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# इपिर्टि न्यूज़ IPIRTI NEWS

Delivering Innovative Solutions for Industry, Society and Environment



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Dear Readers



## GEOPOLYMERIC COMPOSITES OUT OF FOREST & AGRO WASTES

Geopolymers are amorphous three-dimensional Alumino-Silicate binding materials which are polymer matrices-ecofriendly in nature. These are in real terms mineral chemical compounds or mixture of many compounds consisting of repetitive units, viz. Silico-Oxide (-Si-O-Si-O-), Silico-Aluminate(-Si-O-Al-O-), Ferro-Silico-Aluminate(-Fe-O-Si-O-Al-O-) or Alumino-Phosphate (-Al-O-P-O-), evolved through a process of geopolymerization.

CSIR-AMPRI (Advance Materials and Processes Research Institute), Bhopal has brought out a large number of Geopolymeric composites based on Fly ash, Red mud, Marble wastes, etc. (different Industrial Wastes) under suitable catalytic regimes. IPIRTI (Indian Plywood Industries Research and Training Institute) has long since earned the expertise to develop panel products such as Particle Boards and Medium Density Fibre (MDF) boards mainly using phenolic and amino based synthetic resins for the manufacture of various composites. Due to the associated hazards of formaldehyde emission, it is imperative to find alternative binders free of formaldehyde. After sustained research efforts, IPIRTI has

innovated eco-friendly resins by using lignin, soya, tannin, black liquor (Organic binders) renewable materials for manufacture of wood and agro based composites. In recent years there has been much upsurge in the field of eco-friendly resins free of formaldehyde. Side by side geo-polymerization is a novel approach to use inorganic adhesives for the manufacture of formaldehyde free wood composites.

The development and utilization of geopolymeric binders are relatively new in the arena of ligno-cellulosic composites. To start with there is insufficient data regarding the manufacturing conditions and properties of ligno-cellulosic based composite materials prepared using a geopolymeric binders. Nevertheless, IPIRTI in active collaboration with AMPRI, Bhopal will be striving hard on the theme of innovative geopolymer binders which will be a break-through for formaldehyde free adhesive alternatives.

With the aim of commercializing the already innovated technologies, IPIRTI has joined hands with IWST, Bengaluru and AMPRI, Bhopal in organizing the INDUSTRY INSTITUTE INTEGRATION (III-2018) Meet on 19th January 2018 at IWST campus. This meet may open up manifold opportunities for entrepreneurs, industrialists, technologists, researchers, architects, designers, Government departments and NGOs for development and extension of geopolymeric composites from lingo-cellulosic materials.

Dr. B. N. Mohanty, *IFS*  
Director, IPIRTI

## RESEARCH & DEVELOPMENT

### Construction of Bamboo Composite based Housing for M/s Telen-gana State Forest Development Corporation Ltd (TSFDCL), Hyderabad

With the initiative taken by Dr. B.N.Mohanty, IFS, Director, IPIRTI for providing Bamboo Housing Technology with the use of bamboo composites and on the request of M/s TSFDCL Hyderabad to construct an office building with IPIRTI technology on the existing dismantled structures, Shri.Amitava Sil, Scientist, IPIRTI Field Station Kolkata visited the existing site at botanical garden at Kothaguda Reserve Forest, Kondapur, Gachibowli, Hyderabad. He had discussion with Shri Chandan Mitra, IFS, Vice Chairman and Managing Director, M/s. Telegana State Forest Development Corporation Limited, Hyderabad, regarding construction of bamboo composite house on the site and also about the existing steel structure, plan and elevation.



*Proposed Plan and Elevation*



*Site for construction inside Botanical Garden Campus*



*Shri Amitava Sil, Scientist, IPIRTI with Shri Chandan Mitra, IFS, M.D, M/s TSFDCL and Shri Nagabushanam, Consultant*

It was decided to construct a house with plinth area 1512 square ft having four sloped roofing structure. The walling will be double paneled structure with insulated material in between them. The walls will of Bamboo Mat Boards and roofing will be used of Bamboo Mat Corrugated Sheet with a bamboo mat ridge caps. The flooring in some parts will of bamboo flooring tiles. The construction work will be started after completing formalities and approval of final plan and elevation.

