



A commitment to the future
Composite wood products

HUNTSMAN
Enriching lives through innovation

XEMAX Poliüretan

**I-BOND**[®]
Stick with the experts



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Committed to the future of composite wood products

Huntsman was an early pioneer of polyurethane-based resins for the manufacture of composite wood products – and our commitment to this exciting, fast-growing market remains true today.

We have a successful track record of developing new products, services and technologies that can help producers of composite wood products achieve their strategic goals. Ambitious, inventive and reliable, our aim is to be the partner of choice for the composite wood industry – providing customers with an extensive portfolio of resins and release agents, and the highest levels of service and innovation.



Dedicated application specialists

Our dedicated composite wood product experts provide frontline technical support whenever and wherever it is needed. From the initial design of board products, to optimizing the throughput of established manufacturing plants, we are helping our customers improve product performance and profitability.

Through continuous innovation we have developed a full package of polyurethane solutions for companies specializing in different areas of the wood binding industry. Marketed under the brand names of I-BOND® and I-RELEASE®, our resins and release agents can be used in a wide range of applications including the production of oriented strand board (OSB), medium density fiberboard (MDF), particleboard (PB) and wood fiber Insulation board (WFI).

With a variety of resins and release agents at our disposal, we are well placed to help composite wood product manufacturers select systems best suited to specific production line requirements.

Industrial hygiene expertise

As a leading global chemical company, we are committed to making continuous improvements in environmental, health and safety performance.

We were an original signatory to the Responsible Care Guiding Principles and we actively support the 'Walk the Talk' program from ISOPA (the European Diisocyanate & Polyols Producers Association).

In addition, we have our own team of industrial hygiene specialists, who can help our composite wood product customers attain and maintain safe production environments.



Oriented strand board (OSB) and MDI

A winning combination

We are a leading manufacturer of resins for the OSB market – the fastest growing application in the wood binding industry. OSB, produced to the EN 300 standard, is an engineered wood, structural panel that is rapidly gaining in popularity around the world.

OSB applications typically include:

- Timber frame construction
- Boardings and barriers
- Shutters and fences
- Fair and shop fittings – structural and decorative
- Vehicle and wagon interiors
- Structural applications such as walls, roofs and floors
- Packaging
- Furniture
- DIY.



The advantages of MDI

In OSB production the use of a 100% I-BOND® MDI resin can result in a high performance panel with excellent mechanical strength and durability, good moisture resistance and high dimensional stability. The use of I-BOND® MDI can also result in reduced blender maintenance costs (time/frequency), a faster cure, lower formaldehyde emissions and lower drier energy.

Our I-BOND® fast cure resins and I-RELEASE® release systems offer OSB manufacturers opportunities to increase production output.

I-BOND® OSB FC 4310 resin is our catalyzed, fast cure resin. We also produce I-BOND® OSB EFC 4362 an enhanced fast cure resin, which has the potential to provide an even greater increase in production capacity.

Depending on the press system, we can offer different release agents, which can be applied externally on the press belt. I-RELEASE® OSB 9111 agent is suitable for multi-daylight lines with screens, while I-RELEASE® OSB 9128 can give excellent performance on continuous press systems.

PRODUCTS FOR ORIENTED STRAND BOARD

Resin

I-BOND® OSB PM 4300	Standard polymeric MDI resin
I-BOND® OSB FC 4310	Fast cure MDI resin (FC1)
I-BOND® OSB FC 4312	Fast cure MDI resin (FC2)
I-BOND® OSB EFC 4362	Enhanced fast cure MDI resin
I-BOND® OSB EFC 4364	Enhanced fast cure MDI resin (EFC2)

