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# इपिर्टि न्यूज़ IPIRTI NEWS

Delivering Innovative Solutions for Industry, Society and Environment

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## Director's Desk



Dr. B. N. Mohanty, IFS

## **MELIA DUBIA PLANTATION FOR INTEGRATION OF AGRO FORESTRY AND PLYWOOD INDUSTRIES**

Wood is the most preferred material for various end uses ranging from fuel wood to composite products. Empirically, wood can be replaced by wood itself which is considered an energy efficient material. However the emphasis is to shift the source from natural forests to plantation timbers. The choice of species for different end uses is also changing from durable primary conventional timber species to short-rotation, fast-growing plantation species. Large number of wood based industries such as sawn timber and composite panel product manufacturers presently face acute shortage of raw materials and the supply–demand gaps are increasing day by day in alarming proportions. The industrial demand for timber in Round wood equivalents in India is predicted to increase from 74 million m<sup>3</sup> in the year 2005 to 153 million m<sup>3</sup> in the year 2020 and side by side it is estimated that more than 50 percent of the total wood supply in the country will come from non-forest sources.

Amongst the several options available to bridge the gap are: import of timber, which is purely a short-term measure and generating tree resources within the country which could be a better idea as a long-term measure in sustainability terms, as well as a source of carbon stocking which is important from the ecological and environmental viewpoints.

*Melia dubia* is a promising tree highly suitable for agro/ farm forestry with rotation cycle of 8 to 12 years. *Melia dubia* is getting popularised among farmers due to its characteristics such as fast growth, stem straightness without many branches, less shade effect, not susceptible to insect attack, etc. One of the main problems that farmers face today is decreasing income from an acre per year against sudden increase in the value of agricultural lands. Planting certain tree varieties such as *Melia dubia* which can fetch a handsome price in the market, assured buyback, and which require low maintenance expenditure may help in this regard. In addition, the trees also contribute in carbon sequestration and mitigation of climate change impacts.

But considering the general characteristics of the fast growing tree species generally planted by farmers, technology input is very essential to make quality engineered wood products. Through effective research it is possible to broaden the market of *Melia dubia* timber by converting into speciality plywood products i.e. development of higher grade of plywood viz. Decorative/Marine/Shuttering grade Plywood, MDF, Particle Board, Laminated Veneer Lumber (LVL), Compreg etc.

Hands on experience of farmers engaged in *Melia Dubia* plantation and other Horticulture crops as intermediate crops has shown very good market potential for propagation of the idea in terms of Business model. A study on plantation of *Melia Dubia* shows that an income of Rs 15.0 lakhs/ hectare after a period of 10 years by selling logs. Value addition can be done at farmer's place by converting logs in to veneer, by installing a peeling lathe in common facility centre (CFC) making an investment of about Rs 50 lakhs. In so happening the income by selling veneer would be enhanced by 1.5 times over that of selling logs.

In a rough estimate the per annum income from a CFC will be to the tune of Rs.5.63 Crores from processing logs of a captive plantation of 25 hectares.

## RESEARCH & DEVELOPMENT

### DEVELOPMENT OF FIRE RETARDANT PARTICLE BOARD

The popularity of particleboard is increasing in India day by day. This has necessitated that the properties of these boards needs to conform to the general standards of both universal & specific building codes and to the specific demands of the ultimate consumer. To meet these standard properties a technically and economically viable fire retardant treatment for wood based composites with no impact on board structural properties has been developed by Mrs. Mamatha, Scientist, IPIRTI, Bangalore and her team. The requirements for fire retardants for wood and wood based composites have expanded from an initial focus on fire retardancy to encompass other factors such as smoke inhibition, environmental impact and economic aspects. Although many kinds of fire retardants for wood and wood-based composites have been studied, the focus is still mainly on compounds or mixtures containing phosphorus, nitrogen, and boron.