### Improved modified extender cum scavenger for plywood adhesive to substitute the conventional industrial grade wheat flour

The byproduct of turning soya beans into soya milk or tofu is the grounded up fibers part of the bean. This is called Okara. After converting soya bean into soya milk or tofu, the leftover insoluble parts of the soya bean that remains is typically fed to poultry, others live stocks animals or thrown away. But a new value added product use could be done by using this left over.



*Modified Extender made from soya pulp*



*pulp (okara) wastage from soyamilk and tofu*

The study was conducted to formulate a new and improved modified extender for plywood adhesive and to evaluate the potential of the extender made from soya pulp and with some specialty chemicals was carried by Shri S.C.Sahoo, Scientist, and his team at IPIRTI, Field Station, Kolkata.

Currently the conventional extender for most plywood industries being used is industrial-grade wheat flour in amino and phenolic resin during glue formulation. To expand the list of agricultural extenders in the event glue manufacturers needed a comparable alternative, for example, because of a spike in wheat-flour prices or drop in supply. Okara, soy pulp, or tofu is a pulp consisting of insoluble parts of the soybean that remains after pureed soybeans are filtered in the production of soy milk and tofu. It is generally off-white or yellowish in color. Okara that is firmly packed consists of 3.5 to 4.0% protein, 76 to 80% moisture and 20 to 24% of solids. When moisture free, the gritty okara contains 8 to 15% fats, 12 to 14.5% crude fiber & 24% protein and contains 17% of the protein from the source soybeans.

In this study an improved new extender was formulated by utilizing the above soya pulp taken from the leftover of soya milk and tofu with some specialty chemicals like tackifier, viscosity enhancer and formaldehyde scavenger etc. Mixing and adhesion properties of the soya pulp-based adhesives were compared with those of the industry standard adhesive. The adhesive containing the soya pulp-based showed disposability and mixing behaviors, as well as viscosity values that were almost identical to those of the industry standard and superior to those of conventional adhesive. The extender were analyzed for physical and chemical properties like pH, and ash content etc. The extender was selected for 1 to 6 percent concentration level on the weight of liquid phenol formaldehyde and urea formaldehyde resin for efficacy study. 12 mm plywood was manufactured by using extender using both amino and phenolic resin. Veneers of Dipterocarpus species (Gurjan) were taken in this study for manufacture of plywood. The plywood was tested for glue line durability by dry, wet and mycological test. Data reveals that incorporation of 3 – 4 percent concentration level on the liquid resin weight basis gave satisfactory results on bond quality and flow time, coverage etc. At 5 to 6 percentage concentration level gave excellent results on bond quality. Higher concentration level in boiling water resistance, glue shear strength, wood failure and mycological test was shown unsuitable for bonding higher grade of plywood. Formaldehyde emission (perforator value) of the ply board was tested as per EN-717. Data reveals that the emission value of the formaldehyde was reduced to 50% in compared to the ply board emission value made with conventional extender. From the industrial trial, results indicated that quality of the plywood and economical cost of the glue was better than the conventional extender. Hence modified extender made with this soya pulp leftover waste material can be a substitute to the conventional extender wheat flour used as a food commodity without altering the quality of the plywood.

## EXTENSION

### Industry visits:

04.10.2017 - 05.10.2017: Shri. S.C.Sahoo, Scientist, IPIRTI Field Station, Kolkata visited M/s Sarada Wood and Bobbin Works Pvt. Ltd., Amritsar to improve the quality of resin and compreg ply.

11.10.2017-14.10.2017: Ms. Sujatha. D and Dr. Vipin Chawla Scientists visited M/s. Mutha Industries at Agartala to attend to the floor level problems faced by the industry during production

28.10.2017-29.10.2017: Dr. Pradeep Khushwaha, Scientist visited Ahmedabad for checking the suitability and efficacy of hand operated incense stick making unit.

01.11.2017-06-11-2017: Dr. Pradeep Kumar Kushwaha, Scientist visited Bijapur, Chhatisgarh for installation and training on the bamboo round stick making unit.

