



## United States Environmental Protection Agency

**Pressed Wood Manufacturing Industry Survey:**

**Hardboard and Structural Composite Manufacturers**

**General Information, Definitions, and Instructions**

Thank you for participating in EPA's pressed wood manufacturing industry survey.

Please return the completed response no later than **Weekday, Month Day, Year.**

Please contact William Silagi at [silagi.william@epa.gov](mailto:silagi.william@epa.gov) or (202) 564-8788 if you have any questions about this survey.

## GENERAL INFORMATION

**Respond for Individuals Plants.** This questionnaire was designed to gather data for individual manufacturing plants, not all the plants operated by a parent company or company headquarters. (However, you may need information from a parent company or company headquarters in order to complete the questionnaire.) Please provide responses that are specific to your plant only, as identified on page 1 of the questionnaire. If you are completing the questionnaire for multiple plants owned by the same company, please use a separate questionnaire for each plant.

**Plants Making Other Products.** This questionnaire is designed to collect information on hardboard and structural composite products. If your plant also manufactures other composite wood products (i.e., hardwood plywood, medium density fiberboard, or particleboard), you should receive a separate questionnaire. If you need a copy of the other questionnaire and did not receive one, please contact EPA.

**Skills Needed to Report.** This questionnaire is intended to be completed by a person knowledgeable about both the technical and financial aspects of the pressed wood products manufacturing operations at your plant. In some cases, you may need to look up records or consult staff in other departments to complete all the information requested.

**Use Readily Obtainable Information.** This questionnaire asks for readily obtainable information, e.g., information known or easily accessed by technical, managerial, or supervisory employees of your company who are responsible for manufacturing, processing, technical services, or marketing. If you do not have the underlying information, you do not have to generate it to complete the questionnaire. For example, the questionnaire asks for information on formaldehyde emission levels from your products. If you have not already tested your products for formaldehyde emissions, you do not need to test them in order to respond to this questionnaire. In this example, if you do not have any formaldehyde testing data, you would report “UK” (for “Unknown”) on the questionnaire.

**Suggested Recordkeeping.** Participation in this questionnaire is currently voluntary, so that you are not required to respond. If you do respond, you are not required to keep any records to document your response. You may, however, wish to keep a copy of the completed questionnaire for your files to refer to in case EPA contacts you with any follow-up questions to clarify your answers later in the process.

## CONFIDENTIAL BUSINESS INFORMATION

Under section 14 of the Toxic Substances Control Act (TSCA), you may designate information that you submit on this questionnaire as Confidential Business Information (CBI). EPA takes stringent measures to protect CBI submitted in connection with TSCA pursuant to part 2 of title 40 of the Code of Federal Regulations (known as 40 CFR part 2) and the TSCA CBI Protection Manual. These procedures include security clearance and training for all staff permitted to access TSCA CBI, storage of TSCA CBI in secured areas, computer security for TSCA CBI, secure methods for creating, transferring, and destroying TSCA CBI, and advance notice of disclosure to contractors (usually via the Federal Register) where such disclosure is authorized. Access to TSCA CBI is limited to persons who are TSCA CBI cleared.

EPA will disclose information that is covered by a claim of confidentiality only to the extent permitted by, and in accordance with, the procedures in TSCA section 14 and the regulation at 40 CFR part 2, which provides advance notice and an opportunity to object prior to public disclosure. Otherwise, confidential data provided by individual companies will not be identified in summary reports or released to unauthorized individuals, and public dissemination of results based on TSCA CBI will be limited to aggregate statistics that do not disclose confidential data.

Please assert CBI claims only where there is a legitimate need to do so. In general, voluntarily submitted information is entitled to confidential protection where the information would not customarily be disclosed to the public, although authorities in TSCA Section 14 may apply.

**To identify data as CBI, simply check the box in the left-hand margin on the questionnaire form next to each question where you provide CBI. For example, as shown in Figure 1, if the total volume of glutam manufactured by your plant is confidential, then check the box at the left of Question #9(a). Please note that information not specifically identified as CBI may be made available to the public without further notice.**

If you claim any information in your response as CBI, see the enclosed instructions on how to assemble your completed questionnaire and return it to EPA.

