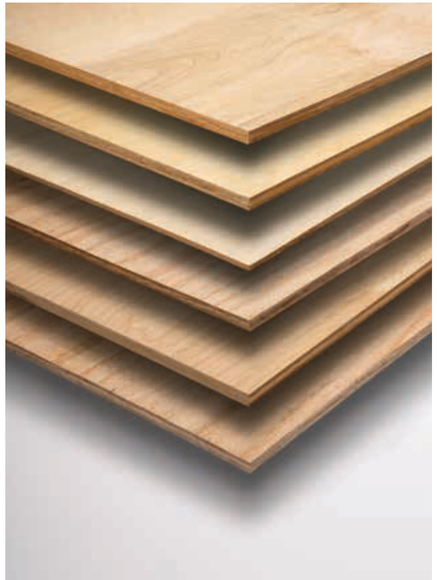
Since 1935, Franklin Adhesives & Polymers has led the way in the innovation of adhesives for wood and wood products. Manufacturers in more than 60 countries have come to trust our products to provide them the high productivity and top quality they demand. They know they can rely on our longstanding experience and deep commitment to the development of practical, hardworking solutions for real needs on the plant floor.

"Our goal is to provide knowledge about formaldehyde and its associated regulations impacting our customers."

Franklin Adhesives & Polymers takes great pride in the quality of products we manufacture for our customers. We also realize we have a legal and ethical responsibility to provide products that comply with global standards and strive to protect our natural resources. Our goal is to provide knowledge about formaldehyde and its associated regulations impacting our customers.



Formaldehyde

Formaldehyde is a naturally occurring and man-made chemical compound used to manufacture many products. It is a gas in its natural form, and inhalation is the primary route of entry into the body. In the atmosphere, formaldehyde gas is commonly formed when hydrocarbons are broken down, so gasoline and its emissions are a likely source of daily exposure. In nature, formaldehyde is formed as plant matter decays and in part comes from the chemical metabolism of foliage. Thus, it is no surprise that it is found in untreated wood. Formaldehyde is also manufactured in large quantities and typically sold as a liquid in solution. It can be found in thousands of common consumer products from deodorant, cosmetics, bathroom cleaners, to insulation, carpets, and furniture.

LEED

LEED, which stands for Leadership in Energy and Environmental Design, is a set of building project guidelines published by the U.S. Green Building Council and is today the most widely used green building rating system in the world. LEED provides a sustainability framework for design, construction, operations, and maintenance of new and existing buildings. By using a rating system that encourages and rewards sustainable design and performance, the program motivates professionals throughout the industry to identify and implement green solutions to reduce environmental impacts and prioritize sustainable practices that benefit existing and future communities.

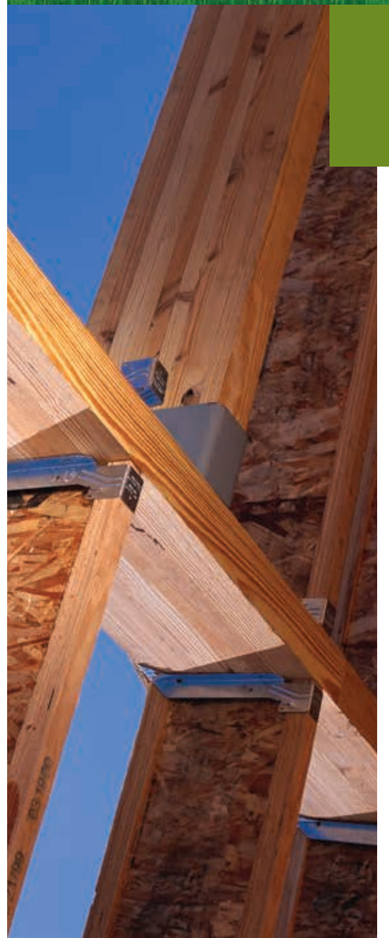
The LEED program largely focuses on adhesives when considering indoor air quality of green building projects. Low-emitting material credits are earned when building products and furnishings demonstrate the ability to meet volatile organic compound (VOC) emissions and content requirements. Composite wood products must use ULEF or NAF resins as defined and certified under CARB Airborne Toxic Control Measure (ATCM) or TSCA Title VI.