Fig.1: Flammability test of particle board



Fig.2: Limiting oxygen Index test

Poplar, silver oak and eucalyptus species were used for the study on the development of fire retardant particle board. Two methods were employed for the manufacture of fire retardant particle board (2ft x 4ft) using melamine urea formaldehyde resin and phenol formaldehyde resin i.e. by treating the particle or by adding chemicals in the glue. The flame retardancy of the composites was studied by using limiting oxygen Index (LOI) test. The boards made were tested for flammability, flame penetration and rate of burning tests as per IS:5509 and Physical and mechanical properties of the board as per the standard IS:3087. As there is no BIS standards for fire retardant particle board exist, the samples have been tested for fire retardancy as per IS:5509. It has been observed that the addition of flame retardant chemicals increased the LOI values. Samples were found showing time duration more than the required for the fire retardant test as per IS:5509. The study indicates that the percentage addition of (1-3%) fire retardant chemicals on the weight of the particles either in glue composition or particle treatment would yields excellent fire properties without deteriorating the physical and mechanical properties of the boards. The percentage of chemicals used varied depending on the species and chemicals chosen. It has been observed that increasing the density of the boards further increases the fire retardancy and mechanical properties of the board.

### **STUDY AND ANALYSIS OF NANO COATING AS FIRE RETARDANT ON WOOD PANEL PRODUCTS**

Wood is one of the most sustainable, aesthetically pleasing and environmentally benign materials. Dry wood materials are susceptible to fire hazards and results heavy losses of life and materials every year; hence protection against fire is necessary. Nano coating is a high performance thin film fire retardant coating. It has been formulated to retard the flame spread across a wide variety of materials as well as suppress the generation of smoke. Dr. K.Ch. Varada Rajulu, Scientist, IPIR-



TI, Bangalore and his team made an attempt to develop a Nano coating on the surface of plywood to enhance the fire retardancy by using nano ceramic materials and chemicals. The performance of treated plywood against fire is tested by flame penetration test, flammability test and rate of burning test as per Indian Standards. Both the formulations performed as per standard. Hence, it can be recommended for application.

### **STATISTICAL ANALYSIS ON THE PROPERTIES OF WOOD BASED PANELS**

Indian wood based panel industry as on today consists of 62 large and medium size mills and over 2500 small scale industries. Out of this 25 numbers are particle board units and 6 MDF mills and rest are plywood, block board, doors etc. Approximately 40% of industries are adhered to the quality production as per national standards.

Unfortunately in India no primary data related to quality of wood based panels products has been generated till now, to emphasis this more attention was given on the samples fails to pass the requirement of standards. Keeping quality is the need of the hour efforts were made to collect four years sample data from 2008-2011 received for laboratory testing by Shri. Kiran M.C., Scientist and his team at IPIRTI, Bangalore. Physical, Mechanical and Chemical properties of General purpose plywood Moisture resistance MR, Boiling Water Resistance (BWR), Marine Plywood Boiling Water Proof grade (BWP), Block Board (MR and BWP) grade samples were collected and analysed to prevent the production of bad quality wood based panels.

## **EXTENSION**

### **INDUSTRY VISITS:**

21.01.2015: Dr. Ranjana Yadav, Officer In-Charge, IPIRTI Centre, Mohali visited M/s. Devipuri Engineering Co., Ludhiana to solve floor level problem during plywood manufacturing.

24.01.2015: Shri S.C. Sahoo, Scientist, IPIRTI Field Station, Kolkata visited M/s. Mayur Plywood, West Bengal for discussion related to project work and implementation of new adhesive technology.

02.02.2015-03.02.2015: Shri. Uday D.N. and Dr. Vipin K. Chawla, Scientists, IPIRTI, Bangalore visited M/s. Mutha Industries Pvt. Ltd., Agartala, Tripura to have technical discussion for finalizing Bamboo processing machinery for making Bamboo strand lumber.

11.02.2015-12.02.2015: Shri S.C. Sahoo, Scientist, visited M/s. Laxmi Timber, West Bengal to rectify the bonding and floor level problem during plywood manufacturing.

16.03.2015-19.03.2015: Shri. S.C. Sahoo, Scientist visited M/s. Sayan Testing and Manufacturing Co.,

Howarah for inspection of resin kettle to be supplied to Mizoram.

20.03.2015: Shri. S.C. Sahoo, Scientist visited M/s. Singh brother Exim Pvt. Ltd, West Bengal to rectify the bonding and floor level problem during plywood manufacturing.

