INDIAN RESINS MANUFACTURERS` ASSOCIATION

eNewsLetter
Edition: March 2023

INDIAN RESINS MANUFACTURER'S ASSOCIATION (IRMA)
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Published by
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INDIAN RESINS MANUFACTURERS' ASSOCIATION

From The Editor's Desk

Dear Friends,

I am glad to inform you that this is the third edition of Irma e-Newsletter published under my editorship which will be of interest to you.

With all of your support and contribution I will make every effort to bring the magazine regularly with good and useful reading material. You are most welcome to give your suggestions to further upgrade IRMA e-Newsletter. We also request you all to give us articles on technical, commercial or any other subject of educate value to our members.

The present scenario is encouraging for the industry. We hope the industrial growth will increase and profitable.

We at IRMA are organising a Seminar on 8th & 9th June 2023 and we wish all of you should attend and enrich the knowledge. It will be a pleasure-cum-educational Seminar outside Mumbai. We are attaching the Seminar flyer, sponsorship details, advertisement form, delegate form etc., to enable you to participate.

HAPPY READING !

N. Kannan
Chief Editor

From The President's Desk

S. Mahadevan
President

Greetings from IRMA,

I take this opportunity to wish all you members a Happy and successful Financial Year.

With raw materials rates stabilising and demand for coatings and resins on the up it is a healthy sign for one and all. The dream budget presented by our Hon.Finance Minister with focus on infra and road projects there will see a surge in demand going forward . All in all it promises to be an exciting time ahead.

World over trend is towards Green and sustainable initiatives. IRMA being in the forefront of such initiatives is pleased to announce its much awaited Seminar on Green initiatives for the Resin Industry under the convenorship of Mr Siddharth shah and Mr Manish Kandhekar at Fariyas Resort Lonavala on 8th and 9th June 2023. I request all you members to participate in large numbers.

I wish to acknowledge the efforts of our Chief Editor Shri Kannan for bringing this edition of Newsletter timely and the support of the young and vibrant team at IRMA.Looking forward to meeting you all at Lonavala.

Thank You.

S. Mahadevan
President

SUSTAINABLE ALTERNATIVE TO DGEBA

Madhuri Bhamare[1], Soham Chaudhari[1], Devesh Sane[1]
Department of polymer and surface engineering, ICT, Mumbai

ABSTRACT

Epoxy resins made from petroleum have good adhesion, physical properties, barrier properties, and chemical resistant qualities. The loss of non-renewable resources, environmental issues, and the need for renewable substitutes for petroleum-based goods to cut greenhouse gas emissions, however, are all causing significant worry. Here in this article we covered tannin, soyabean, cardanol, rosin, furan based epoxy resin and also covered their properties and application in different fields.

Introduction

EPOXY resins (ERs) created from biomaterials are becoming more common as a result of significant efforts being made to provide environmentally friendly substitutes for traditional petroleum-based ERs. The replacement of bisphenol A (BPA) with acceptable materials without affecting the final qualities of ERs is one of the major issues in this industry. Biobased sustainable resin refers to a type of resin that is made from renewable biological resources and is designed to have a minimal impact on the environment. These resins are frequently used as alternatives to polymers made from petroleum. Bio-based resins have several advantages over traditional petroleum-based resins [1]. The advantages of biobased sustainable resin are three- fold. Firstly, they are produced from renewable and sustainable resources, which means that their production doesn't deplete finite resources. Secondly, they have a lower carbon footprint since they require less energy to produce, resulting in fewer greenhouse gas emissions. Lastly, they can be biodegradable or compostable, which means they break down naturally and don't contribute to the problem of plastic pollution in the environment.

Biobased epoxy resin is a type of resin that is manufactured using renewable biological resources, such as soybeans, corn, or other natural materials. Epoxy resins are widely used in high-strength and durable applications, such as coatings, adhesives, and composites. Bio-based epoxy resins offer multiple advantages over traditional petroleum-based epoxy resins. Firstly, they are more sustainable and have a lower carbon footprint. Secondly, they are non-toxic and do not release harmful chemicals during production or use. Lastly, they can be biodegradable or compostable, which means they naturally decompose and do not contribute to plastic pollution in the environment [2].

To produce biobased epoxy resins, plant-based feedstocks are utilized to create epoxy monomers, which are subsequently polymerized to form the final product. The resulting resin possesses similar properties to traditional epoxy resins, such as high strength, chemical resistance, and exceptional adhesion. Bio-based epoxy resins have a diverse range of applications, including coatings for flooring and furniture, adhesives for construction materials, and composites for the automotive and aerospace industries. They provide an

environmentally- friendly and sustainable substitute for conventional epoxy resins, without compromising on performance or quality [3].

