OSHIKA

Adhesives & Construction materials

World Quality From Century Company



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Corporate Information

OSHIKA CORPORATION 1-4-21 Funado Itabashi-ku 174-0041 Tokyo Japan	
Establishment	March 29, 1943
Capital	JP¥417.85 million
Net Sales	JP¥28.772 billion（March 2019）
Staff	158
Main Operations	1.Manufacturing and sales of adhesive, industrial chemical, plywood, processed wooden products. 2.Businesses related to the above.

Message from President

As global warming is becoming apparent, regeneration of the forest which plays an important role in CO_2 reduction is reconsidered. Based on the government policy, diversified use of the forest is evolving day by day, as seen in the stadium for Tokyo Olympic 2020.

We, Oshika Group, offers our advanced methods to utilize wood material through our adhesives for wood by using the technology that we has cultivated over the past 100 years. Not only promoting the coordination of living environment with coziness and warmth of wood, we will contribute to a sustainable, recycling society by spreading the wood utilization worldwide and by promoting the cycling of forest regeneration, wood utilization and forest farming. Furthermore, we will contribute to developing processing technologies for other various materials besides wood material through adhesives.

Based on this philosophy, Oshika Group, as “ONE TEAM”, makes the challenge and wholeheartedly responds to a request of customers, aiming for a trusted company.

Oshika Corporation
President & Representative Director
Kazuhide Horiguchi

Main Business

Chemical Dept.

Industrial Adhesive

Construction Adhesive

Formaldehyde Catcher, Others

Building Material Dept.

Plywood

Laminated Timber

Flooring

International Business Dept.