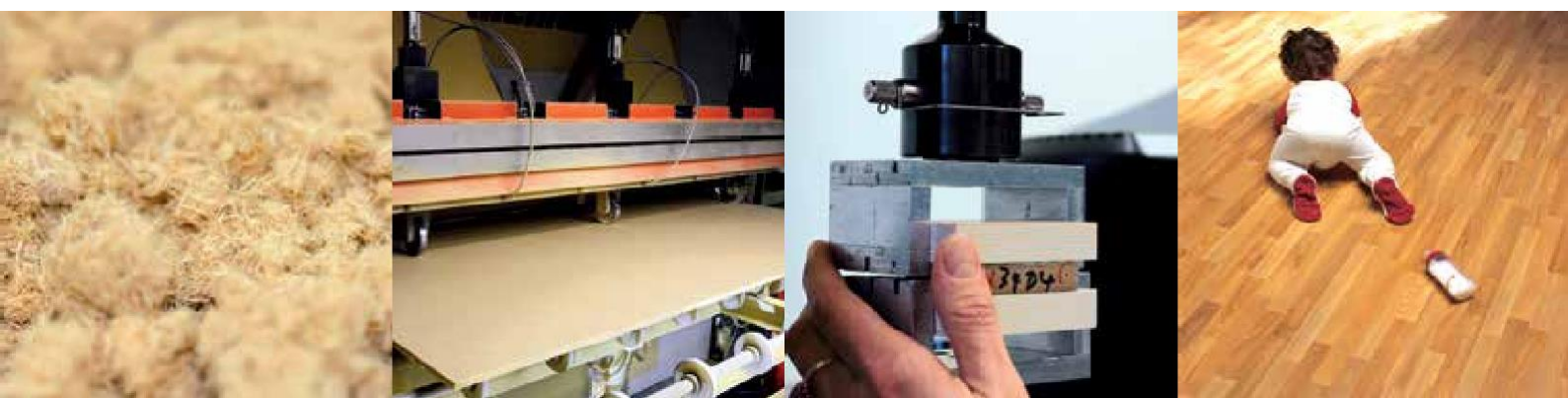
Release agent

I-RELEASE® OSB 9111	External release for multi-daylight lines with 15% solid content
I-RELEASE® OSB 9128	External release for continuous lines (wax free) with 21% solid content

Medium density fiberboard (MDF)

A continuously growing market

Since 1966, when the first MDF panel was produced commercially in the USA, demand for MDF has increased dramatically around the world.



Thanks to its availability in a wide range of thicknesses and its excellent machinability, MDF has a wide variety of uses. Traditional applications include construction, furniture and flooring. However, this is a continuously evolving market. In recent years, MDF producers have brought many innovative products to the market to address customer needs. Examples include anti-bacterial treatments, sound absorbing systems and direct printing applications.

Through innovation and the development of pioneering, cutting-edge technologies, we have established ourselves as a key MDI-resin supplier. Our I-BOND® MDI can be used at 100% in the production of standard quality MDF. It can also be used in the production of special quality MDF for exterior grade panels, moisture resistant panels, thin panels for flooring applications and low-density panels. All panels are produced according to the F**** or super E0 formaldehyde emission standards.

MEDIUM DENSITY FIBERBOARD

Resin

I-BOND® MDF PM 4390	Standard polymeric MDI resin
I-BOND® MDF PM 4394	Polymeric MDI resin (dry blending)
I-BOND® MDF EM 4330	Emulsifiable MDI resin
I-BOND® MDF EM FC 4332	Emulsifiable fast cure MDI resin
I-BOND® MDF FC 4392	Fast cure MDI resin

Release agent

I-RELEASE® MDF 9132	Internal release for multi-daylight and continuous lines (synthetic wax) with 40% solid content
I-RELEASE® MDF 9141	External release for continuous lines (wax free) with 21% solid content



I-BOND® MDF EM 4330 resin was developed as a result of our continuous advances in resin technology. The main advantage of this resin is that it forms a stable emulsion with water, providing better distribution on the fibers in the blow line. The result is a significant increase in panel performance.

We have also developed release agents for MDF production. I-RELEASE® MDF 9132 is applied internally on the fibers. This release agent can be in-line mixed with the resin and added into the blow line. I-RELEASE® MDF 9141 is sprayed externally on the press belt or in case of a multi-daylight press, on to the screen.

Particleboard (PB)

A traditional material in a modern industry

As a base material, PB provides an enormous range of possibilities in furniture manufacture and helps to make wood furniture more affordable. Easy to work with and flexible in application, different types of specialty boards can be produced according to individual building application requirements. Moisture resistance, fire retardance and acoustic insulation are all properties that can be achieved by using specific types of particleboard.



