



United States Environmental Protection Agency

Pressed Wood Manufacturing Industry Survey:

Hardwood Plywood, Medium Density Fiberboard, and Particleboard 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.**

Completing the survey is voluntary, but it is important that you respond. EPA needs information from all companies (including those making products with low formaldehyde emissions) to determine whether further action is needed, and to understand the impact of potential actions on manufacturers. Your participation will help EPA understand your company and the industry as a whole.

If you have any questions, please contact Ann Ferris at ferris.ann@epa.gov or (202) 564-3207; Peter Nagelhout at nagelhout.peter@epa.gov or (202) 566-2313; or William Silagi at silagi.william@epa.gov, or at (202) 564-8788.

GENERAL INFORMATION

Respond for Individual 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 hardwood plywood, medium density fiberboard, and particleboard products. If your plant also manufactures other composite wood products (such as hardboard or structural composites), 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.

Generating Additional Copies. As shown in **Figure 1**, 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.

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

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 (to the extent they may apply) 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.

The information collected by EPA may be disclosed to contractors of the Agency. This access will only occur to enable the contractors to perform required tasks for the Agency. These contractors, including staff, will comply with Agency procedures for contractor handling of confidential information collected in connection with TSCA. By returning the survey to EPA, you consent to this disclosure to EPA's contractors.

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 2, if the total volume of hardwood plywood 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 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 14

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

14. Resin Types and Certification Standards. Please complete the following table for particleboard, medium density fiberboard, and hardwood plywood products produced at your plant. If you produce products in more than one adhesive/emissions class, 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. If you use more than one resin type for the same product, such as different resins for face and core layers, please indicate each resin in the table (see example below).

If you need more rows than provided in the table below, click the button below to have the electronic version of this form automatically generate an additional copy of this question. If you are using the paper version of this form, please use the extra copies provided and make additional copies as necessary.

Add Copy

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

	Pressed Wood Category (select from list below) ¹	Adhesive/ Emissions Class	Binder/ Resin Category (select from list below) ²			Formaldehyde Emission Certification Standard Category (select from list below) ³		
			Previous (if changed in last 5 years)	Current	Planned changes (over the next 3 years)	Previous (if changed in last 5 years)	Current	Planned changes (over the next 3 years)
CBI*	(Column 1)	(Column 2)	(Column 3)	(Column 4)	(Column 5)	(Column 6)	(Column 7)	(Column 8)
	<i>Example: MDF</i>	1	<i>Face: UF Core: UF</i>	<i>Face: MUF Core: UF</i>	<i>Face: MUF+s Core: UF+s</i>	None	CA-1	CA-2
	<i>Example: MDF</i>	2	Not Applicable	UF+s	MUF+s	None	CA-1	CA-2
<input type="checkbox"/>								
<input type="checkbox"/>								
<input type="checkbox"/>								
<input type="checkbox"/>								

Figure 2. 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 manufactured 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
CBI*	(Column 1)	(Column 2)	(Column 3)	(Column 4)
	<i>Example:</i> c. Particleboard	<input checked="" type="checkbox"/>	<i>Avg. annual production:</i> 1 million sq. ft <i>basis:</i> 3/4"	<i>Max capacity:</i> 5 million sq. ft <i>basis:</i> 3/4"
<input checked="" type="checkbox"/>	a. Hardwood Plywood	<input type="checkbox"/>	<i>Avg. annual production:</i> <i>basis:</i>	<i>Max capacity:</i> <i>basis:</i>
<input type="checkbox"/>	b. Medium Density Fiberboard (MDF)	<input type="checkbox"/>	<i>Avg. annual production:</i> <i>basis:</i>	<i>Max capacity:</i> <i>basis:</i>
	c. Particleboard		<i>Avg. annual production:</i>	<i>Max capacity:</i>

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. You need not report separately for products that differ only based on physical characteristics such as thickness, density, or strength, but have the same formaldehyde emission profile; these products may be reported together within the same adhesive/emissions class.

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.

Energy costs. Costs of fuels or energy (e.g., natural gas, electricity) inputs used in manufacturing the primary composite panel products.

Filled or coated products. Secondary composite panel products made typically by treating particleboard or MDF on one or both surfaces with either a high solids filler to improve surface properties, or one or more layers of liquid or decorative paint, or powder coating. Includes EB (electron beam) and ultraviolet (UV) cured products and direct-ink printed products.

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 CARB Phase 1, Phase 2, ULEF and NAF standards; the CPA EPP Grademark Standard; the European E1/E2 standards; the Japanese F-star standards; and the HUD standards.

Hardwood plywood (HWPW). A primary composite panel product usually made with a decorative face ply of hardwood veneer and intermediate, core, and back plies of other veneers or materials. It is assembled with the grains of adjacent layers perpendicular to each other. An adhesive system is applied to the veneer surfaces during assembly, and then cured under heat and pressure. Adhesive systems rated only for interior service are commonly used. Also included is plywood with a coniferous face if it is intended to be used for decorative purposes. Solid wood, particleboard, or medium density fiberboard may be substituted for veneer in the core of the panel. The requirements for hardwood plywood are specified in ANSI standard HP-1-2004.

