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British Columbia
Ministry of Environment
Smithers, British Columbia

Engineering Report
Newpro Emissions Characterization

Project #1941.0

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P.O. Box 21530, Eugene, OR 97402 (541) 484-4771

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INTRODUCTION

Introduction

Evergreen Engineering (Evergreen) was contracted by the British Columbia Ministry of Environment (the MOE) to research and report on the characteristics of air emissions from particleboard plants in North America. Evergreen's interpretation of the overall goal of the project was to help the MOE better understand air contaminant emission mechanisms and control technologies so that it might appropriately regulate and permit the operations of the Northern Engineered Wood Products' (Newpro) particleboard plant in Smithers, BC.

The MOE stipulated seven specific objectives for the project, which are summarized as follows:

1. Provide industry baseline information related to particleboard process equipment, air emissions, and control technology.
2. Discuss emission regulations and permit limits, and how and why they differ amongst jurisdictions.
3. Describe how plant emissions are measured and monitored, and describe how reported data complies with permitted limits.
4. Report on NPRI data for North American board plants.
5. Compare Newpro's emissions to other similar plants.
6. Describe the types of environments around board plants in terms of proximity to residential populations and geographical and climate features.
7. Discuss the feasibility and need to further characterize or reduce emissions from Newpro.

Evergreen has chosen to format this report to address the objectives in both comprehensive and specific terms. The objectives addressed in each section are identified in the headings.

OBJECTIVE 1

INDUSTRY CHARACTERIZATION

Objective 1
Industry Characterization

The first task associated with "characterizing the industry" is to define it. The composite wood "panelboard" industry in North America is composed of several product types. While all wood panelboard plants share similar process steps, the various product types often use significantly different process technologies which have different impacts on plant emissions. Table 1 below lists common panelboard products made in North America today, along with a brief description of how they are made and the markets they serve.

Table 1a
Common North American Wood Panel Boards

Product	Primary Markets	Process Description
Particleboard	Industrial: furniture, cabinets, store fixtures	Starts with sawmill residues (chips, planer shavings, sawdust). Green materials are pre-dried, then mixed with "dry" materials and milled to the right size (<1/4"x 1/8"), blended with urea-formaldehyde resin, formed into mats, and pressed under moderate heat (350ºF) and high pressure. Rough panels are then precision sanded and sawn to final finish and size. Most material handling is done mechanically with some pneumatic systems. Dryers are rotary-drum type with either direct or indirect heat. "Green" dryers have very high inlet temperatures (1,000ºF). "Dry" dryers run much cooler (450ºF).
MDF (Medium density Fiberboard)	Industrial: Interior woodwork, furniture, cabinets, flooring	Similar to particleboard. Always starts with "green" sawmill residues. Uses high energy pressure refining to produce very fine, fluffy fiber, which is then blended with urea-formaldehyde resin as it is dried in a low-temperature (350ºF) flash-tube dryer with either direct or indirect heat. Fiber is formed into mats and pressed under moderate heat (350ºF) and high pressure. Rough panels are precision sanded and sawn to final finish and size. Most material handling is done pneumatically with some mechanical systems.
OSB (Oriented Strand Board)	Construction: Roof decking, wall sheathing, truss & beam components	Always starts with logs, which are usually first conditioned by soaking, then debarked and "shaved" into finger-sized strands. The stands are dried, then may be screened to remove fines for fuel, and blended with either phenol formaldehyde or MDI (isocyanate) resin. Strands are formed into mats and pressed under high heat (410ºF) and high pressure. Rough panels are sawn to moderate tolerance and seldom sanded. Dryers are high temperature (1,000ºF) rotary-drum type that reduce moisture content from green to <5% in one pass). Most material handling is mechanical, with a few pneumatic systems used to contain dust.

Plywood	Construction: Same as OSB, concrete forms	Always starts with logs, which are usually cut to 8-foot lengths, debarked, conditioned by soaking, then peeled into veneer, which is then clipped to 4'x 8' (or smaller) sheets. The veneer is dried on trays in steam or gas fired ovens at moderate (400^oF) temperature with low exhaust volume. The dried veneer is then coated with phenol formaldehyde resin, laid-up into 3+ ply billets, and then pressed under moderate temperature and low pressure. Rough panels are sawn to moderate tolerance and occasionally sanded. Most material handling is mechanical, with a few pneumatic systems used to contain dust.
Hardboard	Specialties: Home siding	Original composite panel invented by Masonite in early 20th century as a "wet process" akin to mechanical pulping. Today, the "dry process" is more common, which is similar to MDF, but usually uses phenol formaldehyde resin.