LEED rating systems and guidelines can be downloaded from www.usgbc.org.

Background

In 1992, the California Air Resources Board (CARB) listed formaldehyde as a toxic air contaminant with the highest air concentration typically found indoors. This was not the first time formaldehyde had come under scrutiny due to air quality concerns. Rules enacted by the Department of Housing and Urban Development (HUD), and the states of Wisconsin and Minnesota aiming to reduce ambient air formaldehyde levels in manufactured housing stem all the way back to 1983. CARB's Composite Wood Products Airborne Toxic Control Measure (ATCM) was finalized in 2008 in order to reduce Californian exposure to airborne formaldehyde. This standard restricted formaldehyde emissions for hardwood plywood (HWPW), particleboard (PB), and medium density fiberboard (MDF), and applied to products sold, supplied, used, imported for sale, or manufactured for sale in California. As a result, panel manufacturers, fabricators of finished goods, distributors, importers, and retailers were required to utilize and distribute compliant composite wood products.

Ultimately, the CARB formaldehyde emission standards would be mirrored on a federal level with the Formaldehyde Standards for Composite Wood Products Act being signed into law to become the Toxic Substances Control Act (TSCA) Title VI in 2010. Until March 22, 2019, products could be labeled as CARB ATCM Phase II or TSCA Title VI to comply with the new standard. After this date, composite wood products had to be labeled as TSCA Title VI compliant. By including provisions for laminated products, product-testing requirements, labeling, recordkeeping, and import certification, the final rule ensured that composite wood products in the U.S. were in compliance with the emissions standards.



TSCA Title VI Emissions Standards:

40 CFR §770.10: Hardwood Plywood-Veneer Core = 0.05 ppm
Hardwood Plywood-Composite Core = 0.05 ppm
Medium Density Fiberboard = 0.11 ppm
Thin Medium Density Fiberboard = 0.13 ppm
Particleboard = 0.09 ppm

TSCA Title VI Standard

EPA TSCA Title VI Third-Party Certifiers must test their panel producers' composite wood products quarterly using large chamber test method ASTM E1333–14 or, with a showing of equivalence, the small chamber test method ASTM D6007-14. The final rule does not require the testing of component parts, finished goods, or articles containing regulated composite wood products after the initial testing of the composite wood material. Beginning March 22, 2024, non-exempt laminated products will be designated as hardwood plywood and thus require testing and certification.

Manufacturers of composite wood products who use no-added formaldehyde (NAF) or ultra low-emitting formaldehyde (ULEF) based resins can submit an application to CARB to seek a two-year reduced testing and certification exemption. Research conducted during the promulgation of the standard clearly showed that polyvinyl acetate and soy-based adhesives had negligible levels of formaldehyde during chamber testing. In fact, the EPA noted both resins as being candidates for NAF-based resins and eligible for the aforementioned NAF-based resin exemption.

While formaldehyde-free adhesives are going to be preferred to other adhesives to meet the formaldehyde requirements, it is not mandatory that adhesives used be formaldehyde-free. Many low-emitting formaldehyde adhesives will pass the strictest limit of 0.05 ppm (HWPW) of the standard. One key point, however, is that chamber testing is performed on wood with the adhesive; the wood almost always contains some natural amount of residual formaldehyde. Fortunately, Franklin considered this in the development of its line of low-emitting formaldehyde wood adhesives.

Europe's Formaldehyde Regulations

The European Union promulgated European Standard EN 13986 in 2004 that limits formaldehyde emissions from wood-based panels used in construction. Wood-based panels include solid wood panel, laminated veneer lumber, plywood, oriented strand board, resin-bonded particleboard, cement-bonded particleboard or fiberboard, and they cannot exceed Emission class E1 formaldehyde level of 0.10 ppm (listed as 0.124 mg/m³). Determination of formaldehyde release is referenced in Annex B of the Standard and includes chamber test method EN 717-1, gas analysis method EN 717-2, and perforator method EN 120.