High pressure laminates (HPL). A surfacing material composed of layers of resin-saturated papers fused together under heat and pressure. May be either decorative or plain. HPL is often glued to primary composite panels such as plywood and particleboard to form secondary composite panel products such as countertops or other work surfaces.

Hot stamp foils. Decorative pigments or paint designed to be transferred from a disposable carrier film to the surface or edge of a composite panel product substrate through use of a heated laminating roll.

Low basis weight papers. Low basis weight papers (lightweight papers) are commonly used as decorative overlays on a variety of primary composite panel substrates. An adhesive is normally applied either to the paper or to the substrate then cured by a heated laminating roll press.

Low pressure decorative laminates (LPDL). Resin-saturated decorative papers that are fused to the surfaces of primary composite panel products with heat and pressure. Often referred to as “melamine laminates” or “polyester laminates.” LPDLs do not require additional adhesive application. LPDLs do not include papers saturated with phenolic resins, which are classified as medium and high density overlays (MDOs and HDOs).

Master panel. Term commonly used for some primary composite panel products after they emerge from the press in rough form prior to sawing and sanding to finished dimensions.

Medium and high density overlays (MDO and HDO). Papers impregnated with phenolic resins that are fused to primary composite panel products with heat and pressure. MDO and HDO are often applied to softwood plywood for exterior applications such as concrete form or signs.

Medium density fiberboard (MDF). A primary composite panel product composed primarily of cellulosic fibers and a bonding system cured under heat and pressure. MDF density is typically between 500 kg/m³ (31 lb/ft³) and 1,000 kg/m³ (62 lb/ft³). The requirements for MDF for interior applications are specified in ANSI standard A208.2-2009.

Modifications to existing equipment. Any upgrading, retro-fitting, or other modifications to existing equipment in order to reduce formaldehyde emissions.

New equipment costs. The amount paid for any new equipment that was purchased in order to reduce formaldehyde emissions, including installation and structural support costs for this equipment.

Particleboard. A primary composite panel product composed of discrete cellulosic particles (as opposed to individual fibers), usually wood, and a bonding system cured under heat and pressure. The density of particleboard products ranges from 300 kg/m³ (19lb/ft³) for low density door core products to over 800 kg/m³ (50lb/ft³) for demanding industrial applications. The requirements for particleboard are specified in ANSI standard A208.1-2009.

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.

Post-press treatment. An additional manufacturing step performed after pressing primary composite panel products that is undertaken to reduce formaldehyde emissions (e.g., treat boards with anhydrous ammonia).

Pressed wood category. A type of primary composite panel product. In this questionnaire it includes only the three following products: hardwood plywood, medium density fiberboard, and particleboard. There may be multiple product grades or adhesive/emissions classes within a pressed wood category. (See definition of “Adhesive/emissions class.”)

Pressed wood products. General term describing all types of primary and secondary pressed wood 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 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 pressed wood products may be used in either industrial or construction applications in their “primary” form, or converted into “secondary” pressed wood 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).

Process controls. The system of motors, sensors, controllers, devices, operator interfaces, and sequencing logic installed in a plant to control the primary composite panel product manufacturing process.

Recordkeeping costs. Costs associated with keeping records of inspections, tests, and any other procedures whose records are normally kept under customary business practices.

Recurring costs. Costs incurred on an ongoing basis.

Research and development costs. Upfront costs necessary to test new production methods or refine the manufacturing process prior to commercial production.

Resin technology. The particular resin formulation (including scavengers and other 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.

Secondary composite panel products. See “Secondary products” definition.

Secondary pressed wood products. See “Secondary products” definition.

Secondary products. Products fabricated from or mainly composed of one or more primary pressed wood products. Examples of secondary products include, but are not limited to, filled or coated products, low pressure decorative laminates (LPDL), vinyl laminate, or the application of high pressure laminates (HPL), hot stamp foils, low basis weight papers (LBWP), or medium or high density overlays (MDO or HDO) to a composite wood panel substrate.

Start-up costs. Costs that are incurred initially after a production change, but that are not expected to be incurred on a recurring basis.

Testing and certification costs. Cost of having primary composite panel products tested and of maintaining certification.

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.