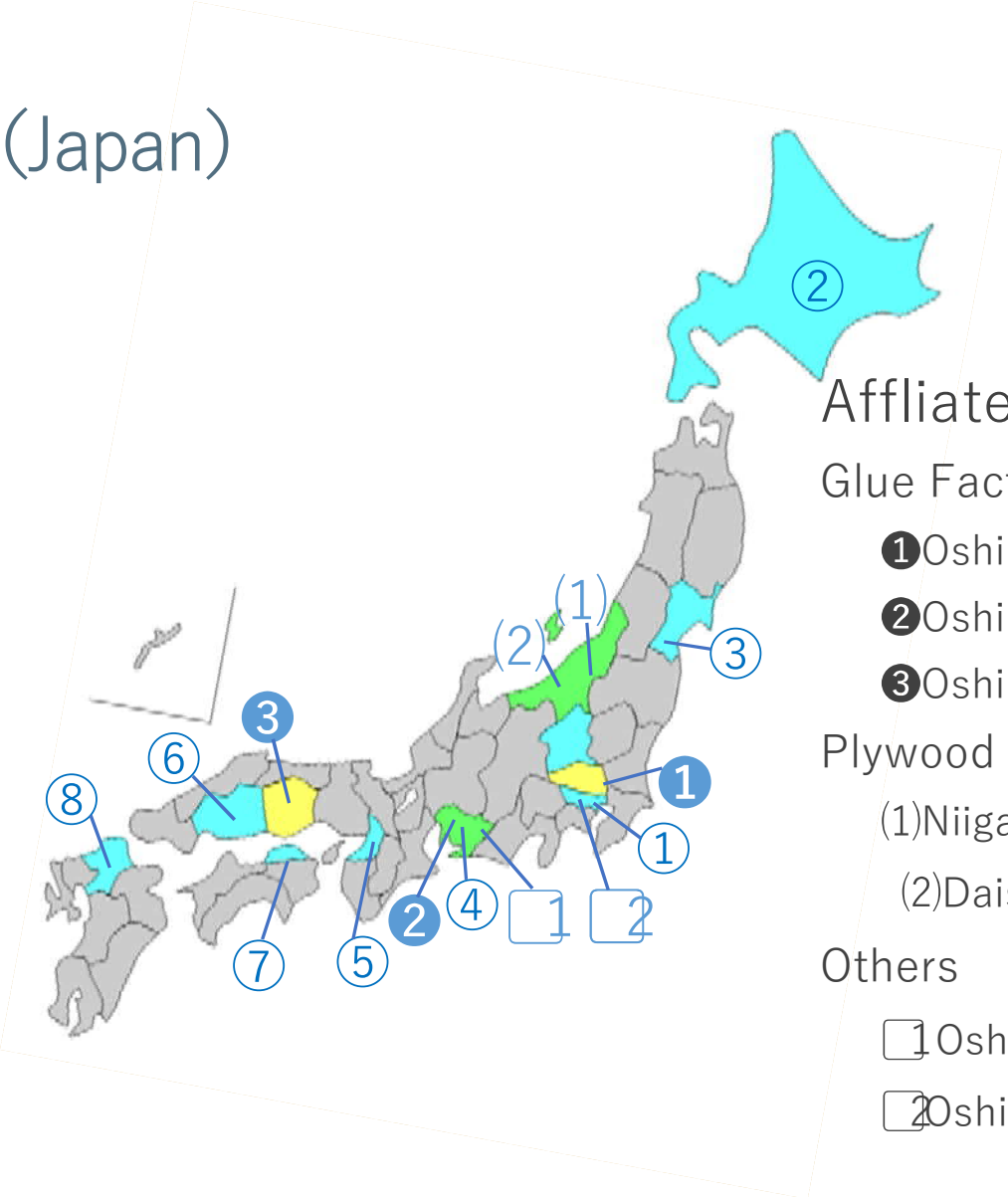
Export

Technology License, Cooperation

Oshika Group (Japan)

Sales Offices

①Tokyo
②Sapporo
③Sendai
④Nagoya
⑤Osaka
⑥Hiroshima
⑦Takamatsu
⑧Kyusyu



Affliated Company

Glue Factories

❶Oshika Chemitec Soka-Plant
❷Oshika Chemitec Nagoya-Plant
❸Oshika Chemitec Mizushima-Plant

Plywood Mills

(1)Niigata Gouhan Shinko
(2)Daishin Gouhan Kogyou

Others

□1Oshika Chemitec Kemiholz
□2Oshika Formalin

Oshika Group（Overseas）

- China - Dalian

  Dalian Oshika Co.,ltd（Sales）

- Indonesia - Jakarta

  PT.Oshika Indonesia（Sales）

  PT.Polyoshika（Manufacture）

Our Partner（Overseas）

- Vietnam
- Philippines
- Poland
- New Zealand

Global Expansion

- East Asia
  - China・Taiwan・South Korea
- Southeast Asia
  - Indonesia・Vietnam・Philippines・Malaysia
- Russia
- New Zealand
- Brazil
- Poland
- India

2. History

HISTORY OF OSHIKA

1905 Founder Yoshitaro Oshika established Oshika & Co. to trade in Ashu indigo and Indigo dyed thread

1935 Began selling casein

1937 Established Oshika Bussan Co., Ltd. In Nagoya

Established Veneer Glue Co., Ltd. in Nagoya

1938 Established Nissin Chemical Laboratory affiliated with Nissin Seiyu Co., Ltd.

Launched adhesive business

1943 Established Oshika Shinko Corporation in Itabashi, Tokyo to expand business

1962 Established Niigata Gouhan Shinko Co., Ltd. in Niigata city

1964 Established Mizushima Chemical Shinko Co., Ltd. in Kurashiki city

1967 Established Osaka Chemical Shinko Co., Ltd. in Minamikawachi, Osaka

1969 Established Souka Chemical Shinko Co., Ltd. in Souka city

1974 Hosted the company's first general meeting

1975 Established Nagoya Wood Chemical Co., Ltd. in Nagoya city

1977 Established Kemiholz Co., Ltd. in Kuse, Kyoto

1979 Co-established Oshika Formalin Co., Ltd. with Mitsubishi Gas Chemical Company, Inc.

1989 Relocated Research & Development Center to the present address

1995 Merged Oshika Bussan Co., Ltd. Into Nagoya Office of Oshika Shinko Corporation

1996 Established PolyOshika in Jakarta

1999 Merged with Osaka Chemical Shinko Co., Ltd.

2000 Relocated the company's headquarter to the present address

2000 Liquidated Nagoya Wood Chemical Co., Ltd.

2001 Merged Veneer Glue Co., Ltd, Mizushima Chemical Co., Ltd., Souka Chemical Co., Ltd. into Oshika Chemitec Corporation.

2001 Changed the company's name to Oshika Corporation

2003 Invested in ZHANGJIAGANG OSHIKA CHEMICAL INDUSTRIAL CO., LTD., the synthetic adhesive manufacturer in Zhangjiagang, Jiangsu Province, China

2008 Oshika Chemitec Co., Ltd. marged Kemiholz Co., Ltd.

2011 Established Dalian Oshika Co., Ltd.

2011 Acquired Ida Shouji Co., Ltd., established a subsidiary

2014 Established PT.OSHIKA INDONESIA

2015 Acquired Daishin Plywood Industrial Co., Ltd., established a subsidiary

Corporate Philosophy

We will create a sustainable future that is both prosperous and comfortable by advancing the technology and trust that we have cultivated over the past 100 years through the development of adhesives for wood, a natural material, and by flexibly responding to various changes in the environment.

