



# UNDERSTANDING THE US FORMALDEHYDE REQUIREMENTS TO **MARKET COMPLIANT COMPOSITE WOOD PRODUCTS**

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# ABSTRACT

In the United States (US) formaldehyde emissions from composite wood products are governed by the Formaldehyde Standards for Composite Wood Products Act, which was signed into law in 2010. It establishes two types of laminated product manufacturers and requires composite wood panels to be tested to ensure compliance with formaldehyde emission standards under TSCA Title VI and certified by an EPA-TSCA Title VI TPC. In this white paper we explore the regulations and their requirements, the products affected, labeling requirements and the role of economic operators, as well as the implementation and compliance timeline.

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## I. EXECUTIVE SUMMARY

Formaldehyde is a colorless, flammable gas at room temperature, with a strong irritating odor that is commonly found in adhesives containing urea-formaldehyde resins. Those glues are prevalent in the manufacture of composite wood or pressed wood products. In 2004, the International Agency for Research on Cancer (IARC) reclassified formaldehyde from ‘probable carcinogenic to humans’ to ‘carcinogenic to humans’.

In the US formaldehyde emissions from composite wood products are governed by the Formaldehyde Standards for Composite Wood Products Act, which was signed into law in 2010.

The Act regulates HWPW-CC, HWPW-VC, PBs, MDFs, thin-MDFs, and laminated products within the meaning of HWPW, as well as finished goods manufactured from these composite wood products. It establishes two types of laminated product manufacturers and requires composite wood panels to be tested to ensure compliance with formaldehyde emission standards under TSCA Title VI and certified by a third party certifier (TPC) recognized by EPA. In addition, panel manufacturers and fabricators must also meet strict labeling requirements.

In this white paper we explore the regulations and their requirements, the products affected, labeling requirements and the role of economic operators, as well as the implementation and compliance timeline.

EPA-recognized TPCs offer certification services to ensure economic operators have peace of mind in complying with the Act.



## II. US FORMALDEHYDE EMISSIONS IN COMPOSITE WOOD PRODUCTS

In July 2010, US President Barack Obama signed into law the 'Formaldehyde Standards for Composite Wood Products Act' (the Act). This landmark piece of legislation became the amendment and Title VI of the 'Toxic Substances Control Act' (TSCA) and set the standard for formaldehyde emissions from composite wood products that are manufactured (defined by statute to include import), offered for sale, sold or supplied in the United States. The formaldehyde emission standards are identical to those in Phase 2 of the Air Toxics Control Measure (ATCM) to Reduce Formaldehyde Emissions from Composite Wood Products under the California Air Resources Board (CARB). The law also authorized the US Environmental Protection Agency (EPA) to develop regulations to implement the Act.

The Final Rule, as amended by the EPA, includes a number of safeguards to ensure the safety of composite wood products destined for the US market. It also requires additional responsibility from various economic operators in the supply chain, specifically manufacturers of composite wood panels, manufacturers of laminated products, fabricators, importers, distributors and retailers to ensure the traceability of (compliant) composite wood products from factories to store shelves.

The regulations establish two types of laminated product manufacturers. These are:

- Manufacturers of laminated products that are not exempt from the definition of hardwood plywood (HWPW) because their products use a resin other than phenol formaldehyde (PF) or no added-formaldehyde (NAF) to attach a veneer to a compliant platform
- Manufacturers of laminated products that are exempt from the definition of HWPW because their products are produced using a PF or NAF resin to attach a veneer to a compliant platform or these are exempt under 40 CFR §770.4

This comprehensive law includes a number of important provisions, including the following:

- Formaldehyde emission standards in hardwood plywood with a composite core or veneer core (HWPW-CC or HWPW-VC), particleboards (PBs), medium density fiberboards (MDFs), and laminated products within the meaning of HWPW
- Accreditation Bodies (ABs)
- Third-Party Certifiers (TPCs) and Third-party certification programs

- Incentives for composite wood products manufactured from ultra-low emitting formaldehyde resins (ULEF) and no-added-formaldehyde-based resins (NAF)
- Product labeling and chain of custody documentation
- Import certification
- Responsibilities for economic operators

The Act requires composite wood panels to be tested to ensure compliance with formaldehyde emission standards under TSCA Title VI and certified by a TPC that is recognized by the EPA. Composite wood panels manufactured with NAF or ULEF resins are eligible to qualify for limited testing and certification exemptions. To ensure strict controls for compliant composite wood panels entering the supply chain, the law contains specific provisions for recordkeeping, reporting and labeling requirements. The Act also recognizes CARB-TPCs through reciprocity with the California Air Resources Board (CARB) program.