The selection of the natural sources employed in the formulation of ERs is critical since the usage of these biobased components may result in ERs with subpar performances.

2.Tannin based epoxy

Tannin is a substance that may darken leather and is easily dissolved in water. It has a strong astringent effect in aqueous solution. Chemical aggregation of an intricate organic molecule results in tannin. Tannin is divided into two categories based on its chemical properties:

1. Condensed tannin, which is polymerized to create phlobaphene, an insoluble substance in water. Hydrozable tannin, which is hydrolyzed by heating with a diluted acid to form gallic acid, ellagic acid, and other acids.

2. The hydrolyzable tannins include extracts from chestnut, myrobolans (Phyllantus and Terminalia species), and dividivi (Caesalpina coraria species).

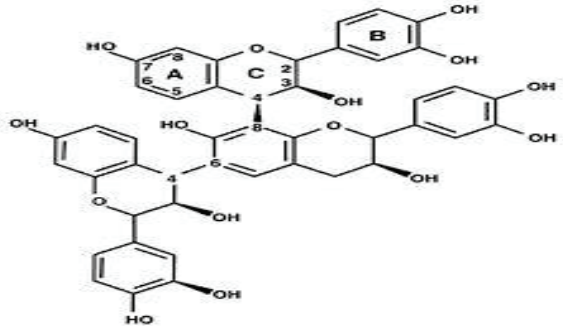

Fig.1: Tannin structure

Condensed tannins, on the other hand, can be found in large amounts in the wood and bark of a variety of species.

3. Cardanol Based Epoxy Resin System

One of the most commonly used biomass-derived product in the chemical industry is the cashew nut shell liquid (CNSL). It is a liquid created from cashew nut shells. The creation of paints and varnish, foundry core oils, automobile brake linings, bonding and latex compounding resins, protective coatings, epoxies, wood composite adhesives, and anionic and non-ionic surface-active agents are just a few products that employ the CNSL today. A viscous liquid known as cashew nut shell liquid (CNSL) develops inside the delicate structure of the cashew nut shell. The cashew nut is a byproduct of the Brazil-native Anacardium occidentale

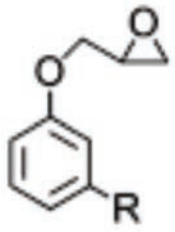

Fig.2: Cardanol structure

L. cashew tree. The main components of CNSL are phenolic compounds with extensive side- chain modification at the meta-position. CNSL can replace phenol in a number of applications since it is more affordable. An excellent example of the potential applications for a cheap, renewable agro-by-product is the use of CNSL in place of phenol [4].

4. Rosin Based Epoxy Resin

Rosin is a readily accessible, naturally occurring chemical. Because of their large hydrogenated phenanthrene ring structure, rosin acids are similar to cycloaliphatic or aromatic compounds in terms of

molecular stiffness. As a result, the stiff monomer that is now made from petroleum might be replaced with one of their derivatives. The rosin-based epoxy outperformed its plant oil equivalents in terms of Tg, modulus, and thermal stability and had many characteristics with the cured glycidyl ether of biophenol A [5].

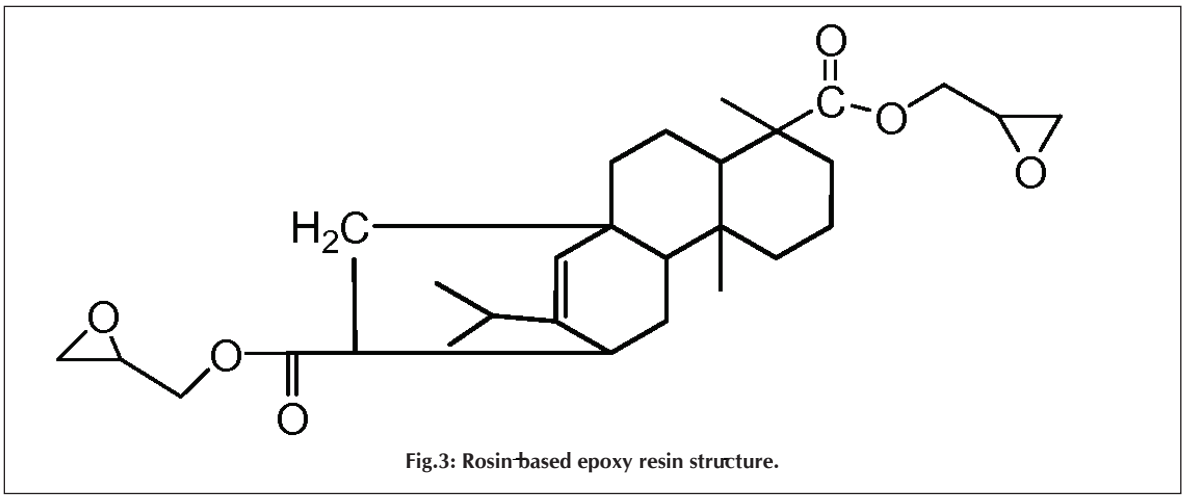

Fig.3: Rosin-based epoxy resin structure.