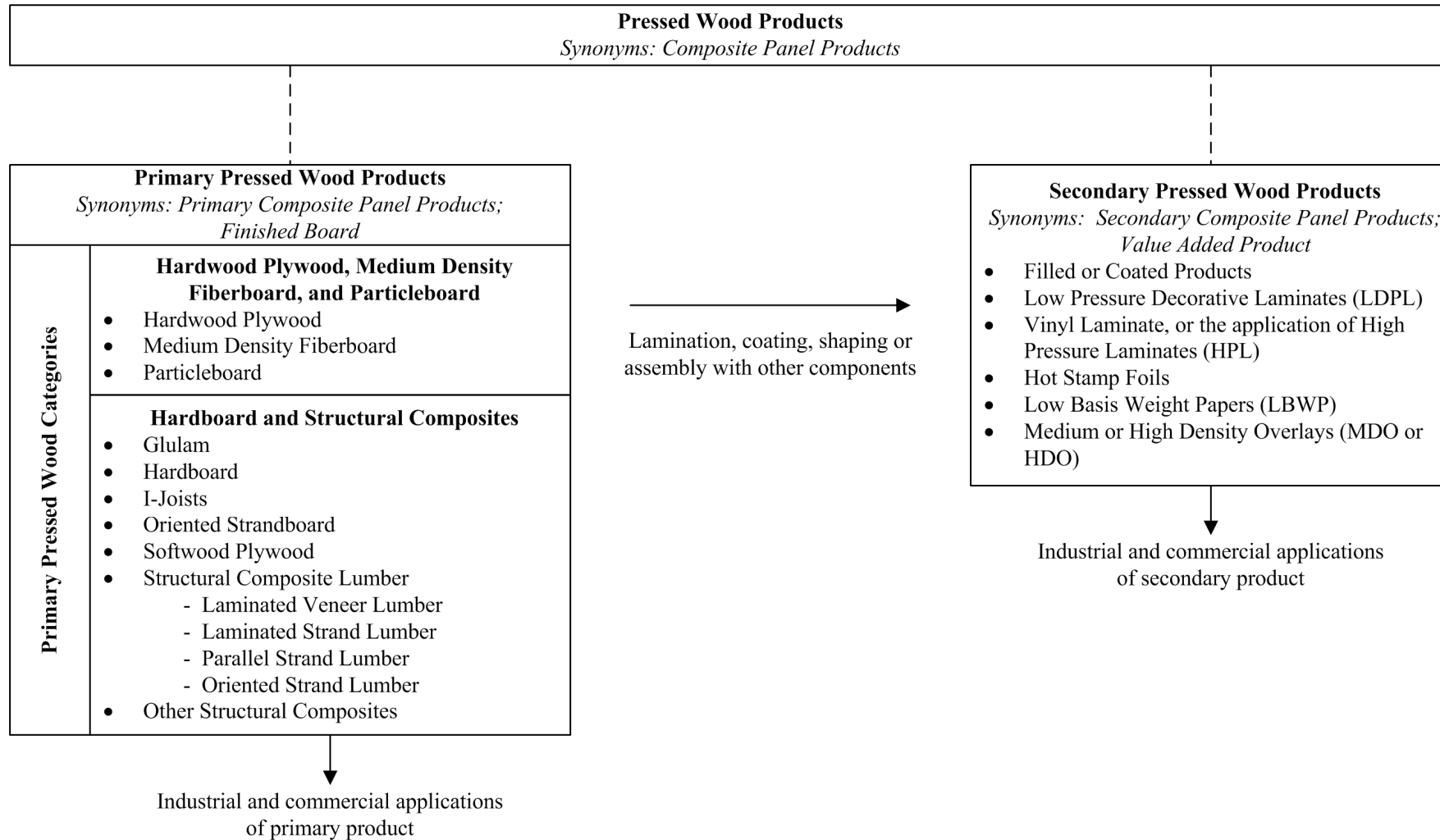
Veneer. Thin sheets or strips of wood created by peeling or slicing logs. Normally used to make plywood.

Vinyl laminate. Thin vinyl films, usually two to six millimeters thick, commonly used as decorative overlays on a variety of substrates. An adhesive is normally applied either to the vinyl or to the substrate and then cured by a heated laminating roll press.

Figure 3 illustrates how some of the terms used in this survey relate to each other.

Figure 3. Composite Panel Product Description

This figure illustrates how some of the terms used in this survey relate to each other.



LIST OF ABBREVIATIONS

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

SURVEY OUTLINE

The questionnaire has eight sections:

- I. General Manufacturer Identification Information;
- II. Primary Pressed Wood Products Manufactured;
- III. Changes to Achieve CARB Phase 1 Certification;
- IV. Changes to Achieve CARB Phase 2 Certification;
- V. Planned Changes to Achieve CARB Phase 2 Certification;
- VI. Issues that May Affect Ability to Reduce Formaldehyde Emissions for Respondents Who Do Not Intend to Become CARB Phase 2 Certified;
- VII. Issues That May Affect Ability to Use a No-Added Formaldehyde (NAF) Resin; and
- VIII. Secondary Products Manufactured.

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.


Before completing this portion of the questionnaire, see the **General Definitions** section of these instructions for the explanation of the term “**ultimate parent company**”.


	<p>Why does EPA need this information? <i>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.</i></p>
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Section II: Primary Pressed Wood Products Manufactured

Before completing this portion of the questionnaire, see the **General Definitions** section of these instructions for the explanation of the terms “**primary pressed wood product**”, “**resin technology**”, “**production technology**”, and “**planned change**”.

Note that in this survey, “**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. You need not report separately for products that differ only based on physical characteristics such as thickness, density, or strength, but have the same formaldehyde emission profile; these products may be reported together within the same adhesive/emissions class.


