC has higher melt viscosity and slightly difficult to process which benefits to manufacture Flexible Products and easy to handle melt from Die to Roller/Sizing stack.

Compounding Process

Mixing Procedure in Heater and Cooler Mixer:

The sequence of adding PVC and Additives to a high Intensity mixer is somewhat critical. Steps of operation can be defined as under:

1. PVC resin is added to the high intensity mixer first. The batch temperature is allowed to rise to 80 - 85 deg C. This initial heat rise swells the resin particle.
2. Required amount of plasticizer should be added slowly before the addition of lubricants.

3. The stabilizers are then added (second addition) in order to protect the resin as soon as possible. There is an additional temperature increase, but only about 10 deg C is allowed. The heat rises to 90-95 deg C prior to the next step.
4. The lubricants are added, allowing about one minute for their dispersion. There might be a temperature reduction at that point, therefore, the temperature is allowed to return to previous step maximum. The modifier is added and mixed for one minute, the fillers and pigments are then added, and the temperature is brought up to about 110-115 deg C.
5. Once addition of all additives is over and proper residence mixing is done, the whole lot of compound is then transferred to cooling mixture to bring the compound to normal handling temperature.

Note: The high filler or pigment loadings should be added near the end of Compounding cycle, in order to avoid severe wear as a result of abrasion on the mixer blades and walls.

Technology of PVC Compound – RIGID & SOFT:

For PVC compounding, High Speed Mixture with cooling mixture station is used for proper blending and cooking the material.

- For Consistent compounding and formulation, automatic component/additives feeding systems are being incorporated. This also reduces wastage at compounding and dusty environment as many of the additives used are dry fine powders.
- The compounded is mostly in powder form known as ‘dry blend’ (DB). In some processes, viz. flexible extrusion or rigid/flexible moulding, DB is converted into pellets form before actual processing.
- The Palletization of PVC compound is done from Dry Blend (DB) by extrusion Process.
- For soft PVC compound, the achievable hardness of finished product will vary from shore A 45 to Shore A 96/98
- The selection of stabilizer, plasticizer and other additives depends on the end use application. E.g. Lead based stabilizers would be preferred for wire and cable applications to achieve better electrical properties of course, the Lead based additives are getting phased out globally and heavy metal free systems are being used these days.
- To take care of inventory management and saving upon time and spillage losses, one pack systems are used in place of single component additives.

DRY BLEND (DB) Verses Pellets:



Source: Social media

- DB is basically mixer of PVC Resin & ingredients.
- To produce Pellets, PVC DB needs to be prepared, then extruded and cut in to small Pellets.
- Naturally Pellets will be more expensive as compared to the DB as the former involves one more process of extrusion and palletization.
- The cost in pellets may go up on account of higher dosage of stabilizer required to compensate for the additional heat history it has to go through.
- However, pellets, besides being dust free have better processing as compared to the DB as fusion already takes place during the process of palletization.

Recycling of PVC.

Products made from thermoplastics including PVC, can be and are efficiently being recycled, reprocessed and reused.

Some of the good alternate applications been found by recycling would be:

- PVC cable – After segregating PVC and Aluminum/Copper conductor. The PVC components are re-granulated and mainly used to manufacture Flexible Garden Pipes;
- Mixed PVC waste are also compounded and used for moulding;
- Medical waste which do not come in direct contact with humans, can be efficiently recycled and are being used to manufacture non-standard moulded parts;
- Rigid PVC pipes scrap gets pulverized and used along with fresh PVC compound to manufacture usable Pipes.

It is very important and advisable that source of scrap is known, which helps processors to use it considerably to achieve the desired properties and better returns.

Conclusion:

In PVC processing, compounding plays a vital role to achieve the desired product quality and physical needs. Compounding area in other words is also known as “Kitchen area”, and if the recipe is good, compounded and processed properly, it will result in a good quality end product. If in PVC processing, if we are able to control and monitor compounding activities, major efforts in getting quality product is achieved. Post compounding activities are mostly automated and with proper controls, the needed product quality can be achieved.