5. Vegetable Oil based epoxy: -

Due to their wide availability, biodegradability, and low toxicity, vegetable oils are a promising renewable resource for producing polymers. The triglyceride structure found in vegetable oils is the main reason for their appeal, as it allows for the creation of various polymeric structures, ranging from linear and easily processable polymers to cross-linked systems that can be used as resins and coatings. Vegetable oils can be categorized into three groups based on their degree of unsaturation: drying, semi-drying, and nondrying oils.[7]

5.1 Soybean Oil based epoxy

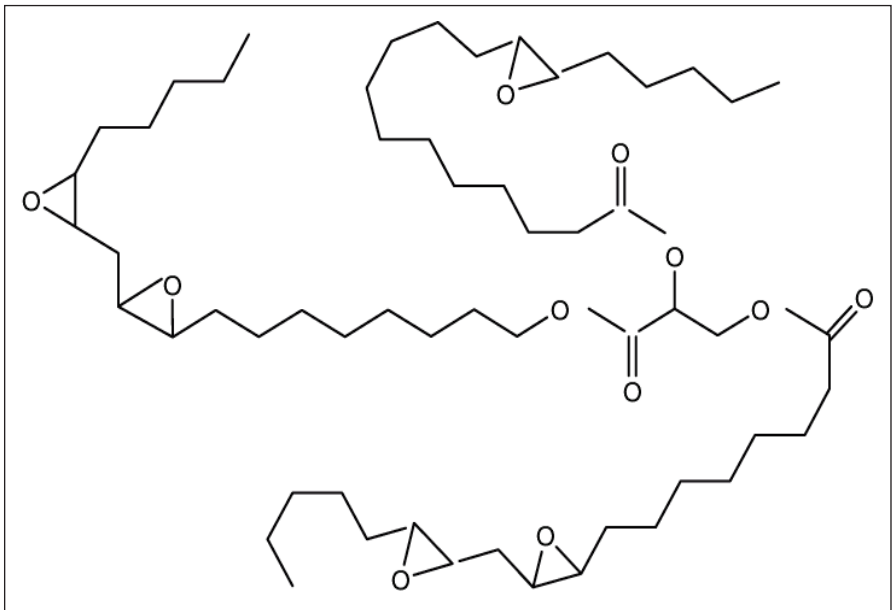

Fig. 4: Soybean oil-based epoxy resin

Epoxidized soybean oil (ESO), a readily available substance with significant potential to replace petroleum-based polymers, is anticipated to have a market of $300 million USD by 2020. Only in the past year, much research has been conducted globally on the use of ESO in a variety of applications. ESO resins can be combined with additives like plasticizers, hardeners, and diluents to customise certain properties of the resulting polymers. For the sake of conciseness while yet being thorough, the breadth of ESO research will not be thoroughly examined; instead, a few recent articles will be emphasised [6].

5.2 Karanja Oil

Similar to the neem tree, the karanja is a widely cultivated, intermediate tree that is typically found close to rivers and coasts. Its oil is thick, from yellow-orange to brown in hue, and is not fit for human consumption. Oleic acid, which is the major unsaturated fatty acid and makes up around 45-70% of the oil's makeup, is the key component of this non-drying oil. There are several therapeutic uses for karanja oil.

According to TGA studies, the statistically significant heat resistance index values for epoxy resins made from karanja oil were 170 and 175 oC. These resins also shown high thermal stability. These temperatures are greater than the 158 oC recorded for similar DGEBA resins. The dried epoxy resins made from karanja have the potential to replace paper laminates and coatings with biobased alternatives. These resins have also been demonstrated to be efficient mosquito larvicides, indicating that they may be utilised to control mosquito populations in places like India where mosquitoes pose a serious threat to public health due to their capacity to spread illnesses like dengue.[7]