	<p>For example: Your company currently makes two product lines. One, RegularResin™ panel, is made with UF resin and is CARB Phase 1 certified. The other, UltraGreen™ panel, is certified as CARB NAF. Both RegularResin™ and UltraGreen™ are made in multiple thicknesses designed for different applications. But within each product line, all of the products use the same resin and have the same emissions profile. So for the purpose of reporting to this survey, report all of the information for RegularResin™ as one adhesive/emissions class, and all of the information for UltraGreen™ as another adhesive/emissions class.</p>
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	<p>For example: Your company currently makes two product lines. One, NormalThickness[®] panel, is made with UF resin and is CARB Phase 1 certified. The other, ExtraThin[®] panel, is also made with UF resin and is CARB Phase 1 certified. Although both products use the same resin and are Phase 1 certified, they are very different in terms of thickness and as a result they have different actual emissions levels. So for the purpose of reporting for this survey, report all of the information for NormalThickness[®] as one adhesive/emissions class, and all of the information for ExtraThin[®] as another adhesive/emissions class.</p>
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Question 9. Primary Composite Panel 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 composite panel 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 or other physical properties produced.


Question 10. Regions Where Pressed Wood Products Manufactured at Your Plant are Sold. Please check all applicable boxes to indicate the geographical regions where the pressed wood products that were manufactured at your plant were sold and are expected to be sold.

	<p>Why does EPA need this information? <i>The information in Question 9 helps EPA understand what categories of primary pressed wood products you manufacture. The volumes may be used in EPA economic analyses to determine your plant's share of national production in order to estimate the aggregate volume meeting various emission levels and/or certification standards.</i></p> <p><i>Question 10 will allow EPA to correlate responses with any existing current regulations that are applicable to your plant's products (such as regulations that cover certain products sold in California or in foreign markets).</i></p> <p><i>EPA is asking about the past five years to get a longer term perspective about any changes that have occurred. EPA is asking about the next three years to get a multi-year prediction that is within a reasonable planning horizon.</i></p>
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Question 11. Hardwood Plywood is Produced at this Plant. If hardwood plywood is produced at your facility please check all applicable boxes and fill in the appropriate blanks.

Question 12. Medium Density Fiberboard is Produced at this Plant. If medium density fiberboard is produced at your facility please check all applicable boxes and fill in the appropriate blanks. When Question #12(f) asks about the importance of appearance to your customers, it is asking about the appearance of the boards themselves, since this might be impacted by changes to resin composition or other inputs in order to reduce formaldehyde emissions. The question is not asking about the importance of decorative overlays and coatings, unless the ability to use these overlays and coatings might be affected by changes to reduce formaldehyde emissions.

Question 13. Particleboard is Produced at this Plant. If particleboard is produced at your facility please check all applicable boxes and fill in the appropriate blanks. When Question #13(f) asks about the importance of appearance to your customers, it is asking about the appearance of the boards themselves, since this might be impacted by changes to resin composition or other inputs in order to reduce formaldehyde emissions. The question is not asking about the importance of decorative overlays and coatings, unless the ability to use these overlays and coatings might be affected by changes to reduce formaldehyde emissions.

	<p>Why does EPA need this information? <i>Questions 11-13 provide information to EPA about the characteristics of your plant that may influence your ability to use various technology options for lowering formaldehyde emissions.</i></p>
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Question 14. 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. The sample response in the table explains how to report for hybrid systems using different resins in the face and core layers.

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 produced at your facility. 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.


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.


Binder/Resin Categories: Columns 3, 4, and 5 ask about the binders and resins used to manufacture your products.


Column 3: **Previous Binder/Resin Category.** If you changed resin technology categories *since the beginning of 2005*, indicate the resin technology category that was previously used. If you changed resins more than once since the beginning of 2005, indicate the resin technology category that was most recently used before the one you currently use. If you have not changed resin technology categories since the beginning of 2005, enter “not applicable” or “N/A”.


Column 4: **Current Binder/Resin Category.** If you use more than one resin technology for a pressed wood category, list all that are applicable in separate rows.

	For example: If last year you produced an MDF panel using a urea-formaldehyde resin, but you currently produce this product using a MUF resin for the face layers and a UF resin for the core, and next year you plan to modify the resins you currently use by adding scavengers, you should report this as shown in row one of the example in the questionnaire.
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	For example: If you began production of a new grade of MDF two years ago using a urea-formaldehyde resin with added scavengers that you have not changed since you began production, but you intend to produce this product next year using a MUF resin with added scavengers, you should report this as shown in row two of the example in the questionnaire.
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	For example: If you switched last year from a urea-formaldehyde resin with added scavengers to a methylene diisocyanate resin, enter “UF+s” in Column 3 (“Previous”) and “pMDI” in Column 4 (“Current”).
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 **For example:** If you switched last year from a urea-formaldehyde resin to a mixture of a urea-formaldehyde resin and a soy resin, enter “UF” in Column 3 (“Previous”) and “UF+SBR” in Column 4 (“Current”). If you switched to a mixture of a urea-formaldehyde resin, a soy resin, and an added scavenger, enter “UF+SBR+s” in Column 4 (“Current”).