**In order to ensure the protection of CBI, please do not e-mail any data or materials that you designate as CBI.**

Figure 1. Example of CBI Checkbox Marked to Claim Data as Confidential

Mark the CBI checkbox in the left-hand margin of the questionnaire form (indicated by the red arrow in the figure below) to claim information you provide as confidential.

## II. Primary Pressed Wood Products Manufactured

**9. Primary pressed wood products manufactured and production volume.**

*\* Check red box if response is confidential business information (CBI)*

	Pressed Wood Category	Check if produced at your plant.	In the 5-year period from 2005 through 2009, what was the average annual total production? (please specify basis).	Provide your plant's rated maximum capacity	To your knowledge, are any of your products used in non-structural applications?
	(Column 1)	(Column 2)	(Column 3)	(Column 4)	(Column 5)
CBI*	Example: Hardboard	<input checked="" type="checkbox"/>	Avg. annual production: 1 million sq. ft basis: 1/8"	Max capacity: 5 million sq. ft basis: 1/8"	Yes
<input type="checkbox"/>	Glulam	<input type="checkbox"/>	Avg. annual production: basis:	Max capacity: basis:	▼
<input type="checkbox"/>	Hardboard	<input type="checkbox"/>	Avg. annual production: basis:	Max capacity: basis:	▼

**Figure 2. Example of How to Generate Additional Copies of a Questionnaire Section or Table**

If you need to fill out more than one copy of a section in the questionnaire, or need more space than a table provides, click the “Add Copy” button to have the electronic version of the form automatically generate an additional copy of the section or table. If you are using the paper version of the form, please use the extra copies provided and make additional copies as necessary.

### Copy #1 of Question 10

OMB Control No. 20XX-XXXX  
Approval Expires XX/XX/XX

**10. Resin Types and Certification Standards.** Please complete the following table for each pressed wood category produced at your plant. If you produce products in more than one adhesive/emissions class, have changed the adhesive/emissions classes of your products in the last five years, or plan to change the adhesive/emissions classes of your products in the next three years, please list each class in a separate row. For the purpose of this survey, adhesive/emissions class means a class of pressed wood product that differs from others based on binder/resin technology, formaldehyde emission certification standard category, and/or formaldehyde emission profile. For average and maximum emissions, calculate the average and maximum emissions over one year if possible. If the average and maximum emissions cannot be calculated over one year, report the average and maximum emissions based on available data.

Click below to have the electronic version of this form automatically generate an additional copy of Question 10. If you are using the paper version of the form, please use the extra copies provided and make additional copies as necessary.

\* This response is confidential business information (CBI)

	Pressed Wood Category (select from list below) <sup>1</sup> (Col 1)	Adhesive/ Emissions Class (Col 2)	Binder/ Resin Category (Select from list below) <sup>2</sup> (Col 3)	Emission Certification Standard Category (select from list below) <sup>3</sup> (Col 4)	Indicate when Products in each Adhesive/ Emissions Class were produced and/or whether it will be produced in the future			Formaldehyde emission levels from finished boards			Share of Production Volume	
					Last 5 years? (Col 5)	This Year? (Col 6)	3 years from now? (Col 7)	Average (specify units) (Col 8)	Max (specify units) (Col 9)	Measurement method (Col 10)	This Year (%) (Col 11)	3 years from now (%) (Col 12)
CBI *	<i>Example: OSB</i>	1	PF	E1	Yes	Yes	Yes	0.2 mg/L	0.3mg/L	JISA1901 Japanese Small Chamber Test	100%	80%
	<i>Example: OSB</i>	2	pMDI	F****	No	No	Yes	0.5 mg/100g	0.7 mg/100g	EN120 Perforator Test	0%	20%
<input type="checkbox"/>												
<input type="checkbox"/>												
<input type="checkbox"/>												

## GENERAL DEFINITIONS

**Additive.** Additives to composite panel products include, but are not limited to, biocides, buffers, catalysts, fire retardants, release agents, scavengers, tack agents, and wax emulsions.