10.11.2017-11.11.2017: Shri .S.C.Sahoo, Scientist visited M/s ARVI Component Pvt. Ltd., Gaziabad, to adopt pre-press technique by using amino resin for manufacturing of quality plywood.

12.11.2017-13.11.2017: Shri. S.C.Sahoo, Scientist visited M/s Rahaman Enterprises, West Bengal to improve the quality of plywood and to solve the floor level problem during manufacture of plywood

28.11.2017-01.12.2017: Dr. K.C.Varada Rajulu, Scientist, IPIRTI Field Station, Kolkata visited M/s. Spectro Analytical Laboratory, Delhi, for characterization of fire retardant properties of Block Board by using cone-calorimeter.

29.11.2017: Dr. Vipin Chawla, Scientist visited Jadua nursery, Dist. Hajipur for Inspection and trial run of bamboo processing machines.

04.12.2017-06.12.2017: Dr. Pradeep Kushwaha, Scientist, IPIRTI Bengaluru and Shri. Amitava Sil, Scientist, IPIRTI, Field Station, Kolkata, visited CASFoS, Burnihat, Assam to inspect the working performance of bamboo primary processing unit and round stick making unit.



*Bamboo Machines*

06.12.2017: Dr. Narasimhamurthy, Scientist, IPIRTI Bengaluru visited M/s. Jalaram Timbers Pvt. Ltd, Mumbai to resolve problems related to decorative face veneer.

12.12.2017-14.12.2017: Shri. Uday D N, Scientist visited M/s Rubbo Queen Wood Products Pvt. Ltd., Perumbavoor, Cochin, for attending the technical problems while peeling veneer.

18.12.2017-19.12.2017: Ms. Sujatha.D and Shri. Uday D. N. Scientists visited M/s Garden ply Products Pvt. Ltd., Hassan, for attending the technical problems related to resin formulations, bending/warping etc., faced by the firm while manufacturing plywood.



*Ms.Sujatha.D and Shri. Uday N.D. Scientists at M/s Garden Ply Products Pvt. Ltd., Hassan*

26.12.2017-03.01.2018 : Dr. K.C.Varada Rajulu, Scientist, IPIRTI Field Station, Kolkata visited on to M/s.V-Can Furnitech Pvt. Ltd, Mumbai for Technology Transfer on Development of Fire Retardant Door Shutter through construction method.



*Dr. K. C.Varada Rajulu, Scientist with Shri. Anand Mulji Sejpal, MD at M/s. V-Can Furnitech Pvt. Ltd, Mumbai*

28.12.2017: Shri. S C.Sahoo, Scientist visited M/s. B.S Progressive Pvt.Ltd. Kolkata to improve the quality of pre-press resin and technique for manufacture of plywood using pre-press.

29.12.2017-30.12.2017: Dr. B.N. Mohanty, IFS, Director, IPIRTI met Senior Vice President, M/s. Rushil Décor Limited and also visited testing facilities for the Medium Density Fiber (MDF) Board Plant at Chikmagalur

### **Meetings/ Seminars/Workshops/Conferences**

03.10.2017: Dr.B.N. Mohanty, IFS, Director, IPIRTI, had meeting with Shri. Surendra Kumar, Director, IWST and Dr.Pankaj Aggarwal, Scientist-G about organizing Institute-Industry Integration Meet on Geopolymer composites.

12.10.2017-13.10.2017: Dr. B.N. Mohanty, IFS, Director, IPIRTI, attended two days workshop in Ministry of DoNER, New Delhi and made presentation about the strengths of IPIRTI in building the Bamboo Value chain with suitable technologies.

12.10.2017-13.10.2017: Dr. Manoj Kumar Dubey, Joint Director, IPIRTI participated in the 3<sup>rd</sup> Stakeholder's Consultation Workshop and 4<sup>th</sup> meeting of GTWG for Green Forestry Sector at IIFM, Bhopal.

16.10.2017: Dr. B.N. Mohanty, IFS, Director, IPIRTI, addressed the trainee soldiers of Madras Engineering Corp. from Chennai about plywood and other panel products from plantation timbers at IPIRTI.