Industry Updates

Report of IVC meeting with PVC fraternity members of Eastern and N-E region during IndPlast 2022

The IVC interactive meeting with East and North- East India Vinyl family took place on 25th November 2022 at Biswa Bangla Mela Prangan, Kolkata along the sidelines of IndPlast 2022. The venue and hospitality services was provided by Indian Plastics Federation (IPF) and Logistics support was given by Reliance Industries (Kolkata office)

The meeting was attended by over 40 Vinyl fraternity members from West Bengal and the neighboring states. Also present were IVC, Polymer Distributors in N-E region, IPF office bearers, members and RIL Kolkata office staff related to PVC business

Welcome address was given by Mr. Rajeev Mehendale, (Hon. Secretary - IVC) and Introduction of IVC was delivered by Dr S M Diwan, (Vice President - IVC)

This was followed by a panel discussion “Role of IVC in making vinyl a competitive force” The moderator for this session was Mr. Manish Jain (IVC member). The panelists were Mr. Sisir Jalan (President IPF) and IVC members - Mr. Pulin Rajyogor, Mr. Ashish Agrawal, Mr. Rajeev Mehendate and Dr SM Diwan After a brief sharing of thoughts by the panel members the stage was open for some lively discussions.



During the deliberations, many suggestions were heard, many concerns were raised. The forward path suggested at the end was as follows:

1. IVC being a new organization, it has to create visibility in Vinyl Industry Circles. More programs and industry interactions needs to be done across the country and maximize the membership
2. IVC has to work towards the very cause of vinyl value chain to clear many myths and make vinyl as a material of choice for its most suitable applications
3. IVC needs to help and bring vinyl business stable. It needs to have a focused approach to address the issues and concerns being faced, to the Government and nodal agencies ‘under one platform, and in one voice’.
4. IVC needs to address environment related issues and undertake projects on the subject of recycling of PVC waste especially, medical wastes. Other associations shall also be invited to join such initiatives

The IVC team informed the gathering its broad objectives. The team requested all vinyl industry members of Eastern and NE region to join this common endeavor and work under the united platform of IVC



The meeting ended with a vote of thanks delivered by Mr. Anindya Roy (Regional Manager - RIL, Kolkata)

IVC participated in the SPMA exhibition at Rajkot

IVC participated in the Saurashtra Plastic Manufacturers Association exhibition "Saurashtra Plast 2022" held between 14-17 Dec 2022 at the Race Course Ground, Rajkot.

Rajkot industrial belt is a major hub for plastic processing industry for products like PVC pipes & fittings, poly films, wovens and non-woven bags.

SaurashtraPlast is a mega exhibition in the Western India and participated by the Plastic Processing Industry, Machinery Manufacturers, Additive suppliers, Master-batch and the Compounding sectors.



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MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE NOTIFICATION

SCHEDULE-II [See Rule 9] (Continued from 2nd issue of sep2022) Guidelines on Extended Producer Responsibility (EPR) for Plastic Packaging Plastic Waste Management Rule 2016 and compilation of amendments till date (Ref. Colour Code)

As amended 27th March 2018, As amended 12th August 2021, As amended 17th September 2021, As amended 06th July 2022}, As amended 16th February 2022

1. Background:

G.S.R. 133(E).—In exercise of the powers conferred by sections 3, 6, and 25 of the Environment (Protection) Act 1986 (29 of 1986), the Central Government hereby makes the following rules further to amend the Plastic Waste Management Rules, 2016, namely:-

1. (1) These rules may be called the Plastic Waste Management (Amendment) Rules, 2022.
- (2) They shall come into force on the date of their publication in the Official Gazette.
2. In the Plastic Waste Management Rules, 2016 (hereinafter referred to as the said rules), in rule 9, in sub-rule (1), for the words —as per guidelines issued under these rules from time to time, as per guidelines specified in SCHEDULE—II shall substituted.
3. In the said rules, after SCHEDULE—I, the following Schedule shall be inserted, namely:-

Background:

Refer Gazette

2. Date of Coming into Effect:

These guidelines shall come into force with immediate effect. The on-going processes related to Extended Producer Responsibility obligations will be aligned with these guidelines.

3. All Definitions: Omitted

4. Obligated Entities:

The following entities shall be covered under the Extended Producer Responsibility obligations and provisions of these guidelines, namely:-

- i. Producer (P) of plastic packaging;
- ii. Importer (I) of all imported plastic packaging and / or plastic packaging of imported products;
- iii. Brand Owners (BO) including online platforms/marketplaces and supermarkets/retail chains other than those, which are micro and small enterprises as per the criteria of Ministry of Micro, Small and Medium Enterprises, Government of India.;
- iv. Plastic Waste Processors

5. Coverage of Extended Producer Responsibility:

5.1 The following plastic packaging categories are covered under Extended Producer Responsibility:

- i. Category I: Rigid plastic packaging;
- ii. Category II: Flexible plastic packaging of single layer or multilayer (more than one layer with different types of plastic), plastic sheets or like and covers made of plastic sheet, carry bags, plastic sachet, or pouches;
- iii. Category III: Multilayered plastic packaging (at least one layer of plastic and at least one layer of material other than plastic);
- iv. Category IV: Plastic sheet or like used for packaging as well as carry bags made of compostable plastics.