Using I-BOND® MDI on PB lines can bring significant benefits—for example, an improvement in board properties and a significant increase in production capacity. I-BOND® PB EM 4352 resin is an I-BOND® MDI resin developed specifically for the PB industry. This resin is compatible with standard (melamine) urea formaldehyde (M)UF resins and is commonly used as a catalyst in hybrid systems, which can result in an increase of 15% production output. Our other catalyzed, fast cure resins are also suitable for PB production. Put together with I-RELEASE® PB 9156 internal release agent, this creates a full package of products suitable for all PB production requirements.

PARTICLEBOARD

Resin

I-BOND® PB PM 4350	Standard polymeric MDI resin
I-BOND® PB EM 4352	Emulsifiable MDI (can also be used in hybrid systems)
I-BOND® PB FC 4320	Fast cure MDI resin
I-BOND® PB EFC 4322	Enhanced fast cure MDI resin
I-BOND® PB EMFC 4354	Emulsifiable fast cure MDI resin

Release agent

I-RELEASE® PB 9156	Internal release agent for multi-daylight and continuous lines (synthetic wax) with 40% solid content
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Wood fiber insulation board (WFI)

The next generation insulation board

Our commitment to continuous innovation for the composite wood product market has contributed to the development of WFI board with a thickness of up to 240mm. This type of panel offers high performance in terms of sound and heat insulation, and provides an eco-friendly and sustainable alternative to standard insulation materials such as mineral fiber.



I-BOND® WFI 4370 was developed specifically for the production of WFI board. With low temperature curing properties, I-BOND® WFI 4370 MDI resin, is designed to give excellent board properties. Under extreme conditions including, for example at low press temperatures or where moisture content is high, I-BOND® WFI 4370 MDI resin can be used without negatively impacting on production output.

WOOD FIBER INSULATION BOARD

Resin

I-BOND® WFI 4370	Low temperature curing MDI resin
I-BOND® WFI 4372	Low temperature curing MDI resin
I-BOND® WFI 4376	Low temperature curing MDI resin

Release agent

I-RELEASE® WFI 9162	External release agent for continuous lines (wax free) with 20% solid content
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Composite wood products

Building a sustainable future

At Huntsman we believe that our composite wood products business has a major role to play in support of sustainable and environmentally responsible construction and manufacturing techniques that will help safeguard our planet for future generations.

Global warming

The manufacture of composite wood products relies on timber sourced from managed and sustainable forestry resources, which in turn helps to ensure that a greater number of trees are planted than harvested. Fast growing, young trees absorb more carbon dioxide than mature trees, helping to trap the carbon contained in one of the principal greenhouse gases.

Deforestation

In many areas of the world, illegal logging and deforestation are significant issues, destroying habitats, reducing biodiversity and damaging the water cycle. Composite wood products produced using sustainable forestry resources are a real and sustainable solution for keeping pace with consumer demand for wood.



Energy conservation

To combat the increasing cost of energy and to reduce greenhouse gas emissions, increasing use is being made of timber frame buildings as an efficient, high quality and sustainable construction method. Timber frame construction is increasingly seen as the modern alternative to traditional brick and concrete construction in many areas of the world. For example in the UK, timber frame construction is increasingly specified by housing associations looking to develop affordable, high quality, energy efficient homes, with over 25% of all social housing projects based on timber framed construction.

Indoor air quality

Consumers are increasingly concerned about air quality in their homes and the levels of volatile organic compounds emitted by the buildings and furnishings around them. Composite wood products manufactured using our high efficiency I-BOND® MDI resins contain no added formaldehyde, meeting the most stringent of standards specified around the world.

Dependable global supply capability

We are committed to offering our customers the finest quality products and service available, and we always strive for consistent and reliable supply throughout the world. We have regional teams of composite wood product experts available in Europe, Asia and the Americas, ready to offer technical assistance to our customers whenever and wherever it is needed. For additional information visit us at: www.huntsman.com

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