**Adhesive/emissions class.** Adhesive/emissions class means a class of pressed wood products that differs from others based on binder/resin technology, formaldehyde emission certification standard category, and/or formaldehyde emission profile.

**Catalyst.** An additive to a resin formulation that allows the resin to cure faster or harder than it otherwise would.

**Composite panel products.** See “Pressed wood products” definition.

**Finished board.** Primary composite panel product, not secondary or value added products.

**Formaldehyde emission certification standard category.** The emission standard you meet (if any) that requires the lowest product formaldehyde emissions. Examples include the European E1/E2 standards; the Japanese F-star standards; and the HUD standards

**Glulam.** Glued laminated timber, also known as “glulam”, is an engineered column, beam or other structurally-rated product created by bonding together individual small pieces of lumber in long lengths and deep depths. Considered a primary composite panel product for the purpose of this survey.

**Hardboard.** A primary composite panel product manufactured mainly from interfelted lignocellulosic fibers (usually wood), consolidated under heat and pressure in a hot press to a density of 500 kg/m<sup>3</sup> (31 pounds per cubic foot) or greater to meet the performance requirements specified in ANSI A135.4. Some hardboard products may exhibit a density of up to 1000 kg/m<sup>3</sup> (62.5 lb/ft<sup>3</sup>).

**I-joists.** An assembly of primary composite panel products made for structural or construction applications. The I-joists may be of any dimension but are normally composed of LVL or lumber flanges and OSB or softwood plywood webs. An adhesive is used to join the flanges to the web.

**Oriented Strandboard (OSB).** A primary composite panel product manufactured of cellulosic wafers or strands, usually wood, and a bonding system, purposefully arranged in layers oriented in specific directions, and cured under heat and pressure.

**Other Structural Composite.** A composite panel product manufactured at your plant, other than glulam, hardboard, I-joists, oriented strandboard, softwood plywood, or structural composite lumber.

**Plant.** Physical facility (consisting of one or more buildings, processes, and assemblies of equipment) where composite panel products are manufactured.

**Planned change.** Changes that are likely to occur (you are confident that they will be undertaken) – as opposed to future “possible” projects which may or may not ultimately be executed. Planned changes include expansions or equipment upgrades/changes in the next three years.

**Pressed wood products.** General term describing all types of primary and secondary composite panel products made from cellulosic material, usually wood, and an adhesive or resin bonding system that is cured under heat and/or pressure.

**Primary composite panel products.** See “Primary pressed wood products” definition.

**Primary pressed wood category.** A type of primary composite panel product. In this questionnaire this includes the following products: glulam, hardboard, i-joists, oriented strandboard, softwood plywood, laminated veneer lumber, laminated strand lumber, parallel strand lumber, oriented strand lumber, and other structural composites. This questionnaire does not pertain to the following three products: hardwood plywood, medium density fiberboard, and particleboard (These products are covered in a separate survey). There may be multiple product grades or adhesive/emissions classes within a primary pressed wood category. (See definition of “Adhesive/emissions class.”)

**Primary pressed wood products.** General term describing all types of primary products made from cellulosic material, usually wood, and an adhesive or resin bonding system that is cured under heat and/or pressure. Primary composite panel products may be used in either industrial or construction applications in their “primary” form, or converted into “secondary” composite panel products through the application of a laminate, or coating, or through shaping or assembly with other components.

**Production technology.** The production process and raw materials used to produce a composite panel product. This includes the resin technology used (defined below).

**Resin technology.** The particular resin formulation (including scavengers and additives) used and its direct integration into the manufacturing process, including associated process controls and preparation, application, and/or blending equipment.

**Scavenger.** An additive to a resin formulation that is intended to combine with free formaldehyde to convert it to an inert reaction product

**Softwood Plywood.** A primary composite panel product made up of relatively thin layers of veneer, usually wood, glued together with the grain of adjacent layers at right angles, or a combination of veneers and other core material such as particleboard, MDF, or lumber. Softwood plywood may be made with any wood species and a durable adhesive system rated for structural or exterior exposure applications.