5.2 The Extended Producer Responsibility Guidelines cover the following with respect to plastic packaging, namely:-

- i. Reuse;
- ii. Recycling;
- iii. Use of recycled plastic content;
- iv. End of life disposal.

6. Registration:

6.1 a. The following entities shall register on the centralized portal developed by Central Pollution Control Board namely:

- (i) Producer (P);
- (ii) Importer (I);
- (iii) Brand owner (BO);
- (iv) Plastic Waste Processor engaged in (a) recycling, (b) waste to energy, (c) waste to oil, and (iv) industrial composting,

b. Registration of Producers, Importers & Brand-Owners (operating in one or two states) and Plastic Waste processors shall be done by State Pollution Control Board or Pollution Control Committee through the centralized Extended Producer Responsibility portal developed by Central Pollution Control Board.

c. After these guidelines have come into effect, with respect to, entities starting their business in a particular year and placing their products in market in that year, they shall have Extended Producer Responsibility target obligations from the next year.

- 6.2 The entities covered under clause 6.1 shall not carry any business without registration obtained through on-line centralized portal developed by Central Pollution Control Board.
- 6.3 The entities covered under clause (6.1) shall not deal with any entity not registered through on-line centralized portal developed by Central Pollution Control Board.
- 6.4 In case, it is found or determined that any entity registered on the on-line portal has provided false information or has willfully concealed information or there is any irregularity or deviation from the conditions stipulated while obtaining registration under Extended Producer Responsibility guidelines, then the registration of such an entity would be revoked for a one-year period after giving an opportunity to be heard. The entities whose registration has been revoked shall not be able to register afresh for the period of revocation.
- 6.5 In case any entity falls in more than one sub-category mentioned in the clause (6.1) then the entity shall register under each of those sub-categories separately. Further, in cases, where the entity has units in different states, in a particular sub-category mentioned in clause 6.1, then these units shall also be registered separately. However, only one registration under a subcategory in a state would be needed, even if, more than one unit are located in a state. The registration shall be as per Standard Operating Procedure laid down by Central Pollution Control Board for the purpose, as per these Guidelines.
- 6.6 While registering, the entities shall have to provide PAN Number, GST Number, CIN Number of the company and Aadhar Number and PAN Number of authorized person or representative and any other necessary information as required.

7. Targets for Extended Producer Responsibility and obligations of Producers, Importers & Brand-Owners:

7.1 The Extended Producer Responsibility targets for the Producers, Importers & Brand-Owners shall be determined category-wise.

7.2 Producer (P):

a. Extended Producer Responsibility target (Refer example I to 3 in Annexure): Eligible Quantity in MT (Q I) shall be the average weight of plastic packaging material (category-wise) sold in the last two financial years (A) plus average quantity of pre-consumer plastic packaging waste in the last two financial years (B) minus the annual quantity (C) supplied to the entities covered under sub-clause 4 (iii) in the previous financial year as under:-

$$Q I \text{ (in MT)} = (A + B)$$

and the Extended Producer Responsibility target shall be determined category-wise, as given below

Extended Producer Responsibility target:

SN	Year	EPR target (As a percentage of Q I - category-wise)
I	2021 - 22	25 %
II	2022 - 23	70 %
III	2023 - 24	100 %

The Extended Producer Responsibility target in MT category-wise, as applicable, shall be provided by Producer, as part of Action Plan on the centralized portal developed by Central Pollution Control Board.

b. Obligation for recycling (Refer example I to 3 in Annexure):

The Producer shall ensure minimum level of recycling (excluding end of life disposal) of plastic packaging waste collected under Extended Producer Responsibility Target, category-wise, as given below namely:-

Minimum level of recycling (excluding end of life disposal) of plastic packaging waste (% of Extended Producer

Plastic packaging category	2024-25	2025-26	2026-27	2027-28 and onwards
Category I	50	60	70	80
Category II	30	40	50	60
Category III	30	40	50	60
Category IV	50	60	70	80