Policies & Vision

- We will establish ourselves as a flagship company that utilizes chemical technology to promote the use of wood.
- We will create business pillars in new fields that are not bound by wood and adhesives.
- We will expand the “world-class quality” of Oshika globally.

Action Guidelines

We, the Oshika Group...

- will deliver satisfaction and trust to our customers.
- will strive for ingenuity and innovation.
- will treat everyone with gratitude and respect.
- will never stop learning and growing together with our peers.
- will value communication and teamwork.
- will comply with laws and regulations and observe social manners.

4. Trending Field

Housing Industry

-Construction of new homes decreasing due to population decline in Japan

-Expansion of business to emerging countries

-Large-scale drought and flood caused by climate change

-Health awareness by population aging and prevention of infections

-Environment consciousness increased by high attention to SDGs

Utilize Oshika's Advantages

Japanese high quality standard
→Expand our products globally as **"world-class quality"**

Japan as a land of forests,
70% of land covered by forests
→Utilization of wood material as **renewable natural resource** (non-residential)

5. Competitive Advantages

All Companies

- Synergy effect by both Chemical Dept. and Building Material Dept.
- High-quality follow-through service by owning R&D Center
- Cost reduction and risk hedge by diversifying domestic manufacturing locations

Chemical Dept.

- Advanced knowledge and networks of wood-related adhesives
- Strong brand awareness in the field of wood-related adhesives in Japan and abroad
- Expansion into new fields with resin design technology and in-house manufacturing facilities

Building Material Dept.

- Trading function of building material besides a plywood factory
- Storing expertise in wood processing technology for over 100 years
- Create the value-added original products by the chemical adhesive technology

International Business Dept.

- Brand-awareness in domestic and overseas as the adhesive specialist for wooden industry
- Wide network with the trading Company and local partner
- Expand the domestically-proven adhesives to overseas

6. Research & Development

Based on long-term performance of adhesives for plywood and laminated timber, Research and development center of Oshika has played a role as a facility for user-prioritized development as below;

- **Productivity increases**

  (higher performance of adhesive, shortening manufacturing time etc.)
- **Optimization of adhesive in accordance with adherend material changes**
- **Cost reduction**

Currently R&D center has been proceeding not only user-prioritized development, but technology-oriented development and corporate research as well

- **Various chemicals which are applicable to wood**

  (flame retardant agent, antiseptic agent, termite preventing agent, high hardening agent, VOC reducing agent, water-repellent agent, moisture-proof agent)
- **New application of existing technologies**