 **For example:** If last year you produced all your particleboard using a urea-formaldehyde resin with added scavengers, and you currently continue to produce particleboard using the same resin formulation, but now you also produce a no-added formaldehyde class of particleboard using a methylene diisocyanate resin, you should complete two rows in the particleboard category, one for products made with UF resin and another for products made with pMDI.

Column 5: **Planned Changes to Binder/Resin Category.** If your plant has specific plans to change resin technologies between now and the end of 2012, indicate the resin technology category that will be used. If you do not plan to change resin technology categories, enter “not applicable” or “N/A”. If plan to change resins but you are not sure which changes you will make because you are still considering more than one possible resin technology (e.g., both enhanced UF resins and soy-based resins), please report the resin you consider most likely and use this as the basis for your response.

 **For example:** If you expect to switch next year from a urea-formaldehyde resin to a melamine-urea-formaldehyde resin with added scavengers, enter “MUF+s” in column 5 (“Planned Changes”).

Formaldehyde Emission Certification Standard Category: Columns 6, 7, and 8 ask about the emission certification standards you meet for the products you manufacture. 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”. If there is no emissions standard that applies to your product, answer “N/A”.

Column 6: **Previous Certification Category.** If the formaldehyde emissions standard in Column 7 was met *only as a result of resin technology or production technology changes made since the beginning of 2005*, indicate the formaldehyde emissions standard previously met by the product, if any.

Column 7: **Current Certification Category.** Indicate the formaldehyde emissions standard that is currently met.

Column 8: **Planned Changes to Certification Category.** If your plant has specific plans to meet a formaldehyde emissions standard between now and the end of 2012 (that it does not currently meet), indicate the emissions standard that will be met.

Question 15. Formaldehyde Emission Levels from Finished Boards. This question asks about emissions from finished boards – *do not report stack or fugitive emissions of formaldehyde*. In this survey, “**finished boards**” refers to primary pressed wood boards, not secondary or value-added products.

For average and maximum emissions, provide results from a standard test method for a large or small chamber test. A standard test method means a standardized laboratory method or testing protocol, such as those published by the American Society for Testing and Materials (ASTM) and/or those approved for use under CARB, the Japanese F-star program, or the European E1 program. See **Figure 4** at the end of these instructions for examples of common test measurement methods. Provide emission levels as large chamber equivalent emissions if possible. If you can not report results as large chamber equivalent emissions, please indicate this in the space provided above the table.

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 have test data showing that the actual maximum emissions level from your product is lower than the maximum allowed by the certification standard you meet, report the actual maximum. In addition, the emissions levels reported should only include those from products tested within typical certification timeframes (i.e., tests performed within 30 days of production). These levels may exceed the emissions levels when the product is ultimately shipped. Please specify the units for the emissions data, such as parts per million (ppm).

Please report a separate line in the table for each different adhesive/emissions class reported in Question 14. If you are using the electronic version of the form, it will automatically fill Question 15 with the pressed wood categories and adhesive/emissions classes that you reported in Question 14. If you selected the “Add Copy” button in Question 14, the electronic version of the form will automatically generate an additional copy of the table for Question 15. If you are using the paper version of the form, please use the extra copies provided and make additional copies as necessary, and list the pressed wood categories and adhesive/emissions classes in the order that you reported them in Column 1 and Column 2 of Question 14.

Column 1: ***Pressed Wood Category.*** If you are using the electronic version of the form this column will be automatically filled based on your responses to question 14. If you are using the paper version, indicate the pressed wood category by entering the appropriate pressed wood category abbreviation listed below the table.

Column 2: ***Adhesive/Emissions Class.*** If you are using the electronic version of the form this column will be automatically filled based on your responses to question 14. If you are using the paper version, indicate the adhesive/emissions class. The different adhesive/emissions class can simply be numbered (as in the example) or labeled more descriptively if desired.

Columns 3 and 4: ***Previous Emission Levels.*** If the current formaldehyde emissions levels listed in Columns 5 and 6 has changed *due to manufacturing changes implemented since the beginning of 2005*, indicate the average and maximum formaldehyde emission rate prior to the current level.


Columns 5 and 6: ***Current Emission Levels.*** Indicate the average and maximum formaldehyde emission levels for the emissions category that you currently meet.

Columns 7 and 8: ***Planned Emission Levels.*** If your plant has specific plans to achieve a formaldehyde emission level for that pressed wood category between now and the end of 2012, enter the anticipated average and maximum emission levels.

Columns 9 and 10: ***Share of Production.*** Please provide the relative share of production volume for each adhesive/emissions class. In column 9, 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 within a pressed wood category, enter “80%”. *The sum of the shares reported within each pressed wood category should equal 100 percent.*

In column 10, report the estimated annual production shares that are anticipated after 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 you do not plan on making any changes to reduce formaldehyde emissions, 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 cannot estimate the expected future shares of production will be, enter “UK.” The sum of the shares reported within each pressed wood category should equal 100 percent.