In case of Category IV plastic packaging category (plastic sheet or like used for packaging and carry bags made of compostable plastics), the minimum level of recycling means processing plastic packaging waste for composting through industrial composting facilities.

c. End of life disposal (refer examples I to 3 in Annexure):

i. Only those plastics, which cannot be recycled will be sent for end of life disposal such as road construction, waste to energy, waste to oil, cement kilns (for co processing) etc. as per relevant guidelines issued by Indian Road Congress or Central Pollution Control Board from time to time.

ii. The producers shall ensure end of life disposal of the plastic packaging waste only through methodologies specified in Rule 5 (1) (b) of Plastic Waste Management Rules, 2016,

d. Obligation for use of recycled plastic content (Refer example 6 in Annexure)

The Producer shall ensure use of recycled plastic in plastic packaging category-wise as given below namely:

Mandatory use of recycled plastic in plastic packaging (% of plastic manufactured for the year)

Plastic packaging category	2025-26	2026-27	2027-28	2028-29 and onwards
Category I	30	40	50	60
Category II	10	10	20	20
Category III	5	5	10	10

In cases, where it is not possible to meet the obligation in respect of recycled plastic content on account of statutory requirements, the exemption will be granted by Central Pollution Control Board on case-to-case basis. However, in such cases, the Producers, Importers & Brand-Owners will have to fulfil its obligation of use of recycled content (in quantitative terms) through purchase of certificate of equivalent quantity from such Producers, Importers & Brand- Owners who have used recycled content in excess of their obligation. Central Pollution Control Board will develop mechanism for such exchange on the centralized online portal.

7.3 Importer (I):

a. Extended Producer Responsibility Target (Refer example I to 3 in Annexure)

Eligible Quantity in MT (Q 2) shall be the average weight of all plastic packaging material and / or plastic packaging of imported products (category-wise) imported and sold in the last two financial years (A) plus average quantity of pre-consumer plastic packaging in the last two financial years (B) waste minus the annual quantity (C) supplied to the entities covered under sub-clause 4 (iii) in the previous financial years as under:

$$Q 2 \text{ (in MT)} = (A + B) - C$$

and the Extended Producer Responsibility target shall be determined, category-wise, as given below namely:

SN	Year	EPR target (As a % of Q 2 - category-wise)
I	2021 - 22	25 %
II	2022 - 23	70 %
III	2023 - 24	100 %

The Extended Producer Responsibility target in MT category-wise, as applicable, shall be provided by Importer as part of Action Plan on the centralized portal developed by Central Pollution Control Board.

b. Obligation for recycling (Refer example 1 to 3 in Annexure)

The Importer shall ensure minimum level of recycling (excluding end of life disposal) of plastic packaging waste collected under extended producer responsibility Target, category-wise, as given below.

Minimum level of recycling (excluding end of life disposal) of plastic packaging waste (% of extended producer responsibility Target)

Plastic packaging category	2024-25	2025-26	2026-27	2027-28 and onwards
Category I	50	60	70	80
Category II	30	40	50	60
Category III	30	40	50	60
Category IV	50	60	70	80

In case of Category IV plastic packaging category (plastic sheet or like used for packaging and carry bags made of compostable plastics), the minimum level of recycling means processing plastic packaging waste for composting through industrial composting facilities.

c. End of life disposal (refer examples 1 to 3 in Annexure)

i. Only those plastics, which cannot be recycled will be sent for end of life disposal such as road construction, waste to energy, waste to oil as per relevant guidelines issued by Indian Road Congress or Central Pollution Control Board from time to time.

ii. The importer shall ensure end of life disposal of the plastic packaging waste only through methodologies specified in rule 5 (1) (b) of Plastic Waste Management Rules, 2016, as amended.

d. Obligation for use of recycled plastic content (Refer example 6 in Annexure)

The Importer shall ensure use of recycled plastic in plastic packaging category-wise as given below.

Mandatory use of recycled plastic in plastic packaging (% of imported plastic for the year)

Plastic packaging category	2025-26	2026-27	2027-28	2028-29 and onwards
Category I	30	40	50	60
Category II	10	10	20	20
Category III	5	5	10	10

Any recycled plastic used in imported material shall not be counted towards fulfilment of obligation. The importer will have to fulfil its obligation of use of recycled content (in quantitative terms) through purchase of certificate of equivalent quantity from such Producers, Importers & Brand-Owners who have used recycled content in excess of their obligation. Central Pollution Control Board will develop mechanism for such exchange on the centralized online portal.