5.3 Linseed Oil based epoxy resin: -

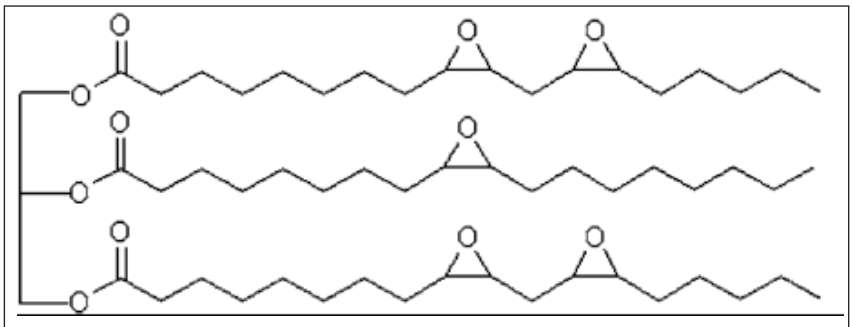

Fig.5: Linseed oil based epoxy resin

Linseed oil is the most often epoxidized oil because of the high number of double bonds in its chains of linolenic acid. Despite being commercially accessible, epoxidized linseed oil (ELO) is currently being researched to be used as a matrix for composite materials with different reinforcements. Due to the global push to develop bio-based polymers and provide petroleum- based epoxy resins for coatings and adhesive applications the needed flexibility, ELO has grown in prominence in thermoset applications. Glass, carbon, and aramid fibres are expensive and not environmentally friendly, prompting the composites industry to investigate using natural fibres in conjunction with bio-based composites like ELO-based resins. [8]

6. Eugenol based epoxy resin

Currently, a number of plant essential oils, including those from basil, bay leaf, clove, nutmeg, and cinnamon, are used to create eugenol, an oily liquid that ranges in colour from colourless to light yellow. It is

more affordable, made from renewable resources, and less dangerous. Antioxidants are commonly utilised in stabilising processes for making rubber and plastic. Due to its low cost, non-toxic properties, and eco-friendly practises, eugenol-based (EU-based) resins are becoming more and more popular for developing design approaches and features. Due to its reactive allyl group and methoxy-substituted phenolic ring, eugenol serves as an excellent substitute for thermoset epoxy resin.

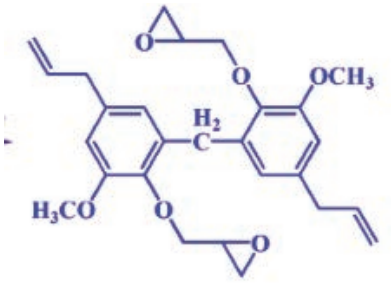

Fig.6: Eugenol based epoxy resin

In addition to resins based on lignin and vanillin, a minor number of epoxy resins based in the EU have also been produced. Because of their great thermal stability, high fracture toughness, and low flammability, they are suitable for a wide range of applications. Electronics, coatings, fibre composites, adhesives, and flame protection are just a few of their uses. Nevertheless, compared to DGEBA, EU-based epoxy resins have a few drawbacks, such as a lower Tg (glass transition temperature), less viscosity, and more hydrophilicity. They have been improved with the use of polysiloxanes, polybenzoxazine, bismaleimide, and 1,3-dioxolan-4-one in order to get over these shortcomings. Outstanding adhesion, anti-corrosion, and stiffness are features of the modified epoxy resins using EU-based technology. They can be made via cross-linking, strengthening, and mixing methods. Several groups have reported that modified EU-based epoxy resins are more advantageous than the pristine EU-based epoxy resin.[9]

7. Furans based epoxy resin

Due to their aromaticity and availability, furanyl building blocks are preferable bio-based substitutes for phenyl building blocks made from petroleum in industrial thermoset resins. Furfural (F) and 5-(hydroxymethyl)-2-furfural (HMF), two furanyl compounds produced from current biomass sources, are easily made from pentose and hexose sugars or polysaccharides. The well-known precursors of the furan-based green polymers 2,5-furandicarboxylic acid (FDCA) and furfuryl alcohol (FA), respectively, may be created from these two furanic chemical building blocks. These precursors cannot, however, create networks by crosslinking. As a result, the two are typically utilised as network modifiers in polymer networks where furan rings are awaiting groups. There have been a number of studies on multifunctional furanyl-based epoxy resins that can form complete thermoset networks for a variety of purposes[10].

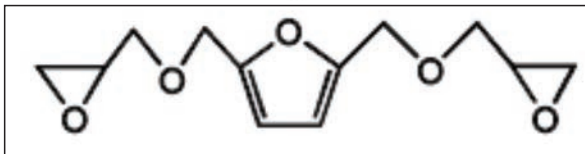
Fig. 7: Furan based epoxy resin

8. Vanillin based epoxy resin

The creation of polymers from renewable resources is a contemporary research issue that is of interest. Vanillin is one of the few biobased and aromatic chemicals that are commercially accessible, and it has lately drawn a lot of interest from the polymer world. Compared to conventional epoxy resins, vanillin-based epoxy resins provide a number of benefits, such as increased biodegradability, decreased toxicity, and improved mechanical qualities. The mono- aromatic aldehyde vanillin, which is generated from lignin, is non-toxic and a sustainable alternative.