23.10.2017: Dr. B.N. Mohanty, IFS, Director, IPIRTI, took part in the deliberations in Research Advisory Group (RAG) Meeting of IWST, Bengaluru.

25.10.2017: Dr. B.N. Mohanty, IFS, Director, IPIRTI inaugurated the Training Programme on Forest, Wildlife & Environmental Conservation for Training to other Stakeholders in the field at IWST, Bengaluru

27.10.2017: Dr. B.N. Mohanty, *IFS*, Director, IPIRTI, discussed with Smt. Mercy Pao, Director, Ministry of DoNER who visited IPIRTI regarding the facilities on Bamboo Technologies suitable for transfer to the North Eastern Region.

27.10.2017: Dr. B.N. Mohanty, *IFS*, Director, IPIRTI, addressed FRI students who visited IPIRTI about Wood Composites and other Panel Products

30.10.2017-02.11.2017: Dr.V.K. Upadhyay, Scientist visited Indian Council of Forestry Research, Dehradun and met Dr.Rajeev Pandey, Dr. Raman Nautial, Dr. Girish Chandra, Scientists and discussed on statistical technical views of surveyed data related to forestry.

31.10.2017: Dr. Manoj Kumar Dubey, Joint Director, IPIRTI participated in the National Seminar on “Green Cover Retention- the Critical Need, Policy and Practices” organized by IWST at the Indian Institute of Science Bengaluru.

28.11.2017: Dr. Pradeep Kumar Kushwaha, Scientist, visited Aizawl to attend launch of Biodiversity and ecosystem services in agrarian landscapes

29.11.2017: Dr. Pradeep Kumar Kushwaha, Scientist visited Aizawl, Mizoram to participate in the meeting on Bamboo Value Chain Development.



29.11.2017: Dr. B.N. Mohanty, *IFS*, Director, IPIRTI had meeting with Shri. Ravi Chand Tawag, outgoing Director, M/s. Diffenbacher (India) and discussed the prospects of collaboration with Shri. Sachin Pendharkar (New Director) of the Company.

04.12.2017: Dr. B.N. Mohanty, *IFS*, Director, IPIRTI, Joint Director and all Scientists had meeting with Shri. Chandan Mitra, *IFS*, Vice Chairman & Managing Director, M/s. Telangana State Forest Development Corporation Limited, Hyderabad about technology transfer and knowledge sharing for Bamboo development in the State.

06.12.2017: Dr. B.N. Mohanty, *IFS*, Director, IPIRTI had meeting with Shri. Bjorn Nordin, Project Manager, M/s. Swedish Wood about prospects of technology transfer and knowledge sharing for Indian Markets.

07.12.2017-13.12.2017: Dr. B.N. Mohanty, *IFS*, Director, IPIRTI had meeting and discussion with Managing Director, M/s. Odisha Forest Development Corporation Ltd. (OFDCL) about implementation of MoU signed for establishment of Common Facility Centre (CFC) in Odisha for Value added industrial



bamboo products.

08.12.2017: Dr. Manoj Kumar Dubey, Joint Director, IPIRTI attended meeting regarding Establishment of IPIRTI Centre in Kandla Region, Gujarat under the Chairmanship of Director General of Forests & Special Secretary, in Indira Paryavaran Bhawan, MoEF&CC, Jor Bagh Road, Aliganj, New Delhi.

Also had meeting and discussion with Chairman, Society for Development of Rural Literature on the project proposal about “Demonstration of Bamboo products and exhibition of IPIRTI Bamboo Houses for North East” in weeklong “Chilka Shelduch Folk Art Carnival” and visit to the Carnival.

10.12.2017-13.12.2017: Dr. K.C.Varada Rajulu, Scientist, IPIRTI Field Station, Kolkata visited Sri Satya Sai Institute of Higher Learning (SSSIHL), Vidyagiri, Prasanthi Nilayam, Ananthpur for collaborative research work on manufacturing Carbon Nano Tubes for Development of Particle board with superior mechanical properties. He also had a discussion with Dr. K.B.R.Varma, Vice-Chancellor about potential research work on Fire retardant wood composite materials by using MWCNT.