**Structural composite lumber (SCL).** A family of engineered wood products created by layering dried and graded wood veneers or flakes with waterproof adhesive into blocks of material known as billets. Includes laminated veneer lumber (LVL), laminated strand lumber (LSL), parallel strand lumber (PSL), and oriented strand lumber (OSL).

**Ultimate parent company.** Highest level company, group of companies, or other legal entity that owns or directly controls the reporting facility or plant, either within the U.S. or globally (if applicable). For example, this may be the company that is quoted on a stock exchange.

## LIST OF ABBREVIATIONS

<b><u>Abbreviation</u></b>	<b><u>Description</u></b>
CBI	Confidential business information
N/A	Not applicable
NAF	No-added formaldehyde
ton	Ton (2,000 pounds = 1 ton)
UA	Unavailable
UK	Unknown



## **SURVEY OUTLINE**

The questionnaire has four sections:

1. General Manufacturer Identification Information;
2. Products Manufactured;
3. Recent or Planned Changes Resulting in Lower Formaldehyde Emissions; and
4. Issues That May Affect Ability to Reduce Formaldehyde Emissions or Switch to a No-Added Formaldehyde (NAF) Resin.

The questions in each section are described in detail in the “**Question-by-Question Instructions**”.

## QUESTION-BY-QUESTION INSTRUCTIONS

Please answer all of the questions. Refer to the “**General Definitions**” section for further explanation of certain key terms used throughout the questionnaire.

### Section I: General Manufacturer Identification Information

#### Questions 1- 8.

The answers to the questions in this section have been pre-filled based on publicly available information and the initial phone call to your plant. Please verify that the pre-filled information is correct; if it is incorrect, or if there is any missing information, please provide corrections on the line(s) following the question or check the appropriate boxes.

See the definition of “**ultimate parent company**” in the General Definitions section before answering these questions.”



**Why does EPA need this information?** *The information in Section I will be used to ensure that your plant is properly identified and that the appropriate contacts are available to answer any questions that EPA might have on the completed questionnaire. Because of the complex relationships between and among corporations, you are asked to distinguish between the parent company (legal owner) of the plant and the company that operates the plant. Information about the legal owner may be used by EPA in economic analyses that distinguish between small and large businesses.*

### Section II: Primary Pressed Wood Products Manufactured

In this questionnaire, “**primary pressed wood product**” refers to all “**primary composite panel products**” except hardwood plywood, medium density fiberboard, and particleboard (which are covered in a separate questionnaire). Primary composite panel products include all types of primary products made from cellulosic material (usually wood) and an adhesive or resin bonding system that is cured under heat and/or pressure. These products include, but are not limited to glulam, hardboard, I-joists, oriented strandboard, softwood plywood, laminated veneer lumber, oriented strand lumber, parallel strand lumber, and laminated strand lumber.

See the definitions of “**adhesive/emissions class**,” “**resin technology**,” “**production technology**,” and “**planned change**” in the General Definitions section before answering these questions.”

#### Question 9. Primary Pressed Wood Products Manufactured and Production Volume.

Please complete the table. Note that in column 3 of Question 9 you need only to provide the *aggregate* estimated average volume of primary pressed wood products manufactured at your plant (over the five year period between 2005 and 2009) for each of the pressed wood categories you make, summed over all thicknesses produced.

#### Question 10. Resin Types and Certification Standards.

Please aggregate the information by adhesive/emissions class for each pressed wood category produced at your facility – that is, complete one row for each group of products with similar formaldehyde emissions profiles. **A list of binder/resin categories and certification standard categories is provided at the bottom of the table.**


*NOTE: Please complete this table for each adhesive/emissions class of each pressed wood category that has been produced at your facility in the last five years or that you plan to produce in the next three years.*

If you need more space than the table provides, click the “Add Copy” button to have the electronic version of this form automatically generate an additional copy of the table. If you are using the paper version of the form, please use the extra copies provided and make additional copies as necessary.