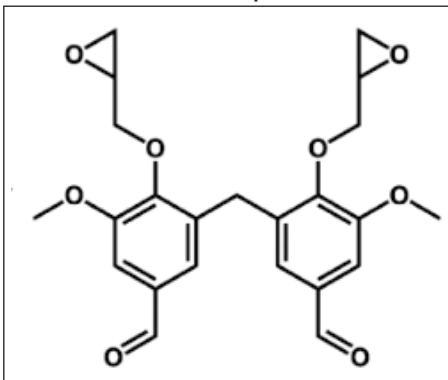
Fig. 8: Vanillin based epoxy structure

While the structure of lignin is complicated, vanillin-based epoxy resins are simple to make by combining chemicals produced from vanillin with epichlorohydrin. High- performance epoxy polymers are created as a result of this reaction, which also yields diglycidyl compounds that can raise the cross-linking density and Tg of the epoxy network. Hence, using bio-based aromatics like vanillin offers enormous potential for the creation of high-performance and sustainable epoxy resin composites. [11]

9. Isosorbide-based epoxy resin

Epoxy resins made from isosorbide also have a greater Tg than resins made from DGEBA, which suggests enhanced heat stability. They are therefore perfect for usage in high- performance applications like those found in the automotive, electronics, and aerospace sectors. Epoxy resins based on isosorbide can also be altered with other monomers to further enhance their characteristics. Epoxy resins based on isosorbides, for instance, can be blended with aliphatic amines to boost their toughness and flexibility, or with aromatic amines to increase their thermal stability. Overall, isosorbide-based epoxy resins are a desirable alternative for the creation of eco-friendly and high-performance epoxy materials because of their good chemical characteristics, natural origin, and capacity for biodegradation. [12]

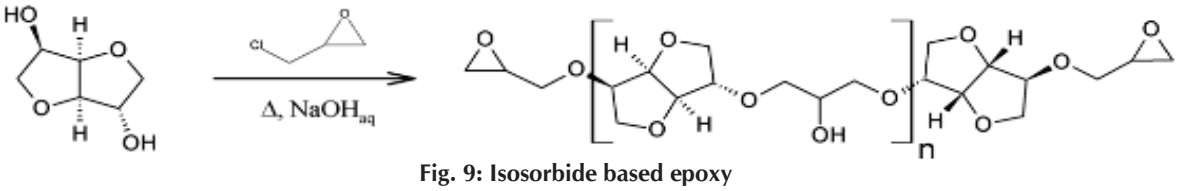

Fig. 9: Isosorbide based epoxy

10. Cinnamic Acid based epoxy resin

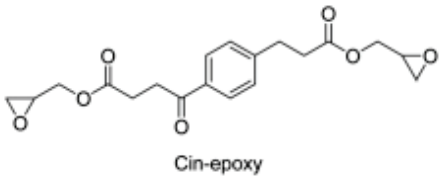

Fig. 10: Cinnamic Acid structure

A potential renewable and sustainable replacement for conventional epoxy resins is the cinnamic acid-based epoxy resin. Cinnamic acid's structure makes a variety of functional derivatives simple to produce. Cinnamic acid can introduce a reactive double bond that can be epoxidized to form an epoxy group by the allylation of the carboxylic group. When cured with a curing agent like MNA, the resultant epoxy resin containing cinnamic acid has a moderate Tg of 116°C (meta-xylylenediamine). Cinnamic acid can be added to epoxy resins to increase biodegradability, lessen environmental effect, and keep the same qualities as conventional epoxy resins. Moreover, cinnamic acid is a desirable and sustainable resource because of its accessibility and affordability.[13]

Conclusion

Nowadays, fossil fuels alone account for more than 90% of all organic compounds and 80% of all energy in the globe. Oil scarcity and pollution have gotten worse over the previous year, thus using bio-based resins is the best solution to reduce carbon footprint. One of the most effective and cost-effective methods to address the dilemma of fossil fuels is the synthesis of wholly or partially bio-based materials. As epoxy resin containing bisphenol-A is harmful to humans, usage of it has been outlawed in many nations. The bio-based epoxy resin is produced using a variety of renewable feedstock, including cardanol, furan, lignin, vanillin, tannin, and various vegetable oils, such as linseed oil, soybean oil, etc. These are the great alternative to petroleum-based materials used for epoxy resin.

References

[1] T. Koike, "Progress in development of epoxy resin systems based on wood biomass in Japan," Polymer Engineering and Science, vol. 52, no. 4. pp. 701–717, Apr. 2012. doi: 10.1002/pen.23119.

[2] F. L. Jin, X. Li, and S. J. Park, "Synthesis and application of epoxy resins: A review," Journal of Industrial and Engineering Chemistry, vol. 29. Korean Society of Industrial Engineering Chemistry, pp. 1–11, Sep. 25, 2015. doi: 10.1016/j.jiec.2015.03.026.