### III. WHAT ARE THE DIFFERENCES IN FORMALDEHYDE EMISSION STANDARD REQUIREMENTS BETWEEN THE ACT AND CARB ATCM?

What are the differences in formaldehyde emission standard requirements between the Act and CARB ATCM?

The Act contains a number of differences, including the following:

- Requiring records to be kept for 3 years instead of 2
- Requiring importers to provide import certification starting March 22, 2019
- Requiring manufacturers to disclose formaldehyde testing results to their direct purchasers upon request
- Requiring laminated products not exempt from the definition of HWPW to comply with formaldehyde emission standards for HWPW starting March 22, 2024

#### WHAT IS FORMALDEHYDE?

Formaldehyde is a colorless, flammable gas at room temperature with a strong irritating odor. This substance is commonly found in adhesives containing urea-formaldehyde resins and such glues are prevalent in the manufacture of composite wood or pressed wood products.

In 2004, the International Agency for Research on Cancer (IARC) reclassified formaldehyde from 'probable carcinogenic to humans' to 'carcinogenic to humans'. Exposure to formaldehyde can cause a variety of symptoms and potential adverse health effects, including itching and stinging of the eyes, respiratory problems, skin dermatitis, nausea and headaches. High levels of exposure may cause some types of cancer.



# IV. WHICH COMPOSITE WOOD PRODUCTS ARE AFFECTED BY THE ACT?

The Act regulates HWPW-CC, HWPW-VC, PBs, MDFs, thin-MDFs, and laminated products within the meaning of HWPW, as well as finished goods manufactured from these composite wood products. Examples of finished goods containing these materials include the following:

- Children’s wooden toys
- Composite wood panels
- Counter tops
- Flooring
- Furniture and related products
- Kitchen cabinets
- Mobile homes/recreational vehicles, molding in homes
- Picture frames
- Prefabricated wood buildings
- Shelving
- Travel trailers and campers

### EMISSION STANDARDS AND ENFORCEMENT

The formaldehyde standards are identical to those in Phase 2 of the ATCM to Reduce Formaldehyde Emissions from Composite Wood Products under the California Air Resources Board (CARB). The formaldehyde emission standards can be tested using ASTM E1333 (large chamber) or ASTM D6007 (small chamber) and their effective dates are summarized in Table 1.

FORMALDEHYDE EMISSION STANDARDS USING ASTM E1333 OR ASTM D6007		
COMPOSITE WOOD	REQUIREMENT	COMPLIANCE DATE
HWPW-VC or HWPW-CC	≤ 0.05 ppm	June 1, 2018
PB	≤ 0.09 ppm	June 1, 2018
MDF	≤ 0.11 ppm	June 1, 2018
Thin-MDF (≤ 8mm thickness)	≤ 0.13 ppm	June 1, 2018
Laminated products within the meaning of HWPW	≤ 0.05 ppm	March 22, 2024

Table 1

### THIRD PARTY CERTIFICATION PROGRAM

All panel manufacturers must have their products certified as compliant by a TPC that is recognized by EPA. This certification process involves the following:

- Contact information
- Manufacturer’s quality control manual
- Contact information for the quality control (QC) manager
- List of products and their resin systems
- At least 5 formaldehyde test results carried out by a TPC that is recognized by EPA using a specified method
- Results of at least 5 quality control tests
- Linear regression equation and correlation data
- Results of the initial onsite inspection by a TPC that is recognized by EPA

As part of the TPC certification program, EPA-recognized TPCs are to perform quarterly inspections on their panel manufacturers and quarterly emission tests.