	<p>Why does EPA need this information? Questions 14 and 15 provide information on the type of resins and binders used in the industry and the formaldehyde emission certification standards and emissions levels for products. The information also helps EPA to understand the relative importance of the different classes of products.</p> <p>This information is important given the ongoing changes in the industry due to the California Air Resources Board (CARB) Airborne Toxics Control Measure (ATCM) for formaldehyde emissions from primary pressed wood products, the growing demand for green building products, etc. This information will help EPA determine whether any action is necessary regarding formaldehyde emissions from pressed wood products.</p>
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Sections III and IV: Changes to Achieve CARB Phase 1 or Phase 2 Emission Requirements

Please complete questions 16 through 18 (Section III) if you have made changes to your production process or raw materials for the purpose of achieving CARB Phase 1 certification. Please complete questions 19 through 21 (Section IV) if you have made changes to your production process or raw materials for the purpose of achieving CARB Phase 2 certification. If you bypassed CARB Phase 1 certification and your initial CARB certification was for Phase 2, you should skip Section III and complete Section IV.

A separate copy of Section III needs to be completed for *each adhesive/emissions class of each pressed wood category* where there were recent changes to achieve CARB Phase 1 certification.

Similarly, complete a separate copy of Section IV for *each adhesive/emissions class of each pressed wood category* where there were recent changes to achieve CARB Phase 2 certification.

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


Before completing this portion of the questionnaire, see the **General Definitions** section of these instructions for the explanation of the term “**adhesive/emissions class**”.

The categories in the cost questions (materials, labor, energy, recordkeeping, testing, reject rates, productivity, downtime, etc.) are not meant to overlap. In order to avoid double-counting costs, do not report the same cost under more than one category.

Do not repeat your Section III responses in Section IV unless there was another similar change to achieve Phase 2 certification. For example, if you added a catalyst to your resin to achieve Phase 1 certification, indicate that in Question 16(b). If you then changed your *again* catalyst to meet Phase 2, indicate that in Question 19(b). But if you continued to use the *same* catalyst to meet Phase 2, do not check “Addition of catalysts to resin” in Question 19(b).

Questions 16 & 19. Changes to production processes or raw materials. Please check all applicable boxes and provide responses in the space provided. Questions 16(d) and 19(d) ask you to either provide an estimate of the costs or choose an estimated range for the costs that you expect to incur for optimizing your production process. Please enter either a single dollar value or a range, but not both. If you are using the electronic version of the form and wish to report a range, you may use the drop down box to select from the ranges provided. If you are using the paper version of the form and wish to report a range, please choose one of the following ranges and write the letter that corresponds to that range in the space provided (e.g., to indicate that costs are between \$5,000 and \$9,999, write “B” in the space provided):

- (A) < \$5,000
- (B) \$5,000 to \$9,999
- (C) \$10,000 to \$24,999
- (D) \$25,000 to \$49,999
- (E) \$50,000 to \$99,999
- (F) \$100,000 to \$249,999
- (G) \$250,000 to \$499,999
- (H) \$500,000 to \$999,999
- (I) > \$1 million

	<p>Why does EPA need this information? Questions 16 through 21 provide information about the issues that might affect manufacturers’ ability to reduce formaldehyde emissions, the types of changes to production processes or raw materials that have been made to reduce formaldehyde emissions, and the costs of addressing these issues. EPA will use this information to understand the feasible options for reducing formaldehyde emissions, and to assess the extent to which formaldehyde emissions are already being reduced</p>
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Questions 17 & 20. Issues your plant addressed in order to achieve CARB Phase 1 or 2 certification.

These questions ask about the issues that your plant addressed in order to implement recent changes to the production processes or to the raw materials for the purpose of achieving CARB Phase 1 (Question 17) or Phase 2 (Question 20) certification for the products manufactured at your plant.

Questions 18 & 21. Estimated costs of changes to the production processes or raw materials. These questions ask about the costs that were incurred in order to implement recent changes to the production processes or to the raw materials to achieve CARB Phase 1 or Phase 2 certification for products manufactured at your plant.

Questions 18(a) to 18(c), 18(f), 21(a) to 21(c), and 21(f) ask you to either provide an estimate of the total costs or choose an estimated range for the total costs that you have incurred for making changes to the production processes or to the raw materials to achieve CARB Phase 1 or Phase 2 certification. Please enter either a single dollar value or a range, but not both. If you are using the electronic version of the form and wish to report a range, you may use the drop down box to select from the ranges provided. If you are using the paper version of the form and wish to report a range, please choose one of the following ranges and write the letter that corresponds to that range in the space provided (e.g., to indicate that costs are between \$5,000 and \$9,999, write “B” in the space provided):

- (A) < \$5,000
- (B) \$5,000 to \$9,999
- (C) \$10,000 to \$24,999
- (D) \$25,000 to \$49,999
- (E) \$50,000 to \$99,999
- (F) \$100,000 to \$249,999
- (G) \$250,000 to \$499,999
- (H) \$500,000 to \$999,999
- (I) > \$1 million

Questions 18(d), 18(e), 18(g), 18(i)-18(l), 21(d), 21(e), 21(g), and 21(i) to 21(l) ask you to either provide an estimate of the costs per thousand square feet of production or provide an estimated range for the costs per thousand square feet of production that you incurred for making changes to the production processes or to the raw materials to achieve CARB Phase 1 or Phase 2 certification. Please provide a single estimate if you are able to do so. If you are unable to provide a single estimate, please provide an estimated range for the costs you incurred.