25.03.2015-26.03.2015: Shri. S.C. Sahoo, Scientist visited M/s. Parijat Agro wood product, Hyderabad to rectify the bonding and floor level problem during plywood manufacturing.

26.03.2015: Ms. Sujatha D. and Mrs. Mamatha B.S., Scientists visited CIPET at Chennai and had discussion regarding extrusion machine and wood plastic composites.

### **MEETINGS/SEMINARS/CONFERENCE**

04.01.2015: Dr. B.N. Mohanty, Director, IPIRTI attended meeting with Hon'ble Minister, Environment, Forests and Climate Change, Shri. Prakash Javedkar, Shri. Ashok Lavasa, IAS, Secretary, MoEF&CC, Shri. S. S. Garbyal, DGF & SS, at Bandipur Wildlife Sanctuary.

04.01.2015: Dr. S.K. Nath, Joint Director interacted with a group of 38 IFS Probationers of Indira Gandhi National Forest Academy, Dehradun, during their visit to IPIRTI, Bangalore.

07.01.2015: Shri. Uday D.N., Scientist attended a meeting regarding the project entitled "Upgradation of the technology on the development of 50mm compregs using dyed veneers of plantation species (Densified Laminated Lumber) on commercial unit" at M/s. Indeutsch International Ltd., Noida.

13.01.2015: Shri. Jagadish Vengala, Scientist (Principal member) attended the third meeting of the panel for Constructional Practices and Safety, CED 46:P11 at Dr. Lal C Verman Conference Hall, BIS, Manak Bhavan, New Delhi organized by BIS, New Delhi.

17.01.2015: Dr. B.N. Mohanty, IFS Director and Shri. K. Jude Sekar, IFS (Retd.) and Former DGF&SS, MoEF&CC, Govt. of India had interaction with a group of 38 IFS Probationers of Indira Gandhi National Forest Academy, Dehradun.

23.01.2015-24.01.2015: Shri. Jagadish Vengala, Scientist attended the Design Research Symposium, INSIGHT 2015 organised by National Institute of Design (NID), Bangalore at NID Campus, Bangalore.

30.01.2015-31.01.2015: Shri S.C. Sahoo, Scientist attended National Seminar on Advance Functional Materials Technology and its Social Implications (NSAFMTSI-2015)" at 'HALDIA Institute of Technology' Haldia, West Bengal and presented papers entitled "Eco-Friendly formaldehyde free wood adhesive for interior plywood manufacturing" and "Enhancement of fire retardancy properties of Plywood by incorporating Silicate, Phosphate and Boron compounds as additives in PMUF Resin".

08.02.2015-09.02.2015: Dr. B.N. Mohanty, *IFS*, Director, Ms. Sujatha D., Shri. Uday D.N., Mrs. Mamatha B.S., Shri. Prakash V., Shri. Kiran M.C. and Dr. K.Ch. Varadarajulu Scientists attended Chintan Shivir at National Institute of Advanced Studies organised by MoEF&CC and Chaired by Hon'ble Minister Shri. Prakash Javdekar. Dr. B.N. Mohanty and Shri. Uday D.N. presented a paper on "Integration of Agroforestry and Wood Based Panel Industries – Opportunities and Challenges".

12.02.2015: Shri. Anand Nandanwar, Shri. Kiran M.C and Dr. K.Ch. Varadarajulu Scientists attended the meeting and had discussion with the representatives of M/s. FII Pvt. Ltd. regarding project on evaluation of Canadian softwood species.

24.02.2015-25.02.2015: Dr. B.N. Mohanty, *IFS*, Director attended "Two Day Research Workshop to showcase the findings of Forestry Research Institutions" at Van Vigyan Bhawan, New Delhi and made a presentation on the Achievements of the Institute during last ten years.

25.02.2015: Dr. B.N. Mohanty, Director, Ms. Sujatha D. and Shri. Uday D.N. Scientists attended the Meeting on "Bamboo Mat Corrugated Technology-Business Model" at MoEF&CC chaired by Shri. Sushil Kumar, Addl. Secretary (SK) MoEF&CC.