In addition to the aforementioned emission testing on a quarterly basis, the Act also requires quality control testing at a defined frequency to monitor day-to-day operations of the manufacturer’s quality control program for consistency. The following small-scale methods can be used to accomplish this control program:

- ASTM D5582 (Desiccator)
- ASTM D6007 (Small chamber)
- BS EN ISO 12460-3 (Gas analysis)
- BS EN ISO 12460-5 (Perforator)
- Dynamic Micro Chamber (DMC)
- JIS A 1460 (Desiccator)

According to the Act, a product certified by a CARB-approved TPC that is also recognized by EPA will be considered certified until March 22, 2019; a transitional period for CARB-approved TPCs to certify composite wood products under TSCA Title VI without an accreditation issued by an EPA TSCA Title VI accreditation body. After March 22, 2019, CARB-TPCs must be fully accredited.

### REPORTING REQUIREMENTS FOR PANEL MANUFACTURERS

In addition to certification requirements, composite wood panel manufacturers must provide the information in Table 2 to their EPA TSCA Title VI TPC and direct purchasers of their products.

NOTIFICATION	PARTY TO NOTIFY/ REPORT	NOTIFICATION REPORT REQUIRED
Change in QC Manager	TPC	Within 10 calendar days
Significant changes to production that may affect formaldehyde emissions	TPC	Within 72 hours
Notification of shipment of non-complying lot	Fabricators, importers, distributors and retailers	Within 72 hours upon receipt of non-complying test results
Information on disposition of non-complying lots	TPC	Within 7 calendar days
Product data reports	TPC	Monthly
Records on quarterly emission testing	Direct purchasers	Upon request prior to sale

Table 2

### ECONOMIC OPERATORS

The Act has identified the following economic operators: manufacturers of composite wood panels, manufacturers of laminated products, fabricators, importers, distributors and retailers. The obligations facing economic operators in the supply chain depend upon their role – and they may have one or more roles (Table 3).

ECONOMIC OPERATOR	REQUIREMENT
Manufacturer of composite wood panels	<ul style="list-style-type: none"> <li>• Undergo Third-Party Certification Program, including quarterly testing and routine quality testing</li> <li>• Documentation and record keeping</li> <li>• Label compliant panels</li> </ul>
Manufacturer of laminated products that are not exempt from the definition of HWPW	<ul style="list-style-type: none"> <li>• Undergo Third-Party Certification Program, including quarterly testing and routine quality testing</li> <li>• Documentation and record keeping</li> <li>• Label compliant laminated products</li> </ul>
Manufacturer of laminated products that are exempt from the definition of HWPW	<ul style="list-style-type: none"> <li>• Documentation and record keeping</li> <li>• Label compliant laminated products</li> </ul>
Fabricator	<ul style="list-style-type: none"> <li>• Documentation and record keeping</li> <li>• Label compliant finished goods</li> </ul>
Importer	<ul style="list-style-type: none"> <li>• Documentation and record keeping</li> <li>• Import certification</li> </ul>
Distributor and Retailer	<ul style="list-style-type: none"> <li>• Documentation and record keeping</li> </ul>

Table 3



## V. PRODUCT LABELING

### PANEL MANUFACTURERS

Panels are to be labeled individually or as bundles in the form of a stamp, tag or sticker. A traceability system such as color-coded edge markings is required for bundles in case panels become separated from the bundle.

The information on the label must contain the following:

- Name of panel manufacturer
- Lot number
- EPA-recognized TPC identification number
- Statement that the products are TSCA Title VI certified. Until March 22, 2019, panels certified as compliant with CARB ATCM Phase II emission standards are to be labeled as compliant with either TSCA Title VI or the CARB-ATCM Phase II emission standards. After March 22, 2019, panels must be certified and labeled as TSCA Title VI compliant
- Statement for NAF-based resins or ULEF formaldehyde resins (optional)

### FABRICATORS

Fabricators are to label each finished good, box or bundle containing finished goods in the form of a stamp, tag or sticker. Importers, distributors or retailers must retain a copy of the label for finished goods, including component parts that are sold separately to end users, that are not individually labeled to customers upon request. Finished goods, including component parts that are sold separately to end users, are exempt from labeling requirements if the surface area of the largest face of these composite wood products is not more than 144 square inches. This exception, however, does not apply if the products are to be used in combination or in multiples to create larger surfaces, finished goods or component parts.