7.4 Brand Owner (BO):

a. Extended Producer Responsibility target (refer examples 1 to 3 in Annexure)

Eligible Quantity in MT (Q 3) shall be the average weight of virgin plastic packaging material (category-wise) purchased and introduced in market in the last two financial years (A) plus average quantity of (B) of pre-consumer plastic packaging in the last two financial years as under:-

$$Q 3 \text{ (in MT)} = A + B$$

The Extended Producer Responsibility target shall be determined, category-wise, as given below namely:

SN	Year	EPR Target (As a % of Q3 - category-wise)
I	2021 - 22	25 %
II	2022 - 23	70 %
III	2023 - 24	100 %

The Extended Producer Responsibility target in MT category-wise, as applicable, shall be provided by Brand Owner as part of the Action Plan on the centralized portal developed by Central Pollution Control Board.

b. Obligation for reuse (refer examples 4 and 5 in Annexure):

I. The Brand Owner using Category I (rigid) plastic packaging for their products shall have minimum obligation to reuse such packaging as given below:

Provided that the reuse of Category I rigid plastic packaging in food contact applications shall be subject to regulation of Food Safety and Standards Authority of India.

II. Minimum obligation to reuse for Category I (rigid plastic packaging).

SN	Year	Target (as % of Category I rigid plastic packaging in products sold annually)
A	Category I rigid plastic packaging with volume or weight equal or more than 0.9 litre or kg but less than 4.9 litres or kg, as the case may be	
I	2025 – 26	10
II	2026 – 27	15
III	2027-28	20
IV	2028-29 and onwards	25
B	Category I rigid plastic packaging with volume of weight equal or more than 4.9 litres or kg.	
I	2025 – 26	70
II	2026 – 27	75
III	2027-28	80
IV	2028-29 and onwards	85

III. The quantity of rigid packaging reused by brand Owner shall be calculated by reducing virgin plastic packaging manufactured/imported/purchased in that year from the sales of the Brand Owner. The brand owner shall provide this information on the centralized portal developed by Central Pollution Control Board.

IV. The quantity of Category I rigid plastic packaging reused shall be reduced from the total plastic packaging used under Category I by the obligated entities (Brand Owners).

V. The quantity of Category I rigid plastic packaging reused during the year 2022 – 2023 and 2023-2024, shall be reduced from the total plastic packaging used under Category I.

c. Obligation for recycling (refer examples I to 3 in Annexure):

The Brand Owner shall ensure minimum level of recycling (excluding end of life disposal) of plastic packaging waste collected under Extended Producer Responsibility target, category-wise, as given below.

Minimum level of recycling (excluding end of life disposal) of plastic packaging waste (% of Extended Producer Responsibility Target)

Plastic packaging category	2024-25	2025-26	2026-27	2027-28 and onwards
Category I	50	60	70	80
Category II	30	40	50	60
Category III	30	40	50	60
Category IV	50	60	70	80

In case of Category IV plastic packaging category (plastic sheet or like used for packaging and carry bags made of compostable plastics), the minimum level of recycling means processing plastic packaging waste for composting through industrial composting facilities.

d. End of life disposal (refer examples I to 3 in Annexure)

i. Only those plastics, which cannot be recycled will be sent for end of life disposal such as road construction, waste to energy, waste to oil, as per relevant guidelines issued by Indian Road Congress or Central Pollution Control Board from time to time.

ii. The Brand Owner shall ensure end of life disposal of the plastic packaging waste only through methodologies specified in rule 5 (1) (b) of the Plastic Waste Management Rules, 2016, as amended.

e. Obligation for use of recycled plastic content (refer examples 6 in Annexure)

i. The Brand Owner shall ensure use of recycled plastic in plastic packaging, category-wise, as given below namely:

Mandatory use of recycled plastic in plastic packaging. (% of manufactured plastic for the year)

Plastic packaging category	2025-26	2026-27	2027-28	2028-29 and onwards
Category I	30	40	50	60
Category II	10	10	20	20
Category III	5	5	10	10

ii. In cases, where it is not possible to meet the obligation in respect of recycled plastic content on account of statutory requirements, the exemption will be granted by Central Pollution Control Board on case-to-case basis. However, in such cases, the Producers, Importers & Brand-Owners will have to fulfil its obligation of use of recycled content (in quantitative terms) through purchase of certificate of equivalent quantity from such Producers, Importers & Brand-Owners who have used recycled content in excess of their obligation. Central Pollution Control Board will develop mechanism for such exchange on the centralized online portal.

iii. In case, where Brand Owner is also Producer and/or Importer of plastic packaging material, the clause 7.2 and 7.3 shall also apply for determining their Extended Producer Responsibility targets and obligations as Producer and/or Importer, respectively.