26.02.2015-28.02.2015: Dr. Vipin K. Chawla, Scientist delivered a lecture on "Bamboo Composite Technology and Bamboo Preservation Techniques" for the trainees of 1st course at IFGTB, Coimbatore.

02.03.2015-04.03.2015: Dr. Vipin K. Chawla, Scientist addressed the inaugural session of the 2nd course as chief guest and delivered a lecture on "Bamboo Composite Technology and Bamboo Preservation Techniques" at IFGTB, Coimbatore.

12.03.2015: Shri. Uday D.N., Scientist presented a paper on "Plantation Timbers and Wood Based Panel Industries-Opportunities and Challenges" at Tamilnadu Forest Research Institute, Chennai.

13.03.2015: Dr. Ranjana Yadav, Officer In-Charge, IPIRTI Centre, Mohali delivered a lecture as a guest speaker in Design Awareness Seminar for Plywood industry at Yamuna Nagar, Haryana.



*Shri. Uday D.N., Scientist, IPIRTI presenting a paper at TFRI, Chennai on 12th March 2015*

### IPIRTI-NID BAMBOO TRAINING WORKSHOP

IPIRTI and National Institute of Design(NID) conducted Collaborative Bamboo Workshop at both the campuses through lectures by IPIRTI & NID experts and demonstrations of various working methods and techniques. This workshop aimed at exchanging the knowledge in utilization of bamboo by IPIRTI and NID during 16<sup>th</sup> - 20<sup>th</sup> March 2015 . Also during the workshop, Bamboo artifacts, designer items were prepared in NID and some bamboo designer structure, gazebo were created at IPIRTI.



*Dr. B.N. Mohanty, IFS, Director, IPIRTI addressing the students of NID and Trainees of IPIRTI during the workshop*



*Dr. B.N. Mohanty, IFS, Director, IPIRTI distributing Certificates to NID student*



*Dr. B.N. Mohanty, IFS, Director, IPIRTI viewing the Bamboo Products displayed by NID students*

### BOG MEETING AT IPIRTI, BANGALORE

122<sup>nd</sup> Meeting of the Board of Governors of IPIRTI was held at IPIRTI Conference Hall, Bangalore on 17<sup>th</sup> March, 2015. The Meeting was chaired by Shri. Ashok Lavasa, IAS, Secretary, Ministry of Environment, Forests & Climate Change, Govt. of India & Chairman, IPIRTI BoG, New Delhi. Dr. B.N. Mohanty, IFS, Director, IPIRTI welcomed the Chairman and other BoG Members.



*A view of 122<sup>nd</sup> BoG Meeting at IPIRTI, Bangalore*

### **Highlights:**

Shri. Ashok Lavasa, *IAS*, Secretary, MoEF&CC, Govt. of India & Chairman, IPIRTI BoG expressed his satisfaction over the first impression of IPIRTI and highlighted two general points for the benefit of all concerned as follows:

First of all, the institutions under MoEF&CC which have been doing good work should look at their Institution from the perspective of others/outsiders and find out what value is attached for the works carried out. He emphasized that when involved in the research work there is likely to be a communication gap between the common people and the institutions for which strategy is to be formulated to bridge the gap so that common people understand about the benefits of Research and Development activities. Secondly, all institutions having both infrastructural facilities and rich human capital should strive hard to become self-sufficient and independent. He stressed that the institutions should set up targets to generate enough resources at least for their day-to-day activities.

He appreciated the significant R & D contributions made by IPIRTI. He also opined that IPIRTI may work out plans to promote the bamboo based housing technologies by way of constructing few houses under Govt. scheme.

He stressed that the institute should propose future lines of action by interacting with the stake holders and hold regular workshops to create awareness. He advised that the institute should take advantage of Skill India Mission, to take up partnership for skill developmental programme.

He desired that IPIRTI should interact with Council of Architecture/Engineers to bring awareness about the environment friendly products developed by IPIRTI which can find its ways in housing concept.