*Dr. K. C.Varada Rajulu , Scientist,  
IPIRTI Field Station, Kolkata  
with Dr. K.B.R.Varma,Vice-Chancellor,  
SSSIHL,Vidyagiri*

12.12.2017: Shri Amitava Sil, Officer-In-Charge, IPIRTI, Field Station, Kolkata, visited Botanical Garden at Kothaguda Reserve Forest, Kondapur, Gachibowli and had a discussion with Shri Chandan Mitra, IFS, Vice Chairman and Managing Director, M/s Telegana State Forest Development Corporation Limited, Hyderabad, Shri Nagabushanam, Consultant and Shri N.Rajender Kumar, In-Charge Plantation Manager regarding construction of bamboo composite house on the site and also about the existing steel structure

18.12.2017-22.12.2017: Dr.B.N.Mohanty, IFS, Director , IPIRTI participated in the One week compulsory training programme for Indian Forest Service Officers on “Integrated Approach for Sustainable Development of Fragile Desert Eco System” held at Arid Forest Research Institute (AFRI), Jodhpur.

21.12.2017: Ms.Sujatha.D Scientist attended the expert committee meeting and made a presentation on the proposal titled “Exemption of environmental clearance for making in-house resin by plywood and panel industries” in the chamber of Additional Secretary (AP), Indira Paryavaran Bhavan, New Delhi.

26.12.2017: Dr. B.N. Mohanty, IFS, Director and Dr. Manoj Kumar Dubey, Joint Director, IPIRTI addressed the 24 delegates from 17 countries who visited IPIRTI as a part of International Programme on Training Methods and Skills for Managers organized by NI-MSME, Hyderabad.

27.12.2017: Dr. B.N. Mohanty, IFS, Director and Dr. Manoj Kumar Dubey, Joint Director, IPIRTI, had meeting with Shri. Jai Krishna, Sub-collector, Ratnagiri, (Maharashtra), other officials from State Forest Department and progressive farmers along with Joint Director and other scientists about processing of *Melia dubia* and prospects of Bamboo Development in that district.

28.12.2017: Dr. B.N. Mohanty, IFS, Director, IPIRTI, organized Small working group meeting of BoG members for discussing the issues faced by Industries and ways and means to enhance the Revenue of IPIRTI. Dr. Manoj Kumar Dubey, Joint Director and Ms. Sujatha, Scientist attended the meeting as members

28.12.2017: Dr. B.N. Mohanty, IFS, Director, IPIRTI, had meeting with Shri. Anil Kumar Singh, IFS (Retd.) regarding Formaldehyde emission certification of composite wood along other officials of M/s. GICIA India Ltd.

28.12.2017: Dr. B.N. Mohanty, IFS, Director and Dr. Manoj Kumar Dubey, Joint Director, IPIRTI took part in preparatory meeting for Industry-Institute Integration Workshop being organized by AMPRI, IWST & IPIRTI along with Director, IWST and other scientists.

28.12.2017: Dr. Manoj Kumar Dubey, Joint Director, IPIRTI attended a meeting with Dr.A.K.Singh Ex PCCF Assam and CEO of GICIA Ltd and Shri. A.K Verma Ex PCCF Karnataka on proposal for collaboration in Developing Composite Wood Emission Certification for Indian Manufactures to IPIRTI Bengaluru at the IPIRTI Bengaluru

29.12.2017-30.12.2017: Dr. B.N. Mohanty, IFS, Director, IPIRTI met Senior Vice President, M/s. Rushil Décor Limited and visited testing facilities for the Medium Density Fiber (MDF) Board Plant at Chikmagalur.

### Visit to Abroad:

30.10.2017-03.11.2017: Dr. B.N. Mohanty, IFS, Director, IPIRTI, attended 22<sup>nd</sup> Executive Committee Meeting of the Asia Pacific Forest Research Institute (APAFRI) and participated in the Workshop & Conference on Forest-related Traditional Knowledge in Seoul, Korea.