[3] S. Kumar, S. K. Samal, S. Mohanty, S. K. Nayak, and C. Author, "Recent Development of Bio-based Epoxy Resins: A Review."

[4] F. Jaillet, E. Darroman, A. Ratsimihety, R. Auvergne, B. Boutevin, and S. Caillol, "New biobased epoxy materials from cardanol," European Journal of Lipid Science and Technology, vol. 116, no. 1, pp. 63–73, 2014, doi: 10.1002/ejlt.201300193.

[5] E. Ramon, C. Sguazzo, and P. M. G. P. Moreira, "A review of recent research on bio- based epoxy systems for engineering applications and potentialities in the aviation sector," Aerospace, vol. 5, no. 4. MDPI Multidisciplinary Digital Publishing Institute, 2018. doi: 10.3390/aerospace5040110.

[6] D. Ratna, "Mechanical properties and morphology of epoxidized soyabean-oil- modified epoxy resin."

[7] Kadam, A., Pawar, M., Yemul, O., Thamke, V., & Kodam, K. (2015). Biodegradable biobased epoxy resin from karanja oil. Polymer, 72, 82-92.

[8] Cardona, F.; Sultan, M. T.; Abu Talib, A.; Ezzah, F.; Derahman, A. Bioresources 2016, 11, 2820.

[9] Jiang, H., Sun, L., Zhang, Y., Liu, Q., Ru, C., Zhang, W., & Zhao, C. (2019). Novel biobased epoxy resin thermosets derived from eugenol and vanillin. Polymer Degradation and Stability, 160, 45-52.

[10] J. Stanzione and J. la Scala, "Sustainable polymers and polymer science: Dedicated to the life and work of Richard P. Wool," Journal of Applied Polymer Science, vol. 133, no. 45. John Wiley and Sons Inc., Dec. 05, 2016. doi: 10.1002/app.44212.

[11] Mogheiseh, M., Karimian, R., & Khoshsefat, M. (2020). Vanillin-derived epoxy monomer for synthesis of bio-based epoxy thermosets: effect of functionality on thermal, mechanical, chemical and structural properties. Chemical Papers, 74, 3347-3358.

[12] Hong, J., Radojčić, D., Ionescu, M., Petrović, Z. S., & Eastwood, E. (2014). Advanced materials from corn: isosorbide-based epoxy resins. Polymer Chemistry, 5(18), 5360-5368.

[13] Xin, J., Zhang, P., Huang, K., & Zhang, J. (2014). Study of green epoxy resins derived from renewable cinnamic acid and dipentene: synthesis, curing and properties. RSC Advances, 4(17), 8525-8532.

■

EVENTS

Irma General Body Meeting Held On 10th February 2023 At The Chembur Gymkhana, Phase-i Basement Hall, Chembur, Mumbai 7400 071

The programme started at 7.00 P.M. Irma President, Mr. S. Mahadevan gave a brief welcome speech highlighting the activities and also spelled about the future activities especially about the forthing coming Seminar scheduled to be held in the month of June 2023 outside Mumbai.

There was book Launch – 'From the Hinterland of Conscience" Random Relections by Shri Shailesh Sheth. Thereafter we had lecture/presentation on the topic "GST & Customs – Budgetary & other Recent Amendments and their implications by Shri Shailesh Sheth, M/s. SPS Legal. Many members were present..

The proceedings were carried out by Hon. Secretary, Mr. Aditya Chandrachud. The vote of thanks given by Vice President, Mr. Hiren Shah.

After Vote of thanks it was followed by networking and dinner.

Introduction of Shri Shailesh Sheth by Bhagyesh Narkhede

Seminar Announcement with Flyer by Irma President, Mr.S. Mahadevan & by Convenor Mr. Siddharth Shah, Co-Convenor Mr.Manish Khandekar along with Mr.Hiren Shah, Vice President and Mr/Aditya Chandrachud, Hon. Secretary, Mr.Ashay Mehta, Seminar Committee Member

Book release by Shri Shailesh Sheth along with office bearers of Irma and Past President Mr.Siddharth Shah