## INAUGURATION OF NEWLY CONSTRUCTED LECTURE HALL-CUM-SAMPLE CELL BUILDING AT IPIRTI, BANGALORE



Shri. Ashok Lavasa, IAS, Secretary, Ministry of Environment, Forests & Climate Change, Govt. of India inaugurated the newly constructed Lecture Hall-cum-Sample Cell Building at IPIRTI on 17<sup>th</sup> March, 2015.

18.03.2015: Shri. Jagdish Vengala, Scientist attended National Seminar on “National Building Code of India: New Directions for Revision” jointly organized by BIS and School of Planning and Architecture, New Delhi at Auditorium, Architecture Building, School of Planning & Architecture, New Delhi.

25.03.2015: Ms. Sujatha D. and Mrs. Mamatha B.S., Scientists attended a Seminar on “Thermo Gravitric Analysis” organized by M/s. Netsczan analysis at Chennai.

### EXHIBITIONS

03.01.2015-12.01.2015: Shri. Amitava Sil, Officer In-charge and other staff of IPIRTI Field Station Kolkata participated in the exhibition during Sundarban Mela-2015 at Canning Town, South 24 Paraganas by exhibiting the products developed by IPIRTI in a stall.

04.02.2015-07.02.2015: Shri. Prakash.V, Scientist, IPIRTI Bangalore, Dr. Ranjana Yadav, Officer In-Charge, IPIRTI Centre, Mohali and Shri. Ramesh Karri, JTA participated in DELHIWOOD - 2015 held at India Expo Centre and Mart, Greater Noida. IPIRTI Stall was set up to exhibit the Products and Technologies developed at IPIRTI.



08.03.2015: Dr. Vipin K. Chawla, Scientist visited Nesara Farmers' Market, Chamrajapuram, Mysore for setting up an exhibition stall for bamboo products and delivered a lecture on bamboo composite technology to Architects, Engineering students and local communities.

### **DIGNITARIES VISITS**

17.01.2015: Shri. Jude Sekar, IFS (Retd.), Former Director General of Forests & Special Secretary to MoEF&CC, Govt. of India visited IPIRTI and addressed the Scientists including IFS Probationers from "Indira Gandhi National Forest Academy"



03.02.2015: Shri. Isaac Emmanuel, Head-Industrial Marketing & Advocacy and Shri. Robin Jacob Joseph, Manager-Business Development from M/s. Bayer Materialscience Pvt. Ltd., Thane West visited IPIRTI, Bangalore to discuss with Dr. B.N. Mohanty, Director and team of Scientists on the Project titled "Polyurethane based adhesives for Bonding wood based products".

17.02.2015: Shri. Puspendu Bhattacharya, Senior Sales Manager, M/s. DKSH India Pvt. Ltd., visited IPIRTI Field Station Kolkata for discussion regarding sponsoring a project on adhesive.

26.02.2015: Shri. R.K Bhiani, Director M/s. Mridul Chemicals Pvt. Ltd. visited IPIRTI Field Station, Kolkata for technical discussion.

28.02.2015: Shri. R.C. Jain, Managing Director with his team from M/s. Indeutsch International, Noida, visited IPIRTI, Bangalore to hold discussion with Dr. B.N. Mohanty, Director and team of IPIRTI, Scientists on the upgradation of the technology on the Project titled "Development of 50mm compregs using dyed veneers of plantation species (Densified Laminated Lumber)".

03.03.2015: Dr. N. SriLakshmi, Registrar, National Institute for Micro, Small and Medium Enterprises (NI-MSME) made a study visit to IPIRTI, Bangalore along with 10 International delegates who were undergoing training on Intellectual Property Rights and implications for SMEs of IPRIS at Hyderabad.

12.03.2015: Scientist from BIS, Mohali visited IPIRTI Centre, Mohali to see the Mycological testing facility available at the Centre.

30.03.2015: Shri. Rajesh Mundra, Director, M/s ARCL visited IPIRTI Field Station, Kolkata for discussion regarding sponsorship of a project.

## TRAINING

### Post Graduate Diploma Course:

26th batch of PGD Course on Wood and Panel Products Technology started and 22 candidates are undergoing the training programme.