7.5 The Extended Producer Responsibility target in MT category-wise, as applicable, shall be provided by all Producers, Importers & Brand-Owners as part of Action Plan on the centralized portal developed by Central Pollution Control Board.

7.6 The obligations for reuse, recycling of waste and use of recycled plastic content in packaging shall be reviewed every five years based upon available technologies for meeting the targets specified.

7.7 Extended Producer Responsibility on plastic packaging will promote sustainable packaging, as per guidelines prepared by Central Pollution Control Board, inter alia based on the following criteria,

- i. Package designing promoting reuse;
- ii. Package designing amenable for recycling;
- iii. Recycled plastic content in plastic packaging material and;
- (iv) Package designing for environment.

7.8 In case, the obligated entity utilizes plastic packaging made from biodegradable plastics, the provisions of rule 10 shall be applicable and the Extended Producer Responsibility target shall not be applicable

-----to be continued in the next issue

Note: This PWM Rule is compiled by Dr. Priyank Arya, Founder Director, EHS Services (www.ehsservices.co.in, ehss.inquiry@gmail.com) based on available PWM Rules for your better understanding.

Before taking any action or decision, kindly refer to the original PWM Rules as published by MOEFCC/CPCB from time to time.



INDIAN VINYL COUNCIL

INDIAN VINYL COUNCIL

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Tel.: +91 22 67489899
Email ID : membership@indianvinylcouncil.com
Website: indianvinylcouncil.com

Reg. No. : GUJ/21190/Ahmedabad (Registrar of Societies)

MEMBERSHIP APPLICATION

Date of application: _____

Name of the organization : _____

Business Address : _____

City : _____ Pin : _____ State : _____

Tel. : _____ Email: _____ Website: _____

Factory Address (if applicable) : _____

City : _____ Pin : _____ State : _____

Tel. : _____ Email: _____ Website: _____

Date of Establishment GST No.

Category of Business (Please tick mark wherever applicable) (see page 3 and 4 for criteria of type of membership)

- Manufacturer of PVC resin Additives manufacturer Processor of PVC Equipment manufacturer
- Trader/Distributor Institution/Association Consulting firm Others

Annual Turnover of last financial year Rs.

Nature of business:

Name of Authorized Representatives	Designation	Specimen Signature	Mobile No	Email ID
------------------------------------	-------------	--------------------	-----------	----------

(Principle Member)

(Alternate Member)

Category of Membership Applied for (Please tick mark wherever applicable):

- Privilege Associate Donor

Name of the authorized Person: _____

SIGNATURE

FOR OFFICIAL USE

Received on:

Accepted at the Managing Committee Meeting held on

Sign of Hon. Secretary / Auth. Signatory

Send the filled form along with the cheque to :
Indian Vinyl Council, 101/102 terminal -9, Nehru Road, neat Hotel Sahara Star, Vile Parle (E) , Mumbai 400099 .India

FEE STRUCTURE

A) Privilege Members :Individuals in the Business of PVC, Corporate in PVC business , PVC compounders, PVC converters, PVC end product fabricators and any other company engaged in the field of PVC value chain or furthering the object of the Society, may be admitted as Privilege Member

Figures in Rupees

Please tick as applicable category					
Company Turnover	0-100 Cr	100-250 Cr	250-500 Cr	500-1000 Cr	1000+ Cr
ADMISSION CHARGE	5000	5000	5000	5000	5000
ANNUAL MEMBERSHIP FEE	25000	50000	75000	100000	250000
TOTAL	30000	55000	80000	105000	255000
ADD GST (18%)	5400	9900	14400	18900	45900
TOTAL	35400	64900	94400	123900	300900
LESS TDS (10%)	3000	5500	8000	10500	25500
TOTAL PAYABLE	32400	59400	86400	113400	275400

B) Associate Member: Any society, association, chamber of commerce or other not-for-profit organization, trust, foundation etc. registered as per the applicable law and representing manufacturing industries, service providers, suppliers, end users, dealer etc. belonging to the Vinyl chain from the India, may be admitted as Associate Member of the Society

Figures in Rupees

Membership Fee	10,000
One Time Enrolment Fee	5,000
Total	15,000
Add GST 18%	2700
Total	17700
Less TDS @ 10% (for F/Y 21-22)	1500
Total Payable	16200

Above mentioned are Annual fees and become due in April every year.