*Dr. B.N. Mohanty, IFS, Director, IPIRTI  
(third from right)*

05.11.2017-14.11.2017: Dr. Manoj Kumar Dubey, Joint Director, IPIRTI participated in High-Level workshop on Policy Approach of Bamboo and Rattan in Sustainable Development and South-South Collaboration at Beijing, China.



*Indian Delegation in front of INBAR headquarter. Dr. Manoj Kumar Dubey, JD, IPIRTI with DG INBAR Dr. Hans Friedrich, Ms Preeti Sinha Senior President Yes Bank, Mr T. Subrimony Director South Asia INBAR.*

The High-Level Workshop on Policy Approach of Bamboo and Rattan in Sustainable Development and South-South Collaboration 2017 was sponsored by MOFCOM, organized by ICBR and co-organized by INBAR. In response to the UN 2030 Agenda for Sustainable Development and the new goals in the South-South cooperation sponsored by the Chinese government, and in combination with the experiences and needs of the senior officials participating in this workshop, the policy workshop covered the following topics:

The roles and potential of bamboo and rattan resources conservation and utilization in green development; The policy requirements of bamboo and rattan sectors development for poverty alleviation and livelihood improvement; The construction of a South-South cooperation platform for bamboo and rattan development, policy and strategy design for the development of national and regional bamboo and rattan sectors, The significance of standardization in the field of bamboo and rattan and the related South-South cooperation; The sustainable management and utilization of rattan resources and relevant collaborations. The experiences of China's bamboo forest user-right reform.



There were total 63 participants from 24 countries including 9 Ministers from eight countries.

### **Visit of Dignitaries:**

02.10.2017: Shri. Dillip Arora, Director, M/s. Sarada Wood and Bobbin Works Pvt. Ltd., Amritsar visited IPIRTI Field Station Kolkata had a discussion with Shri. S.C.Sahoo, Scientist, Field Station Kolkata regarding factory visit to improve the plywood quality.

03.10.2017: Shri. A.K.Jain, General Manager, M/s.UP Forest Development Corporation visited IPIRTI, Bengaluru and met Dr. B.N. Mohanty, IFS, Director, IPIRTI and discussed about the prospects of Bamboo Development in Uttarpradesh.

11.10.2017: Shri. Haresh Ajbani, Director, M/s. Vritti Impex Pvt. Ltd, Mumbai visited IPIRTI Field Station, Kolkata and had a discussion with Shri. S.C.Sahoo regarding fire retardant and flexi plywood.

13.10.2017: Shri. Kalyan Neogi, Factory Head, M/s. Dee Bee Enterprize, Kolkata visited IPIRTI Field Station Kolkata and had discussion with Shri Amitava Sil, Officer-In-Charge on the testing of plywood and flush doors at the institute.

27.10.2017: Smt. Mercy Pao, Director, Ministry of DoNER visited IPIRTI and had discussion with Dr. B.N. Mohanty, IFS, Director, about the facilities available on Bamboo Technologies for the North Eastern Region.

15.11.2017: Shri. L.Prasad, Sales Executive, M/s. Electropeak Future Floorings Pvt. Ltd, Kolkata visited IPIRTI Field Station Kolkata and had discussion with Shri Amitava Sil, Officer-In-Charge on the flooring materials developed by the institute.

04.12.2017: Shri Rajesh Mundra, M.D and Shri. U.S.Panda had visited IPIRTI Field Station Kolkata and had a discussion with Shri. S.C.Sahoo, Scientist regarding the sponsored project of PF Powder resin testing.

11.12.2017: Shri. Rahul Joshi, Sales Manager, M/s Sarada Plywood Industries Ltd, Kolkata visited IPIRTI Field Station, Kolkata and had discussion with Shri. Amitava Sil, Officer-In-Charge on the testing of Structural plywood at the institute.

19.12.2017: Shri. Chandrakant Deo and Shri. Prosonjit Ganguly, Partners, M/s. Wood Cure Enterprises had visited IPIRTI Field Station Kolkata and had discussion with Shri. S.C.Sahoo, Scientist regarding the sponsored project report.