### Short Term Vocational Training Courses:

10.02.2015-13.03.2015: One month training programme on “Plywood Manufacturing Technology” was conducted for 5 candidates at IPIRTI Field Station, Kolkata.

25.02.2015-27.02.2015: A Short term training course on “Peeling and Knife Grinding” was conducted for 3 candidates at IPIRTI, Bangalore.

### SHORT TERM TRAINING COURSES FOR JUNE - DEC, 2015 AT MOHALI

Sl. No	Title of the Training Course	Duration	Date	Fees	S.Tax* (Rs.)	Total (Rs.)
1.	Resin Manufacturing Conventional PF & UF Resin	3 days	June 08-10	5000	618	5618
2.	Retention Of Preservative Chemical	5 days	July 20-24	5000	618	5618
3.	Testing Of Plywood As Per I:S 303, 1328, 710 & 4990	5 days	August 17-21	5000	618	5618
4.	Testing Of Block board And Flush Door As Per IS:1659 & IS: 2202 (Part - I)	5 days	Sept.07-11	5000	618	5618
5.	Analysis of Raw Material for Resin Manufacturing	5 days	Oct. 05-09	5000	618	5618
6.	Testing Of Plywood As Per IS 303, 1328, 710 & 4990	5 days	Nov. 02-06	5000	618	5618

\* 12.36% Service Tax

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

Programme Coordinator: Dr. Ranjana Yadav (ranjana@ipirti.gov.in) IPIRTI Centre (MoEF&CC, Govt of India) B-65, Phase -7, Industrial Area, Mohali-160055, Punjab. 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, Bangalore. You can apply online by filing and submitting the Registration Form.

## SHORT TERM TRAINING COURSES FOR JUNE - DEC, 2015 AT BANGALORE

Sl. No.	Title Of The Training Course	Duration	Date	Fee	Tax*	(Rs.) Total
1.	Testing of Flush Door and Block Board as Per IS:2202 And IS:1659	5 Days	June 08-12	10000	1236	11,236
2.	Plywood Manufacturing-I ( Log Storage, Centering, Peeling, Clipping, Drying, Knife Grinding)	5 Days	July 06-10	7500	927	8,427
3.	Plywood Manufacturing- II ( Adhesives for Plywood and Plywood Manufacturing-Res-in Preparation, Gluing, Hot Pressing)	5 Days	July 20-24	7500	927	8,427
4.	Testing Of Plywood and Block Board as Per IS:303,IS:710,IS:1328,IS:4990 And IS:1659	5 Days	Aug 17-21	10000	1236	11,236
5.	Preliminary Bamboo Processing	3 Days	Aug 25-27	5000	618	5,618
6.	Low Cost Phenolic Resins Using Renewable Bio-Materials as Replacement for Phenol	5 Days	Sep 07-11	7500	927	8,427
7.	Low Formaldehyde Emission Adhesives for Plywood and Particle Board	5 Days	Oct 05-09	7500	927	8,427
8.	Defects and Remedial Measures In Plywood Manufacture	5 Days	Nov 16-20	7500	927	8,427
9.	Testing of Plywood and Block Board as Per IS:303,IS:710,IS:1328,IS:4990 And IS:1659	5 Days	Dec 14- 18	10000	1236	11,236

\* 12.36% Service Tax

\*\* 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, Bangalore and sent by post to Post Bag No.2273, Tumkur Road, Yeshwanthpur PO, Bangalore - 560 022.

## SHORT TERM TRAINING COURSES FOR JUNE - DEC, 2015 AT KOLKATA

Sl. No	Title of the Training Course	Duration	Date	Fees	S.Tax* (Rs.)	Total (Rs.)
1.	Low Formaldehyde emission adhesives for plywood and particle board	3 days	24 – 26 Jun	5,000	618	5,618
2.	Retention of Preservative Chemical	5 days	27- 31 Jul	7,500	927	8,427