C) Donor Member: Individuals, firms, trusts, foundations, institutions, bodies corporate or associations supporting or desirous of supporting, or furthering the objects of the Society, may, on payment of the lump sum donations, as is fixed by the Society from time to time.

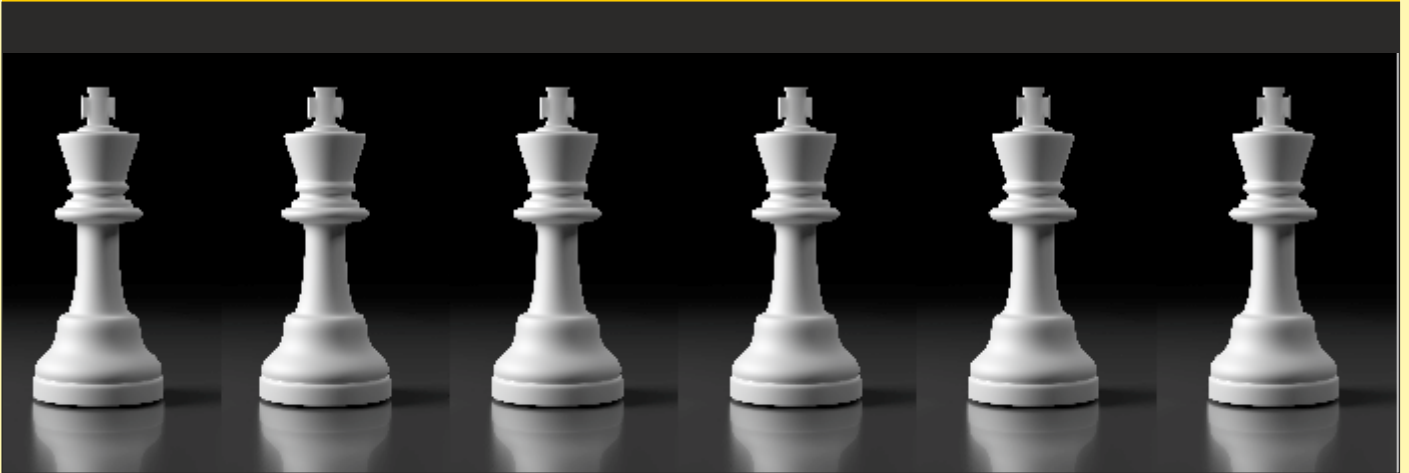
Donation will be accepted in multiples of Rs 1.0 Lakh and minimum of Rs 5.0 lakhs

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www.indianvinylcouncil.com

**FOR ONLINE MEMBERSHIP
APPLICATION**

Privilege Members of IVC



- 1 Amisha Vinyls Private Limited
- 2 Asia Pacific Vinyl Network
- 3 Baerlocher India Additives Private Limited
- 4 Basil Prompt Vinyl Private Limited
- 5 Bihani Manufacturing Company Private Limited
- 6 Caprihans India Limited
- 7 Deceuninck Profiles India Private Limited
- 8 Encraft India Private Limited
- 9 Finolex Industries Limited
- 10 Goldstab Organics Private Limited
- 11 Indo-Reagens Polymer Additives Private Limited
- 12 Karan Polymers Pvt. Ltd
- 13 Lubrizol
- 14 Manish Packaging Private Limited
- 15 NCL Veka Limited
- 16 Ori-Plast Limited
- 17 Pioneer Polyleathers Private Limited
- 18 Platinum Industries Private Limited
- 19 Prabhu Poly Pipes Ltd
- 20 PVC Converters (India) Private Limited
- 21 Reliance Industries Limited
- 22 Sun Ace Chemical India (Private) Limited
- 23 The Supreme Industries Limited
- 24 Theysohn Extrusion
- 25 Vihan Engineering Private Limited



INDIAN VINYL COUNCIL

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GSTIN : 24AABTI 7693 EIZJ

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