### **Exhibition:**

02.12.2017-05.12.2017: Shri. K. Thanigai, Scientist, IPIRTI participated in Kerala Bamboo Fest-2017 held at Marine Ground, Ernakulam, Kochi organized by Kerala – Bureau of Industrial Promotion (K-BIP). He exhibited the products developed by IPIRTI during the fest.

### **Other activities:**

Dr. Manoj Kumar Dubey , Joint Director, IPIRTI nominated as an expert member for an All India Coordinated Project of ICFRE Dehradun on “Development of dielectric heating based processing technologies for solid wood, bamboo and their composites.”

### Kannada Rajyotsava

24.11.2017: Dr. B.N. Mohanty, IFS, Director along with Scientists and Staff joined celebration of Kannada Rajyotsava in a befitting manner with various cultural events.



### Swachhata Drive

27.10.2017, 24.11.2018 and 29.12.2017: Swacchhata Day was observed by organizing Campus Cleanliness Drive Inside the campus & facilities. Staff and Trainees of the institute took part in the drive.



### IPIRTI Research Reports published

- |        |  |
|--------|--|
| RR-199 | Innovative and competitive technology for manufacture of fire-retardant adhesive for wood based panel products |
| RR-200 | Development of Light Weight Composite Panel Products   |
| RR-201 | Development of Medium Density Fiber Board—Phase I—Wheat Straw  |
| RR-202 | Study on Utilization of Plantation Grown Timber Species Melia dubia for Medium Density Fibre Board             |

## TRAINING

**One Year Post-Graduate Diploma Course on Wood and Panel Products Technology:** 33 trainees successfully completed the 28<sup>th</sup> Batch of one year Post Graduate Diploma Course in Wood and Panel Products Technology (WPPT). All the successful candidates got placement in wood based panel industries in India.

09.11.2017-10.11.2017: **Campus Interview and Valedictory function:** IPIRTI, Organized Campus Interview and Valedictory function for passing out of 28<sup>th</sup> batch PGDC trainees. Shri.A.K. Verma, IFS, Retd.PCCF & HoFF, Govt. of Karnataka graced the function as Chief Guest.



**29<sup>th</sup> Batch of one year Post Graduate Diploma Course in Wood and Panel Products Technology (WPPT):** 34 candidates selected and admitted for the 29<sup>th</sup> Batch of one year Post Graduate Diploma Course in Wood and Panel Products Technology (WPPT) and are undergoing training,

**Short Term Vocational Training Courses:**

11.12.2017-15.12.2017: A training course completed with 5 candidates on “Testing of Plywood, Block Board as per: 303, 710, 1328, 4990 and 1659” was conducted at IPIRTI, Bangalore.

23.10.2017-22.11.2017: One-month training course completed with 4 candidates on “Plywood manufacturing technology” at IPIRTI Field Station, Kolkata.

**Ph.D. work at IPIRTI, Bengaluru:**

Shri. Ramprasad a candidate registered to VTU, Belagavi, Karnataka is doing his PhD work under the guidance of Dr.Pradeep Kumar Kushwaha, Scientist, IPIRTI, Bengaluru

**SHORT TERM TRAINING COURSES FOR JAN - AUG, 2018 AT BENGALURU**

Sl. No	Title of the Training Course	Duration	Date	Fees*
1.	Identification of Timbers(Theory & Practical for wood/timber identification)	3 days	Jan 23-25	11800
2.	Testing Of Plywood And Block Board As Per IS:303, IS:710, IS:1328, IS:4990 and IS:1659	5 days	Feb 05-09	23600