The information on the label must contain the following:

- Name of fabricator or substitute with downstream fabricator, importer, distributor or retailer
- Date the finished goods were manufactured (month/year)
- Statement that the goods are TSCA Title VI compliant
- Statement for finished goods fabricated from composite wood panels made with ULEF and NAF resins (optional)

### NON-EXEMPT LAMINATED PRODUCT MANUFACTURERS

From June 1, 2018, all manufacturers of laminated products are required to comply with the general requirements for fabricators.

From March 22, 2024, manufacturers of non-exempt laminated products must comply with all of the requirements for HWPW manufacturers, including testing, third-party certification, documentation, record keeping and labeling requirements.

### LABELING RELIEF

The Final Rule, as amended, by the EPA permits compliant composite wood products and finished goods that were manufactured before the compliance date (formerly December 12, 2017 prior to amendments) to be labeled as TSCA Title VI Compliant. Since August 25, 2017, this (voluntary) labeling relief has enhanced regulatory flexibility and facilitate a smoother supply transition to compliance with broader requirements in the Act, as well as promoting compliant composite wood products entering commerce earlier than under the rule as originally published or as amended.



# VI. TIMELINE SUMMARY

## SUMMARY OF TIMELINE FOR ECONOMIC OPERATORS UNDER EPA FINAL RULE AS AMENDED

ECONOMIC OPERATOR	REQUIREMENT	COMPLIANCE DATE
Manufacturer of composite wood panels (mills)	Manufactured-by date for formaldehyde emissions from panels	June 1, 2018
	Unless products are eligible for limited exemption made with NAF-based or ULEF resins, products must be certified by a TPC that is recognized by EPA	
	Quarterly testing and routine quality control testing	
	Labeling	
	<ul style="list-style-type: none"> <li>Documentation and record keeping (must be kept for 3 years)</li> <li>Documentation and record keeping for reduced testing and limited third-party certification exemption for products made with NAF-based or ULEF resins (must be kept for as long as exemption is claimed)</li> </ul>	
Fabricator other than manufacturers of laminated products	<ul style="list-style-type: none"> <li>Documentation and record keeping (must be kept for 3 years)</li> <li>Label compliant finished goods</li> </ul>	June 1, 2018
Manufacturer of laminated products that are not exempt from the definition of HWPW	<ul style="list-style-type: none"> <li>Documentation and record keeping (must be kept for 3 years)</li> <li>Label compliant finished goods</li> </ul>	June 1, 2018
	Other requirements are as for manufacturers of composite wood panels above	March 22, 2024
Manufacturer of laminated products that are exempt from the definition of HWPW	<ul style="list-style-type: none"> <li>Documentation and record keeping (must be kept for 3 years)</li> <li>Label compliant finished goods</li> </ul>	June 1, 2018
	Records demonstrating purchase/use of compliant platforms and NAF or PF	March 22, 2024
Importer	Documentation and record keeping (must be kept for 3 years)	June 1, 2018
	Import certification	March 22, 2019
Distributor and retailer	Documentation and record keeping (must be kept for 3 years)	June 1, 2018

Table 4



# VII. THE SGS SOLUTION

To meet industry demand, SGS has invested in a network of laboratories that are EPA-Recognized Third-Party Certifiers (TPCs). As a result, we offer global certification services under the Formaldehyde Emission Standards for Composite Wood Products Rule. Our TPC laboratories are based in:

- Ho Chi Ming City, Vietnam
- Hong Kong, China

Building on this network we provide a wide variety of international services to ensure economic operators have peace of mind in complying with the Act. These include, but are not limited to:

- Consultancy on how the Act applies to composite wood products
- Certification of panel manufacturers (mills), including gap assessments, setting up an in-house lab and quality control system, correlation testing and quality control personnel
- Factory inspection services
- Correct labeling procedures
- Documentation and record keeping

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## ABOUT THE AUTHOR

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Hing Wo joined SGS in 2003 as a Senior Laboratory Executive. Since joining the global platform in 2013, Hing Wo has been supporting a range of initiatives, from product compliance to regional projects. He is a member of SGS's food contact committee and the chemical sub-group for toy safety. Prior to joining SGS, Hing Wo graduated with a PhD in Medicinal Chemistry and worked on anti-HIV and anti-infective agents.

## ABOUT SGS

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