Column 1: **Pressed Wood Category.** Indicate the pressed wood category by selecting from the dropdown menu on the electronic form or entering the appropriate pressed wood category abbreviation listed below the table. If selecting the “Other Structural Composite” category, please specify the type of product for which you are reporting. Electronic form users can click on the applicable cell after selecting the “OTR:” category from the dropdown menu to enter a description of the product.

Column 2: **Adhesive/Emissions Class.** Indicate the adhesive/emissions class. The different adhesive/emissions class can simply be numbered (as in the example) or labeled more descriptively if desired (e.g., sheathing).

Column 3: **Binder/Resin Category.** If you use, have used, or will use more than one resin technology or production technology for a pressed wood category, list all that are applicable in separate rows.

 **For example:** *If last year you produced all your OSB using a PF resin, and you currently continue to produce OSB using the same resin formulation, but now you also produce a no-added formaldehyde class of OSB using a pMDI resin, you should complete two rows in the OSB category (one for each adhesive/emissions class of OSB you produce).*

Column 4: **Emission Certification Standard Category.** Indicate whether this pressed wood adhesive/emissions class meets any formaldehyde emissions standards (European E1, Japanese F-star, etc.). In this survey, the “**formaldehyde emission certification standard category**” means the emission standard you meet that requires the lowest product formaldehyde emissions. If your product does not meet an emissions certification standard, enter “None”.

Column 5: **Adhesive/Emissions Class Produced in last 5 years.** Indicate whether the class of products was produced in the last five years (“yes” or “no”).

Column 6: **Adhesive/Emissions Class Produced this year.** Indicate whether the class of products was produced this year (“yes” or “no”).

Column 7: **Adhesive/Emissions Class Produced 3 years from now.** Indicate whether the class of products is expected to be in production three years from now (“yes” or “no”).

Columns 8 and 9: **Average and Maximum Formaldehyde Emission Levels from Finished Boards.** Indicate the average and maximum formaldehyde emission rates for finished boards. If you have been making the adhesive/emissions class for a year or more, calculate the average and maximum emissions over the past year. If you have not been making the product for a full year, calculate the average and maximum over whatever time frame you manufactured the adhesive/emissions class. If you do not regularly test formaldehyde emissions rates, but have performed one-time or occasional formaldehyde emissions testing, calculate the average and maximum formaldehyde emissions rates using available test results.

For the maximum emission level, report the actual maximum level measured, not the maximum allowed by a certification standard (if any). In addition, the emissions levels reported should only include those from tests performed within 30 days of production.

Column 10: **Measurement Method.** List the “measurement method” that is used to measure or test the emission levels. This is usually a standardized laboratory method or testing protocol, such as those published by the American Society for Testing and Materials (ASTM). Provide the test standard number/abbreviation, or a descriptive title for the method that you use. See **Figure 4** at the end of these instructions for examples of common test measurement methods.



**For example:** If you use ASTM E1333 - 96(2002) *Standard Test Method for Determining Formaldehyde Concentrations in Air and Emission Rates from Wood Products Using a Large Chamber to measure the formaldehyde emissions from oriented strandboard*, then in the “OSB” row(s), enter “Large Chamber Method, ASTM E1333-96”. If you use the European perforator method to measure formaldehyde emissions from glulam, in the “GL” row(s), enter “EN 120 European Perforator Test.” See Figure 4 at the end of these instructions for more examples of common test measurement methods.

Columns 11 and 12: **Share of Production.** Please provide the relative share of production volume for each adhesive/emissions class. In column 11, provide the total annual production share using the current binder/resin technology and production process, in percent. For example, if four fifths of your production is for a given adhesive/emissions class, enter “80%”. The sum of the shares reported within each pressed wood category should equal 100 percent.

In column 12, report the estimated annual production shares that are anticipated after any planned changes to raw materials and production processes to reduce formaldehyde emissions are completed, whenever the change is planned to occur. (For example, if you have a change planned for 2011 that will reduce formaldehyde emissions, report the production shares expected for 2011.)