See the **General Definitions** section of these instructions if you need further explanation of the terms “**research and development**”, “**modifications to existing equipment**”, “**new equipment costs**”, “**additive**”, “**post-press treatment**”, “**recordkeeping costs**”, and “**testing and certification costs**”.

Section V: Planned Changes to Achieve CARB Phase 2 Emission Requirements

Please complete questions 22 through 24 if you:

1. Anticipate making changes to your production process or raw materials for the purpose of achieving CARB Phase 2 certification;
2. Have already achieved CARB Phase 2 certification but you anticipate making additional changes to production processes or raw materials for the purpose of optimizing the production processes for your CARB Phase 2 certified products; or
3. Have already achieved CARB Phase 2 certification but you anticipate making additional changes to production processes or raw materials for the purpose of achieving CARB Phase 2 ULEF or NAF certification.

If you will need to address different issues to achieve CARB Phase 2 certification for different products in a pressed wood category (for example, MDF and thin MDF, or products made with UF resin and products made with MF resin), please complete a separate copy of Section V for each group of products where similar issues will need to be addressed. You may choose to complete a separate copy of Section V for *each* adhesive/emissions class, complete a separate copy of Section V for a *group* of adhesive/emissions classes, or simply complete a separate copy of Section V for *an entire* pressed wood category.

If you are not sure which changes you will make to achieve CARB Phase 2 certification because you are still considering more than one possible approach (e.g., both enhanced UF resins and soy-based resins), please use the approach you consider most likely as the basis for your responses in Section V.

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.


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

The categories in the cost questions (materials, labor, energy, recordkeeping, testing, reject rates, productivity, downtime, etc.) are not meant to overlap. In order to avoid double-counting costs, do not report the same cost under more than one category.


Do not repeat your Section III or IV responses in Section V unless you plan to make another similar change. For example, if you indicated in Question 19(b) that you added a catalyst to your resin to achieve Phase 2 certification, indicate that in Question 19(b), do not check “Addition of catalysts to resin” in Question 22(b) unless you plan to change your catalyst to optimize production or achieve ULEF or NAF certification.

Question 22. Planned changes to production processes or raw materials. In Question 22(a), specify the pressed wood category manufactured at your plant: hardwood plywood, medium density fiberboard, or

particleboard. Indicate the adhesive/emissions class(es) for the group of products if applicable. Please answer the remaining sub-questions in Question 22 as related to this group of products.

	<p>Why does EPA need this information? Question 22 provides information about the types of changes to production processes or raw materials that will be made to reduce formaldehyde emissions. This information will help EPA to determine the types of changes manufacturers plan to make to reduce formaldehyde emissions, and whether any EPA action to reduce formaldehyde emissions from pressed wood products is necessary.</p>
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Question 23. Issues your plant is expected to address in order to achieve CARB Phase 2 certification, optimize your process, or become certified as ULEF or NAF. Please check all applicable boxes and provide responses in the space provided.

	<p>Why does EPA need this information? EPA needs information about the issues that might affect manufacturer's ability to reduce formaldehyde emissions in order to determine what options might be technically feasible.</p>
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Question 24. Estimated costs of planned changes to the production processes or raw materials. These questions ask about the costs that are expected to be incurred in order to achieve CARB Phase 2 certification, to optimize your production process, or to achieve CARB ULEF or NAF certification.

Questions 24(a) to 24(c), and 24(f) ask you to either provide an estimate of the total costs or choose an estimated range for the total costs that you expect to incur for making changes to the production processes or to the raw materials to achieve CARB Phase 2 certification, optimize your process, or achieve ULEF or NAF certification. Please enter either a single dollar value or a range, but not both. If you are using the electronic version of the form and wish to report a range, you may use the drop down box to select from the ranges provided. If you are using the paper version of the form and wish to report a range, please choose one of the following ranges and write the letter that corresponds to that range in the space provided (e.g., to indicate that costs are between \$5,000 and \$9,999, write "B" in the space provided):

- (A) < \$5,000
- (B) \$5,000 to \$9,999
- (C) \$10,000 to \$24,999
- (D) \$25,000 to \$49,999
- (E) \$50,000 to \$99,999
- (F) \$100,000 to \$249,999
- (G) \$250,000 to \$499,999
- (H) \$500,000 to \$999,999
- (I) > \$1 million

Questions 24(d), 24(e), 24(g), and 24(i) to 24(l) ask you to either provide an estimate of the costs per thousand square feet of production or provide an estimated range for the costs per thousand square feet of production that you expect to incur for making changes to the production processes or to the raw materials to achieve CARB Phase 2 certification, optimize your process, or achieve ULEF or NAF certification. Please provide a single estimate if you are able to do so. If you are unable to provide a single estimate, please provide an estimated range for the costs you expect to incur.

See the **General Definitions** section of these instructions if you need further explanation of the terms "research and development", "modifications to existing equipment", "new equipment costs", "additive", "post-press treatment", "recordkeeping costs", and "testing and certification costs".