3.	Testing of Plywood, Block Board, Flush Door	5 days	24- 28 Aug.	7,500	927	8,427
4.	One Month Training Course on “Plywood Manufacturing Technology”	01 Month	01- 30 Sep	10,000	1,236	11,236
5.	Analysis of raw material for resin manufacturing.	3 days	28-30 Oct.	5,000	618	5,618
6.	Low Cost and Special Resin for manufacture of Plywood	5 days	16- 20 Nov	7,500	927	8,427
7.	Preliminary Bamboo Processing	3 days	16- 18 Dec	5000	618	5,618
8.	Plywood and Adhesive manufacturing	3 days	28- 30 Dec	5,000	618	5,618

\* 12.36% Service Tax

Programme Coordinator: Mr. Amitava Sil, IPIRTI Field Station Kolkata, 2/2 Biren Roy Road (West), Sarsuna, Kolkata-61, Tele Fax:033-24983120, Mob:09874219758 (ipirti@vsnl.net). 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.

### NEWS

#### Wood Plastic Composite Industry 2018-2019 Forecasts for Global and Chinese Regions DALLAS, March 12, 2015 /PRNewswire/ --

RnRMarket Research.com adds “Market Research Report on Global and Chinese Wood Plastic Composite Industry, 2009-2019” and “Wood-Plastic Composite & Plastic Lumber to 2018” reports with 150 and 364 pages to its online business intelligence library.

Market Research Report on Global and Chinese Wood Plastic Composite Industry, 2009-2019 is a professional and in-depth market survey on Global and Chinese Wood Plastic Composite industry. The report firstly reviews the basic information of Wood Plastic Composite including its classification, application and manufacturing technology. The report then explores global and China’s top manufacturers of Wood Plastic Composite listing their product specification, capacity, Production value, and market share etc. The report further analyzes quantitatively 2009-2014 global and China’s total market of Wood Plastic Composite by calculation of main economic parameters of each company; The breakdown data of Wood Plastic Composite market are presented by company, by country, and by application. The report also estimates 2014-2019 market development of Wood Plastic Composite Industry. The report then analyzes the upstream raw materials, downstream clients, and current market dynamics of Wood Plastic Composite Industry.

In the end, the report makes some proposals for a new project of Wood Plastic Composite Industry and a new project of Wood Plastic Composite Industry before evaluating its feasibility. Overall, the report provides an in-depth insight of 2009-2014 global and China Wood Plastic Composite industry covering all important parameters.

## SUPERANNUATION



Dr. Sushil Kumar Nath, Joint Director, retired on superannuation on 31st January 2015. He joined IPIRTI in the year 1983 as a Senior Scientific Officer and since then he has been posted at Field Station, Assam till the year 1996. Later, he was transferred to IPIRTI, Bangalore. He became Joint Director of this Institute in March 2004. Since then he was the Co-ordinator of Training and with his vast experience he was guiding IPIRTI scientists in all aspects. During April-September 2014, he was the Director In-charge of IPIRTI. He was engaged in research on wood based panel products and development of adhesives for last 32 years. He has extensively visited plywood factories throughout the country and rendered services to the industries in process and product development.

Dr. Nath was experienced in utilization of plantation timber for manufacture of plywood with respect to gluing and pre-pressing technique and the technology is being widely utilized by the plywood industry. In the field of bamboo panel products Dr. Nath has developed technology for the manufacture of bamboo laminates and flooring tiles from Indian bamboo. In-addition to Joint Director, Dr. Nath was the Training Co-ordinator for the courses conducted by the IPIRTI and Testing activities of the Institute. He was a Member of wood and wood product sectional committee CED-20 of Bureau of Indian Standard and a life member of Indian Academy of Wood Science. Dr. Nath had more than 50 scientific publications in national and international journals.

IPIRTI acknowledges the contributions of Dr. Nath especially in the study on “Life Cycle Analysis” (LCA ) of wood composites, in addition to the manufacture of Wood Based Panels-Plywood, Block board, Flush Door Particle Board, Medium Density Fibre Board (MDF) & Bamboo Composites.

Dr. Nath has compiled a book entitled “Plywood Manufacturing practices in India” in August 2009 and he is one of the Co-author of the book namely “Bamboo Composites-IPIRTI Technologies” published by IPIRTI, Bangalore in May 2013.

IPIRTI wishes him a Happy & Peaceful Retired Life.

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Director & Principal Executive Officer

Shri Prakash Javadekar  
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