If no planned changes to reduce formaldehyde emissions are anticipated, report the estimated annual production shares that are anticipated in 2012. For example, if you plan for all of your production of the pressed wood category to be the given adhesive/emissions class in the future, enter “100%”. If you do not know what the future shares of production will be, enter “UK.” The sum of the shares reported within each pressed wood category should equal 100 percent.



**Why does EPA need this information?** Question 10 provides information on the formaldehyde emissions levels from hardboard and structural composites, trends, and the relative importance of different classes of products. This information will help EPA to determine whether or not to take any action regarding formaldehyde emissions from these products.

### Section III: Recent or Planned Changes Resulting in Lower Formaldehyde Emissions

**Question 11.** Have you made any recent changes (since 2005) to production processes or raw materials that resulted in lower product formaldehyde emissions?

Please check all applicable boxes.

**Question 12.** Do you plan to make any changes in the next three years to production processes or raw materials expected to result in lower product formaldehyde emissions?

Please check all applicable boxes.



**Why does EPA need this information?** *The information in Questions 11 and 12 will be used to assess the extent to which formaldehyde emissions are being reduced in the absence of any EPA action and if so, why.*

## **Section IV: Issues That May Affect Ability To Reduce Formaldehyde Emissions or Switch to a No-Added Formaldehyde Production Technology**

### **Question 13. Issues That May Affect Ability to Reduce Formaldehyde Emissions**

Please complete a separate copy of Question 13 for each primary pressed wood category manufactured at your plant that is manufactured with added formaldehyde.

If the issues you would need to address in order to reduce formaldehyde emissions vary within a pressed wood category, a separate copy of Question 13 can be completed for each group of products within a pressed wood category where similar issues would need to be addressed.

Click the “Add Copy” button on the survey to have the electronic version of this form automatically generate an additional copy of Question 13. If you are using the paper version of the form, please use the extra copies provided and make additional copies as necessary.

### **Question 14. Issues That May Affect Ability to Switch to NAF Production Technology**

Please complete a separate copy of Question 14 for each primary pressed wood category manufactured at your plant that is manufactured with added formaldehyde.

If the issues you would need to address in order to adopt a NAF resin technology vary within a pressed wood category, a separate copy of Question 14 can be completed for each group of products within a pressed wood category where similar issues would need to be addressed.

Click the “Add Copy” button on the survey to have the electronic version of this form automatically generate an additional copy of Question 14. If you are using the paper version of the form, please use the extra copies provided and make additional copies as necessary.



**Why does EPA need this information?** *If EPA determines that it should address formaldehyde emissions from hardboard or structural composites, the Agency will use the information from Questions 13 and 14 to determine the technical and economic feasibility of potential actions.*

**Figure 4. Common Standard Test Methods for Formaldehyde Emissions**

Figure 4 presents some examples of common standard test methods. Note that this list may not be complete.

<b>Number</b>	<b>Description</b>
ASTM E 1333-96	Standard Test Method for Formaldehyde Concentrations in Air and Emission Rates from Wood Products Using a Large Chamber
ASTM D 5582-00	Standard Test Method for Determining Formaldehyde Levels from Wood Products Using a Dessicator
ASTM D 6007-02	Standard Test Method for Determining Formaldehyde Concentrations in Air and Emission Rates from Wood Products Using a Small Chamber
EN 120	Wood based panels—determination of formaldehyde content—extraction method called perforator method, European Standard
EN 717-2	Wood-based panels—determination of formaldehyde release—Part 2: formaldehyde release by the gas analysis method, European Standard
JIS A 1460	Building boards. Determination of formaldehyde emission—desiccator method, Japanese Industrial Standard
DMC	Dynamic Microchamber Test method by Results Technology Inc.
EN 717-1	Wood-based panels—determination of formaldehyde release—Part 1: formaldehyde emission by the chamber method. European Standard.
EN 717-3	Wood-based panels—determination of formaldehyde release—Part 3: formaldehyde release by the flask method, European Standard
ISO/DIS 12460	Wood-based panels — Determination of formaldehyde release — Part 4
JIS A 1901	Determination of the emission of volatile organic compounds and aldehydes for building products—small chamber method, Japanese Industrial Standard