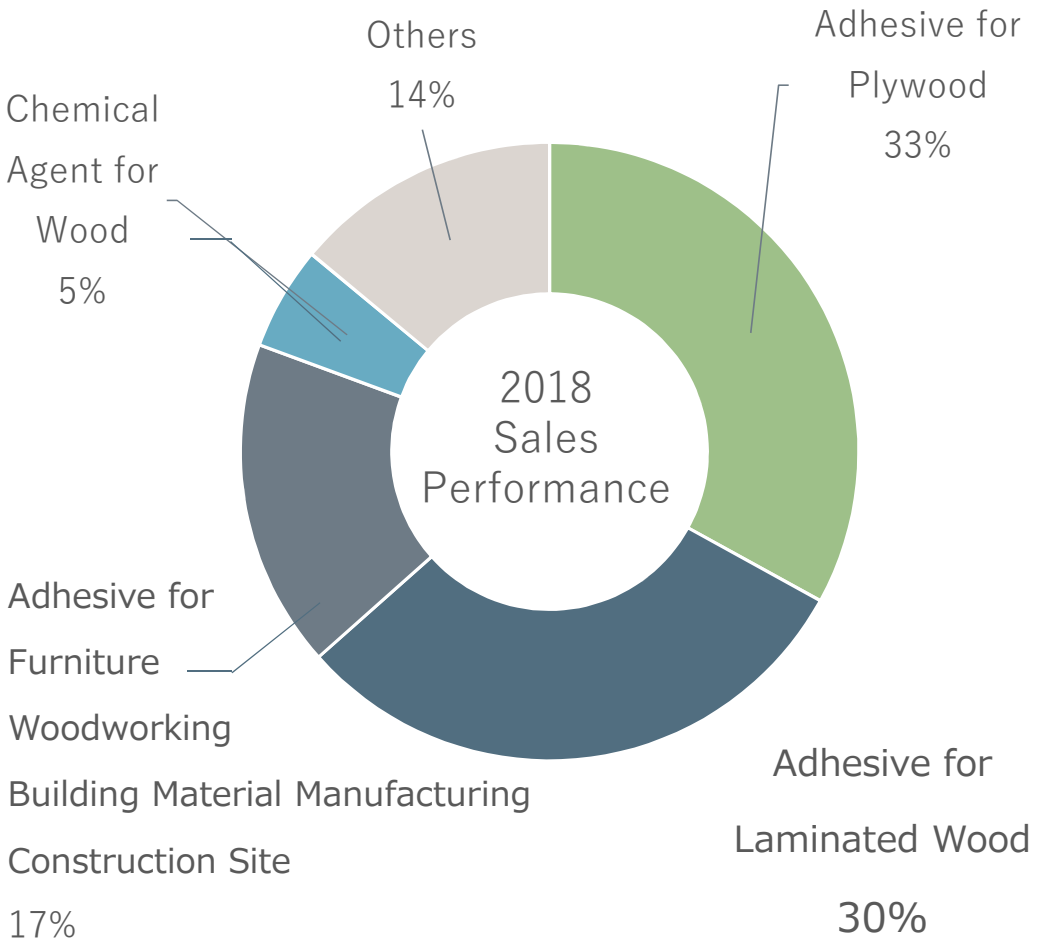
  (Urethane, Epoxy, Hot Melt)
- **Utilization of biomass feedstock for SDGs (Lignin etc.)**
- **Development for the utilization of new materials (Cellulose Nano Fiber etc)**

7. Core Product

Oshika's core product is adhesive for building materials. Inheriting the technology since the foundation, we have significant advantages particularly in adhesives for plywood (phenol resin adhesive) and for laminated timber (Aqueous polymer-isocyanate adhesive, resorcinol adhesive).

Besides that, we have a great number of sales performance in the field of not only adhesive for construction and emulsion for building materials but treatment chemicals for wood as well. For the past few years, the adhesive sales performance in non-industry field (Vehicles and home appliances) also shows its growth.

Expand the adhesive sales for non-wood materials besides our main wood material business



8. Mid-term Business Plan

Main policies over the first three years

1. Establish of outstanding brand competitiveness in the field of adhesive for wood (reinforcement of research, development and production)
2. Consider about shrinking domestic market (enhancement in sales and marketing)
3. Expand the oversea operations
4. Develop new products and strengthen sales
5. Strengthen organizational infrastructure (unification of the organization)