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RAW MATERIAL SCENARIO

Rates are per KG for bulk buying. Rates prevailing as on 16th March 2023

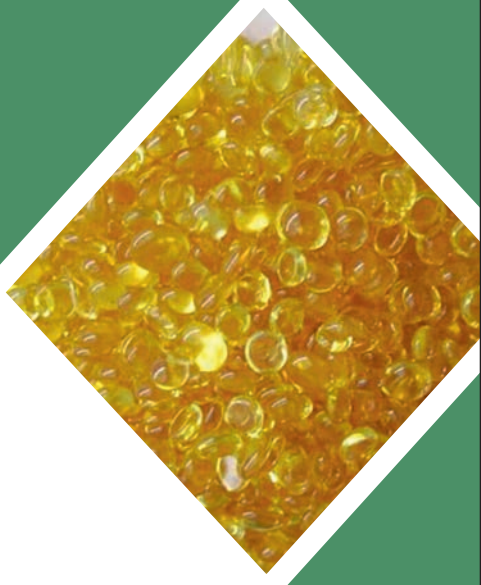
Phthalic anhydride	...	Rs 118-120
Pentaerithrital	...	Rs. 128-130
Glycerin.	...	Rs. 65-67
Rosin. Indonesian	...	Rs. 118-120
Fatty. Acid	...	Rs. 100-102
Xylene. Mix. Reliance	...	Rs. 87
Soya oil	...	Rs. 105
Linseed oil	...	Rs. 111
Castor oil	...	Rs. 135
Bpcl MTO	...	RS. 131.50
Slop oil Reliance		RS. 82

- Compiled by Hiren Shah

Seminar On

Resins - Today & Tomorrow - XII

Green Initiatives for Resin Industry



8th & 9th June 2023
Hotel Fariyas, Lonavala

INDIAN RESINS MANUFACTURERS' ASSOCIATION

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RESINS – TODAY & TOMORROW - XII

GREEN INITIATIVES FOR THE RESIN INDUSTRY

Dear Ladies & Gentlemen,

IRMA biennial Seminar is planned on Thursday 8th & Friday 9th June 2023, at Fariyas Hotel, Lonavala. The theme is "Green Initiatives for the Resin Industry".

The last Seminar concluded in June 2019 and due to Covid pandemic, IRMA had to hold back its series of biennial Seminars. The Covid situation & lockdowns taught us all new ways of living and survival. The pandemic also bought situations of global shortages and supply chain disruptions, something we all never even imagined.

The Government also announced its "Make in India" policy and schemes to reduce use of fossil fuels and increased usage of renewal energy in various forms, from Ethanol blending to Electric Vehicles to Solar and hydrogen fuel cells.

Our Resin industry should also play a major role in supporting the Government's goal to be an active user of green energy in times to come.

This biennial Seminar is planned to create a platform which will bring all the industry users together, wherein information from various applications to supply chain would be shared and discussed.

We are also going to bring out the updated Souvenir-cum-Members Directory on this occasion and we request all the members **to update their business and contact details.**

The venue of the Seminar remain Hotel Fariyas, Lonavala due to its popularity, easy accessibility for one and all and its serene environment.

Looking forward to welcoming you all at this one day residential Seminar on 8th & 9th June 2023.

Siddharth Shah	**S. Mahadevan**	**Manish Khandekar**
Convenor	President	Co-Convenor

AN APPEAL FOR SPONSORSHIP

Organising Seminars for the benefit of its members and others, has been customary for IRMA.

Due to overwhelming response to our last seminar and by popular demand, we have decided to repeat Fariyas Hotel, Lonavala as the venue for the seminar on Thursday 8th & Friday 9th June 2023.

We are sure that this event will benefit all the delegates and also take IRMA to greater heights.

We all know that, funds are of prime importance for organising such an event and hence we appeal to you for making a whole hearted contribution for this cause.

Please do attend the Seminar with spouse, to make this event grand and colourful.

Yours sincerely,
Seminar Committee Members

Ashay Mehta **Dr. B. Venkataraman** **Bhagyesh Narkhede** **Dr. Prashant Samant** **Dr. Parag Raut**

Tentative Programme

Date: Thursday 8th & Friday 9th June 2023
Venue: Hotel Fariyas, Lonavala

Date: Thursday 8th June 2023
Venue: Chambers Hall

09.00 a.m. onwards	:	Registration
11.00 a.m. – 01.00 p.m.	:	Inaugural Session
01.00 – 02.00 p.m.	:	Lunch
02.00 – 02.40 p.m.	:	Lecture I
02.40 – 03.20 p.m	:	Lecture II
03.20 – 03.40 p.m.	:	Tea Break
03.40 – 04.20 p.m.	:	Lecture III
04.20 – 05.00 p.m.	:	Lecture IV
05.00 – 06.00 p.m.	:	Panel Discussion
06.00 – 06.45 p.m.	:	Closing Ceremony
07.30 p.m. onwards.	:	Entertainment, Networking & Dinner

Date: Friday 9th June 2023

07.00 – 10.00 a.m.	:	Breakfast *(@Coffee Shop)*
10.00 a.m.	:	Checkout

Recap of 2019 Seminar

ADVERTISEMENT BOOKING FORM

Dear Sir,

Please book the following advertisements for the souvenir - cum-Members Directory being brought out during the seminar on the theme "Green Initiatives for Resin Industry" under "Resins Today and Tomorrow – XII" series on Thursday 8th & Friday 9th June 2023.