	<p>Why does EPA need this information? EPA needs information about the expected costs of reducing formaldehyde emissions in order to consider the costs of potential actions to reduce formaldehyde emissions in the future.</p>
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Section VI: Issues That May Affect Ability to Reduce Formaldehyde Emissions for Respondents Who Do Not Intend to Become CARB Phase 2 Certified

If you make products that you do not intend to have CARB Phase 2 certified because they do not meet the definition of definitions of hardwood plywood, medium density fiberboard, or particleboard in the CARB ATCM (e.g., curved plywood) or they are exempt from the CARB ATCM (e.g., you intend on selling all of the production outside of California), please complete Question 25.

Please complete a separate copy of Question 25 for *each pressed wood category* that you do not intend to have Phase 2 certified. If you would need to address different issues to achieve CARB Phase 2 certification for different products in a pressed wood category (for example, MDF and thin MDF, or products made with UF resin and products made with MF resin), please complete a separate copy of Question 25 for each group of products where similar issues would need to be addressed. You may choose to complete a separate copy of Question 25 for each adhesive/emissions class, complete a separate copy of Question 25 for a group of adhesive/emissions classes, or simply complete a separate copy of Question 25 for an entire pressed wood category.

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

Question 25. Please indicate the issues your plant would need to address in order to adopt a lower emission technology to meet CARB Phase 2 formaldehyde emission limits. These questions ask about the issues that your plant would need to address in order to implement changes to the production processes or to the raw materials for the purpose of reducing the formaldehyde emissions to achieve CARB Phase 2 compliance.

	<p>Why does EPA need this information? EPA needs information about the issues that might affect manufacturer’s ability to reduce formaldehyde emissions in order to determine what options might be technically feasible.</p>
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Section VII: Issues That May Affect Ability to Use a No-Added Formaldehyde (NAF) Resin

Please complete a separate copy of Question 26 for each pressed wood category manufactured at your plant, with the following exceptions:


1. The pressed wood category has no added formaldehyde; or
2. The pressed wood category will have no added formaldehyde after making the planned changes to the production process or raw materials reported in Questions 22 through 24.

If you would need to address different issues to use a NAF resin for different products in a pressed wood category (for example, MDF and thin MDF, or products made with UF resin and products made with MF resin), please complete a separate copy of Question 26 for each group of products where similar issues would need to be addressed. You may choose to complete a *separate* copy of Question 26 for *each* adhesive/emissions class, complete a separate copy of Question 26 for a *group* of

adhesive/emissions classes, or simply complete a separate copy of Question 26 for an *entire* pressed wood category.

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

Question 26. Please indicate the issues your plant would need to address in order to adopt a no-added formaldehyde (NAF) resin technology. These questions ask about the issues that your plant would need to address in order to implement changes to the production processes or to the raw materials for the purpose of adopting an NAF resin technology.

	<p>Why does EPA need this information? <i>This information will help EPA determine in what circumstances NAF resin technology might be a feasible option for reducing formaldehyde emissions.</i></p>
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Section VIII: Secondary Products Manufactured

Question 27. Resins and Binders for Secondary Pressed Wood Products Manufactured. If you manufacture secondary wood products, please complete this table to provide information about the categories of secondary products that your plant manufactures, the resins/binders used in each, and the primary pressed wood products used as inputs. Use the codes at the bottom of the table to indicate the binder/resin technology used in the secondary manufacturing process and the primary pressed wood product(s) used in manufacturing this secondary product. Please include resins in saturated papers when reporting the resin/binder used. Refer to the table header for instructions on how to complete the table if you use more than one resin for a single product, or if you use different resins to manufacture different secondary products.

See the **General Definitions** section of these instructions for a description of the product categories reportable as secondary pressed wood products.


	<p>Why does EPA need this information? <i>The coatings and coverings used in secondary products, and the resins used to adhere them, may affect formaldehyde emissions from panel products. EPA needs this information to better understand the materials being used to manufacture secondary products.</i></p>
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Figure 4. Common Standard Test Methods for Formaldehyde Emissions

This table presents some examples of common standard test methods. Note that this list may not be complete and additional test methods may have been approved by CARB since the publication of this document.

Number	Description	CARB-Approved
ASTM E 1333-96	Standard Test Method for Formaldehyde Concentrations in Air and Emission Rates from Wood Products Using a Large Chamber	CARB primary test method
ASTM D 5582-00	Standard Test Method for Determining Formaldehyde Levels from Wood Products Using a Dessicator	CARB small-scale quality control
ASTM D 6007-02	Standard Test Method for Determining Formaldehyde Concentrations in Air and Emission Rates from Wood Products Using a Small Chamber	CARB small-scale quality control
EN 120	Wood based panels—determination of formaldehyde content—extraction method called perforator method, European Standard	CARB alternate small-scale quality control
EN 717-2	Wood-based panels—determination of formaldehyde release—Part 2: formaldehyde release by the gas analysis method, European Standard	CARB alternate small-scale quality control
JIS A 1460	Building boards. Determination of formaldehyde emission—desiccator method, Japanese Industrial Standard	CARB alternate small-scale quality control
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	