The panelboard products described above are made in North America in well over 300 facilities. Evergreen believes that for the purposes of this study, it is appropriate to focus further detailed characterizations of "The Industry" on only particleboard. Including the other product types in the characterization would not appreciatively improve the Ministry's understanding of how to best regulate the emissions from Newpro, and may in fact confuse some issues.

Particleboard is produced at 55 plants in North America, of which 38 are in the US, 10 in Canada, and 7 in Mexico. These plants vary widely in size, age, and technology. The Composite Panel Association (CPA), a trade association which represents nearly 95% of North American panelboard manufacturing capacity, rates the annual production capacity of each facility in the standardized units of "million square feet – ¾" basis" (MMSF) or million cubic meters (MCM). In 2006, CPA estimated the particleboard industry's capacity at 7,173 MMSF. Individual facilities range in size from only 6 MMSF/yr to 547 MMSF/yr. The capacity of the majority of the mills (76%) falls within the range of 100 to 255 MMSF/yr. CPA rates the capacity of the Newpro facility in Smithers at 50 MMSF/yr, which ties it as the 10th smallest mill in North America.

CPA's 2006 Capacity Report is appended for reference.

<u>The Particleboard Process and Air Emission Sources</u>

All particleboard plants, regardless of size, perform the same basic unit-operations. Larger and more sophisticated plants may add a few steps for quality enhancement or value-added purposes, and the design of the process equipment may vary, but all mills contain the same essential elements, and have the same emission issues, as described in Table 2.

Table 1b
Particleboard Process Operations and Emission Issues

Operation	Process Description	Emission Issues
Raw Material Receiving	Planer shavings, chips, sawdust, or other wood residuals are delivered to the plant by truck, unloaded, and moved to storage. If both "green" and "dry" raw materials are used, they are usually segregated for storage.	1. Fugitive wood dust during unloading and transport
Green Drying	Many, but not all plants will pre-dry green raw material before further processing. The green dryers are usually rotary drums that are direct fired, with either natural gas, wood dust, or oil. Boiler flue gas is also sometimes used. Dryer inlet temperatures may approach 550^{o}C (1000^{o}F). The dryers usually use a fan and cyclone to pull the material through and separate it from the exhaust.	1. Fugitive wood dust from transport 2. PM emissions from dryer and combustion system 3. VOC and HAP emissions from dryer 4. NO_x and SO_x emissions from combustion
Milling and Screening	The wood raw materials are mechanically milled to proper geometry. There is seldom any heat or additives used. In larger plants, the particles may be screened, or milled separately for the "surface" and "core" layers of the board.	1. Fugitive wood dust from mechanical transport 2. PM emissions from pneumatic transport
Final Drying	Material is dried to about 3% moisture content in rotary drum dryers. Dryers may be either direct fired, or indirectly heated with steam or thermal oil. Inlet air temperatures are typically much cooler than Green Dryers. The dryers usually use a fan and cyclone to pull the material through and separate it from the exhaust.	1. Fugitive wood dust from transport 2. PM emissions from dryer and combustion system 3. VOC and HAP emissions from dryer 4. NO_x , SO_x, and CO emissions from combustion
Additive Blending	Dry wood particles are mixed with resin and wax in continuous, mechanical blenders. Urea-formaldehyde resin is almost universally used. Some mills may also use melamine-fortified UF (MUF), or phenol-formaldehyde (PF), or methylene-diphenyl-di-isocyanate (PMDI) resins. The normal UF resin dosage is about 8%. About 1% paraffin wax is added to improve water repellency. Small amounts of "scavengers" are often used to reduce formaldehyde emissions. Surface and Core particles are always blended separately, with slightly different recipes.	1. Fugitive wood dust from transport 2. Formaldehyde from freshly resinated material