Front Gate Fold	:	Rs.50,000/- +18% GST
Back Cover	:	Rs.30,000/- +18% GST
Book Mark	:	Rs.30,000/- +18% GST
Inside Front Cover	:	Rs.25,000/- +18% GST
Inside Back Cover	:	Rs.20,000/- +18% GST
First page	:	Rs.20,000/- +18% GST
Full page (Four Colour)	:	Rs.10,000/- +18% GST

Sponsorship Categories

Sr.No.	Type & Sponsorship	Donation
1.	Title	Rs.3,00,000/-
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5.	Silver	Rs.50,000/-
6.	Well Wisher	Rs.25,000/-

Final cut size of the magazine	:	21.5 cms x 27.5 cms
Full page	:	18 cms x 24 cms
Full page bleed	:	22 cms x 28.5 cms

(limit text matter within 19 cms & 25.5 cms)

Art Work: **Corel Draw, High Resolution Pdf files**

Payments can be made either by cheque

Cheque No._____ Date _____ for Rs. _____

Drawn on _____ in favour of **INDIAN RESINS MANUFACTURERS' ASSOCIATION**

OR BY **RTGS / NEFT in favour of**
INDIAN RESINS MANUFACTURERS' ASSOCIATION
INDIAN OVERSEAS BANK
CHEDDANAGAR BRANCH
MUMBAI 400 089
A/C.No.048702000001478 IFSC: IOBA0000487

Thanking you,

Yours truly

signature_____ (with stamp)

Name of the Person _____

Designation _____

Name of the Company _____

Address _____

_____ Tel:& Mobile _____

Delegate Registration Form For
IRMA SEMINAR - XII

FOR OFFICE USE ONLY

RECD. ON	NUMBER

Date: Thursday 8th & Friday 9th 2023
Venue: Fariyas Hotel, Lonavala

NAME OF DELEGATES
1
2
3
4

NAME & ADDRESS OF COMPANY
Tel.:
Email:

Outstation delegates are requested to send delegate fees by **Cheque Or RTGS / NEFT**

Delegate Fees :

Room	Single Occupancy	Twin Sharing	Delegate with Spouse	Delegate with Spouse & Child above 5 yrs.
Rates	Rs. 9,750/- +18%GST	Rs. 5,500/- each + 18% GST	Rs. 10,500/- + 18% GST	Rs. 13,000/- + 18% GST
Total to Pay	Rs. 11,505/-	Rs. 6,490/- each	Rs. 12,390/-	Rs. 15,340/-

Enclosed Cheque No._____ Date:_____ Rs. _____

drawn on_____ in favour of **INDIAN RESINS MANUFACTURERS' ASSOCIATION**

OR BY **RTGS / NEFT in favour of**
INDIAN RESINS MANUFACTURERS' ASSOCIATION
INDIAN OVERSEAS BANK
CHEDDANAGAR BRANCH
MUMBAI 400 089
A/C.No.048702000001478 IFSC: IOBA0000487

Signature (with stamp)

Name :

Date :

Please send your Registration /Advertisement Booking form duly filled to

Indian Resins Manufacturers' Association
A-715, Kailas Business Park. Parksite, Vikhroli (West), Mumbai 400 079.
(T) 022-2517 0063, (M) 9867087531, 9082095319 | email: info@irmaonline.org
website: www.irmaonline.org

Philosophy of marriage :
At the beginning,
every wife treats her husband as GOD..
Later, somehow don't know why..
alphabets get reversed..

Peter called his doctor's office for an appointment.
"I'm sorry," said the receptionist, "we can't fit you in for at least two weeks."
"But I could be dead by then!"
"No pro
blem. If your wife lets us know, we'll cancel the appointment. "

Teacher: "If I Gave You 2 Cats, And Another 2 Cats And Another 2, How Many Will You Have?"
Pappu: "Seven Sir"
Teacher: "No, Listen Carefully. If I Gave You 2 Cats, And Another 2 Cats And Another 2, How Many Will You Have?"
Pappu: "Seven"
Teacher: "Let Me Put It To You Differently. If I Gave You 2 Apples, And Another 2 Apples And Another 2, How Many Will You Have?"
Pappu: "Six."
Teacher: "Good. Now If I Gave You 2 Cats, And Another 2 Cats And Another 2,How Many Will You Have?"
Pappu: "Seven!!!"
Very Angry Teacher: "Where Do You Get Seven From"
Very Angry Pappu: "Because I Already Have One At Home"

Boy prayed: Oh God give me 1 bag full of money, job, 1 big vehicle many girls..!
GOD: Your Prayer is accepted.
He became a

CONDUCTOR in a. .. LADIES BUS ..!!.