3.	Resin Manufacturing	3 days	Feb 21-23	11800
4.	Preservative Treatment Methods For Wood And Wood Based Panels	3 days	Mar 07-09	11800
5.	Manufacture of Particle Board	5 days	Mar 12-16	17700
6.	Analysis Of Raw Materials For Resin Manufacture	3 days	Apr 04-06	11800
7.	Testing Of Door Shutters As Per IS: 2202, IS:1003, IS: 4020	3 days	Apr 25-27	17700
8.	Estimation Of Preservative Chemicals content In Wood/Ply-wood	5 days	May 14-18	17700
9.	Peeling & Knife Grinding	3 days	May 23-25	11800
10.	Wood Seasoning	3 days	May 29-31	11800
11.	Testing Of Flush Door And Block Board As Per IS:2202 And IS:1659	5 days	Jun 04-08	23600
12.	Plywood Manufacturing-I ( Log Storage, Centering, Peeling, Clipping, Drying, Knife Grinding)	5 days	Jul 09-13	17700
13.	Plywood Manufacturing- II ( Adhesives For Plywood And Ply-wood Manufacturing-Resin Preparation, Gluing, Hot Pressing)	5 days	Jul 16-20	17700
14.	Testing Of Plywood And Block Board As Per IS:303, IS:710, IS:1328, IS:4990 And IS: 1659	5 days	Aug 06-10	23600
15.	Preliminary Bamboo Processing and Bamboo preservations	2 days	Aug 27-28	7080
16.	Bamboo Composites Technology (Mat & Strip based products)	3 days	Aug 29-31	11800

\*\* Programme Coordinator: Dr. V K Upadhyay, Head, IT & SORIT (upadhyay@ipirti.gov.in). You can apply online by filling and submitting the Registration Form (PDF)/Registration Form (doc). Registration has to be done 10 days before the date of commencement of the course by remitting prescribed course fee. Fees payable to the organization may be sent by crossed Demand Draft in favour of Director, IPIRTI, Bengaluru and sent by post to Post Bag No.2273, Tumkur Road, Yeshwanthpur PO, Bengaluru - 560 022.

\* 18% GST

### SHORTTERM TRAINING COURSES FOR JAN - AUG, 2018 AT KOLKATA

1.	Testing of Plywood, Block Board, Flush Door	5 days	Jan 29-03 Feb	17700
2.	One Month Training Course On “ Plywood Manufacturing Technology”	1 Month	15 Jan-15 Feb	23600
3.	Analysis Of Raw Materials For Resin Manufacture	3 days	Feb 21-23	11800
4.	Preliminary Bamboo Processing	3 days	Mar 20-22	11800
5.	Resin Manufacturing	3 days	Apr 25-27	11800
6.	Particle Board Manufacturing	5 days	May 07-11	17700

7.	One Month Training Course on “Plywood Manufacturing Technology”	1 Month	June 04 - 05 Jul	23600
8.	Block Board & Flush Door Manufacturing	5 days	Jul 23-27	17700
9.	Low Formaldehyde emission adhesives for plywood and particle board	3 days	Aug 22-24	11800

\*\* Programme Coordinator: Mr. Amitava Sil, IPIRTI Field Station Kolkata, 2/2 Biren Roy Road (West), Sarsuna, Kolkata-61, Tele Fax:033-24983120, Mob:09874219758 (ipirtikolkata@ipirti.gov.in). Registration has to be done 10 days before the date of commencement of the course by remitting prescribed course fee. Fees payable to the organization may be sent by crossed Demand Draft in favour of Director, Indian Plywood Industries Research & Training Institute. You can apply online by filing and submitting the Registration Form.

\* 18% GST

### **SHORT TERM TRAINING COURSES FOR JAN - AUG, 2018 AT MOHALI**

1.	Testing Of Block board And Flush Door As Per IS:1659 & IS: 2202 (Part - I)	3 days	Feb 13-17	11800
2.	Analysis of Raw Material and Resin Manufacturing ( PF & UF)	5 days	Mar 06-10	11800
3.	Testing of Fire Retardant Plywood As Per IS: 5509	2 days	Apr 05-06	5900
4.	Testing of Plywood As Per I:S 303, 1328, 710 & 4990	5 days	May 15-19	14160
5.	Testing Of Block board And Flush Door As Per IS:1659 & IS: 2202 (Part - I)	5 days	Jun 12-16	11800
6.	Testing Of Fire Retardant Plywood As Per IS: 5509	2 days	Jul 17-18	5900
7.	Testing Of Plywood As Per I:S 303, 1328, 710 & 4990	5 days	Aug 21-25	14160

\*\* Lodging and Boarding are not included and have to be arranged by the trainees.

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\* 18% GST

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