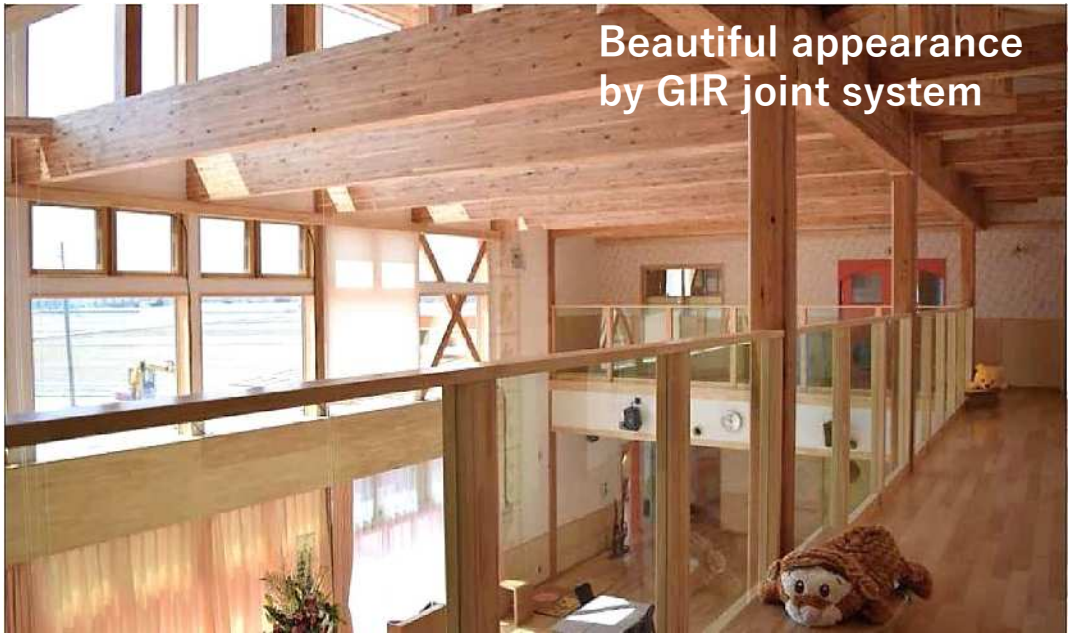
9 . Concept
10. Essence of Monozukuri

Global expansion of Oshika's world-class quality

GIR（Glued-in Rod ）joint system

GIR (Glued-in Rod) is a kind of joint system using rod and adhesive in timber structure.

GIR joint system is an innovative jointing technology to conceal the metal joint part by placing steel rod inside timber.
Oshika has developed a new epoxy resin adhesive to strengthen its joint part by filling adhesives into the space between rod and timber.

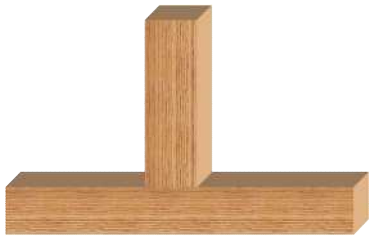


Beautiful appearance by GIR joint system

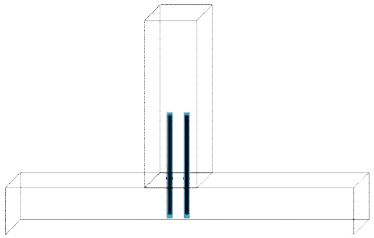
11. GIR Joint System

Advantages to use GIR joint system

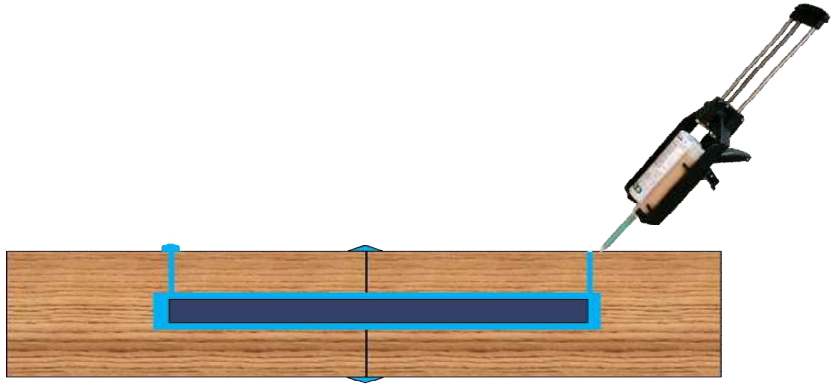
1. No disfigurement of the structure
2. Long-term anti-loosing performance
3. No stress when jointed
4. Simultaneous anchoring on joint parts
5. No damage to the dimension of timber
6. High processing accuracy is not required



Outside Appearance



Inside Structure



How to fill the space between rod and timber with the adhesive

11. GIR Joint System

Example of the construction using GIR Joint System

Miyako Shimojishima Terminal (under construction)

Location	: 1727, Aza Sawada, Shiirabu, Miyakojima-shi, Okinawa
Chief Architect	: Mitsubishi Estate Residence Co., Ltd.
Designer	: Nikken Sekkei Ltd.
Construction	: Mr. Kokuba, Daiyone JV (CLT construction ; Yamasa Mokuzai Co., Ltd.)
Site area	: 32,586㎡ (airport), 12,027㎡ (facility)
CLT amount used	: 1,530㎥

Miyako Shimojishima Terminal (inside of the terminal)