Germany announced in 2018 that they would be adopting DIN EN 16516 as the new reference method for formaldehyde emissions from coated and uncoated wood-based materials. This method introduced what are considered more realistic chamber test conditions to accurately gauge formaldehyde emissions. In addition, the new analytical processes essentially result in a 50% decrease in the current formaldehyde emissions limit value. This means that the existing EN 717-1 method can still be used in parallel with the DIN EN 16516 standard, but EN 717-1 formaldehyde results must be multiplied by a factor of 2. The use of DIN EN 16516 and doubling EN 717-1 results became effective in Germany January, 1, 2020.

Franklin's Adhesives

The LEED table below illustrates our adhesives that meet current LEED low emitting materials requirements discussed earlier in this brochure. Next, the second table lists a sample of our adhesives and compliance with TSCA Title VI and EU formaldehyde standards. This table serves only as a guide as TSCA Title VI and other international regulations, require the composite wood manufacturer to conduct third party testing of your substrate with the adhesive you are using, to show compliance with a particular regulation.

If you would like further guidance on using our products to meet TSCA Title VI standards or additional testing information, please feel free to contact us at 1.614.443.0241.

This brochure was printed from the most current information available at the time. Please refer to the current TSCA Title VI and LEED guidelines for complete accuracy.

LEED v4 Products

Product	CDPH Version	TVOC Range
Multibond 2025	v1.2	≤ 0.5 mg/m³
Advantage 460	v1.2	≤ 0.5 mg/m³
Doorbond 200	v1.2	≤ 0.5 mg/m³
Multibond 2015	v1.2	≤ 0.5 mg/m³
Multibond MX-90	v1.2	≤ 0.5 mg/m³
Multibond 1085	v1.2	≤ 0.5 mg/m³
Reactite EP-925	v1.2	≤ 0.5 mg/m³

Franklin Products Information

Product	TSCA Title VI	EN 16516
Assembly High Tack	Formaldehyde Free	
Multibond 2000	✓	
Multibond 2015	✓	✓
Multibond EZ-1	✓	✓
Multibond EZ-2	✓	✓
Multibond X-080	✓	
Multibond X-016	✓	✓
Multibond MX-90	✓	
Multibond SK-8	✓	✓
ReacTITE EP-925	Formaldehyde Free	✓
ReacTITE EP-980	Formaldehyde Free	✓
Titebond 50	Formaldehyde Free	
Titebond Original	Formaldehyde Free	
Titebond Regular	Formaldehyde Free	

Franklin Adhesives & Polymers, a division of Franklin International, manufactures adhesives for the domestic and global wood furniture, millwork, engineered-lamination and filter-fabrication markets. It also produces pressure sensitive adhesives for tapes, graphics and labels used on consumer packaged goods, office products and more. The division supplies product and local service in more than 60 countries on six continents across the globe and operates a plant in Guangzhou, China to serve the Pacific Rim more efficiently.

Franklin Adhesives & Polymers has led the way in the innovation of adhesives for wood and wood products and offers an adhesive solution for most applications in the wood product manufacturing plant. Under the trusted brand names Titebond, Multibond, ReacTITE and Advantage, these products provide superior performance in wood assembly, solid edge and face gluing, engineered product lamination and finger jointing. Franklin Adhesives & Polymers remains committed to pioneering environmentally safe products that also maintain high performance characteristics.

As one of the few adhesives manufacturers in the U.S. that creates polymers for its own adhesives, Franklin Adhesives & Polymers is well positioned to both develop innovative products for particular applications and customize existing products to meet specific customer requirements. The division also maintains a technical service team of experts who work with customers to ensure complete satisfaction with adhesive performance. If you have any questions about any of the information above, please do not hesitate to contact us.

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Franklin Adhesives & Polymers

Recycled
Recyclable

Franklin International is making a commitment to understand and reduce its ecological footprint.

Green Guide

Formaldehyde regulations and associated green programs

Franklin Adhesives & Polymers