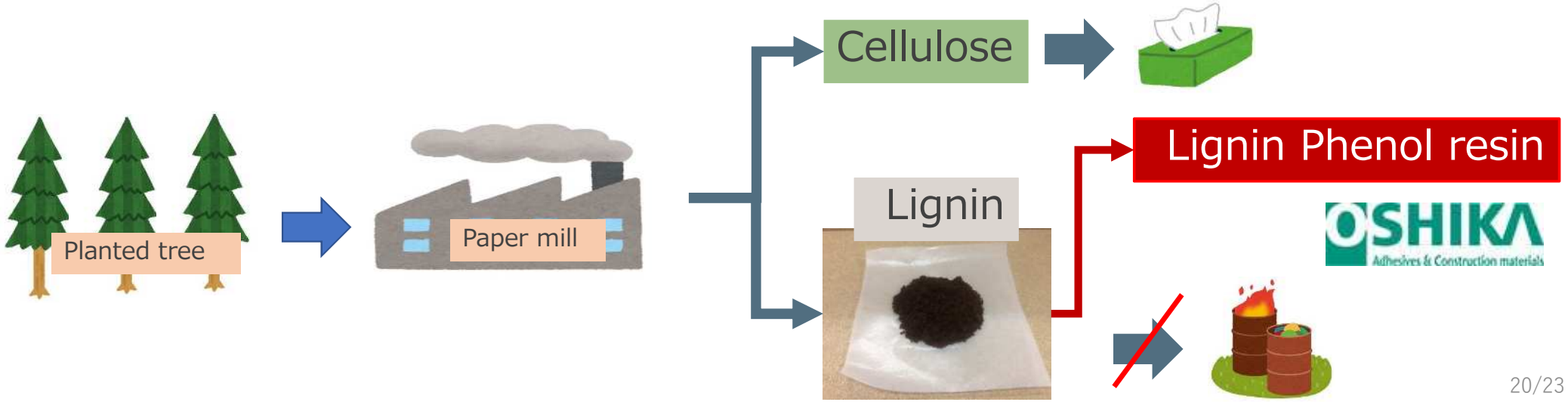
Location	: 1727, Aza Sawada, Shiirabu, Miyakojima-shi, Okinawa
Chief architect	: Mitsubishi Estate Residence Co., Ltd.
Designer	: Nikken Sekkei Ltd.
Construction	: Mr. Kokuba, Daiyone JV (CLT construction ; Yamasa Mokuzai Co., Ltd.)
Site area	: 32,586㎡ (airport), 12,027㎡ (facility)
CLT amount used	: 1,530㎥

Image provided by Mitsubishi Estate Residence Co., Ltd. and Shimojishima Airport Management Co., Ltd.

12. Lignin Phenol

Lignin phenol resin

Oshika developed a new adhesive made from “Lignin(included in trees)” as one of the materials.
Lignin is generated as a by-product in the papermaking process, most of which had been used for fuel.
This resin is a polymer included in the plant cell wall. Even though lignin had been researched in order to use it for the material of adhesive, however it was rarely used because of its weak reactivity compared with phenol.
As being extracted not from oil but from wood, Oshika’s new Lignin phenol resin enabled us to sustainably produce adhesives.



Flame retardant

One of the disadvantages of timber as construction material is “it burns”.
Oshika succeeded in creating a flame retardant which performs well enough to acquire “incombustibility certification” set up by Minister of Land, Infrastructure, Transport and Tourism.
Generally, flame retardants for timber often cause efflorescence by absorbing moisture. However, Oshika’s flame retardant can reduce efflorescence appearing on the surface.
As it never causes disfigurement of the wood material, timber which is treated flame retardants can be applied to wherever it needs flame retardancy.

Burning test on solid wood(left) and treated wood(right)

Flame retardant applied to wooden wainscot

CLT
(Cross Laminated Timber)

CLT(Cross Laminated Timber) is an enormous and thick wooden material, which each layer of the aligned saw board is laminated perpendicular to the previous layer. It has been used for constructional material as well as civil engineering material and furniture.
Firstly developed in Austria around 1995, CLT has been used for various buildings in Europe, mainly in Britain, Switzerland and Italy. Rapidly gaining popularity in Canada, the United States and Australia in recent years, CLT is used to build high-rise buildings in those countries.
It is often adopted to house and mid-rise apartment as well as living space of nursing home and guest room of hotel, using its characteristics of insulation and box frame. Not only as a frame of construction, CLT potentially has the multiple benefits of thermal insulation, flame shielding and sound insulation performance.
CLT also offers a cozy space with a warm wood texture and grain. Besides, since wood is a sustainable, recycling resource, it allows us to construct

14. CLT

buildings by using forest resources effectively while reducing CO2 emissions.
There are other advantages as well. As CLT is carried in construction field after some materials are assembled in factory(prefabrication) and the joint part is very simple, so it does not require a long construction period and any expert skills. It is possible to store and assemble as temporary housing parts in a time of disaster.
Furthermore, CLT is much more light compared with RC(reinforced concrete) constructions.
Oshika is always ready to offer the suitable adhesive for CLT manufacturing.

CLT Example