Mat Forming	Resinated material is laid down in a continuous 3-layer mat of Surface/Core/Surface construction. In most plants, the continuous mat is then separated and trimmed into press-length segments. The trim material is recycled.	1. Fugitive wood dust from mechanical transport 2. PM emissions from pneumatic transport
Pressing	Mats of resinated wood particles are converted into board by applying heat and pressure in a hot press. The press may be continuous, but more commonly opens and closes in cycles. The pressing surfaces are heated to about 165^{o}C (330^{o}F), and pressures of 30 to 35 kPa (500 to 600 psi) are applied. The press time varies with board thickness, but is about 4 minutes for ¾" board. Gaseous emissions occur throughout the press cycle, but occur in a puff when the press is opened. Fine dust from the edges of the mats is often picked-up in the rising warm air currents and also emitted.	1. VOCs from heating wood material. 2. Formaldehyde and methanol from both wood and resin. 3. PM emissions
Cooling	Hot panels are allowed to cool in ambient air for 10-15 minutes to help them stabilize and prevent thermal degradation of the resin.	1. Formaldehyde and methanol
Sawing	Rough panels are sawn to remove trim and cut to final size.	1. PM emissions
Sanding	Panel surfaces are sanded to proper thickness tolerances and surface quality.	1. PM emissions
Value added	Some plants will add value to standard panels by cutting to smaller sizes, or applying paint or laminate to the surfaces.	1. Various, minor
Packaging, Warehouse, Shipping	Finished product is bundled for shipment, and handled by forklift trucks for warehousing and out-loading for shipment.	1. Lift truck exhaust
Thermal Energy, Boiler	Most plants have a central thermal energy plant for generating steam or heating thermal oil for process and building heat. They may be fired with either wood residues, natural gas, or oil.	1. PM (opacity) from wood-fired furnaces. 2. NOx, SOx, and CO from fuel and combustion

Relationships Between Process Conditions and Air Emissions

The emission rates of criteria and hazardous air pollutants from particleboard plants are primarily related to production rate, wood species, raw material moisture content, condition of process equipment, frequency of upset conditions, and extent of control technology. Following is a brief description of how each of these factors influence emissions.

1. Production rate

   The particleboard process can be characterized as a series of material-handling operations linked together for continuous, 24 hour, seven-day, and year-round operation. The raw material is bulky and processed in large quantities. A small mill, like Newpro will continuously process about 8 tonnes of bone dry wood (bdt) per hour. Large mills may process 50 bdt/hr or more. The bulk density of unprocessed raw materials and dried particles are usually in the range of 100 to 200 kg/m^3. The number and size of machines used in each process step, and the emissions resulting from each process, varies in proportion to the plant's production capacity.

2. Wood Species

   Many different wood species are used to make particleboard in North America. The major production regions are along the Northern West Coast, the Great Lakes Region, The US South, and the Canadian Maritimes. The wood species that grow in these regions are all different, but most are usable for making particleboard. Softwoods (conifers like hemlock, spruce, pine, and fir) are generally preferred, but many hardwood species (such as alder, aspen, basswood, maple, cherry, and sweet gum) are also often used.

   From an emissions perspective, the primary influence of species is related to their extractive (pitch) content, and resulting VOC emissions created during the drying and pressing operations. Pines tend to be the most resinous type of wood, and therefore emit the most VOCs. Hemlock and spruce contain less extractive material, so tend to emit less VOCs. Hardwoods also tend to be low VOC emitters.

3. Raw Material Moisture Content

   Fresh (green) wood normally has a moisture content nearly equal to the dry weight of the wood. Green wood also contains water soluble extractive compounds (pitch) that become emitted as VOCs as the wood is dried. VOC emission rates diminish as the moisture content drops. Consequently, VOC emissions are highest from "Green Dryers" and significantly less from "Final Dryers". VOC emission rates are also related to drying temperatures, which are also usually higher on Green Dryers than Final Dryers.

4. Equipment Condition

    All process and material handling equipment must be properly designed and kept in good mechanical condition to minimize emissions. Fugitive dust losses from poorly maintained containment and conveying equipment can be a chronic problem in particleboard plants. It is obvious that tail-pipe control devices, such as baghouses, scrubbers, and cyclones must be kept in good condition to perform as designed. Proper combustion control of wood-fired furnaces is essential to minimizing CO and smoke emissions.

5. Upsets

    All particleboard plants experience upset conditions from time to time due to equipment malfunction or loss of process control. Most common is plugging of conveying systems resulting in high, short-term dust losses. Fires are a major risk and hazard in particleboard plants, particularly around the milling and drying systems. Most mills are equipped with sensitive sensors designed to abort material flows at the slightest indication of fire. These episodes can also result in short-term dust losses.

    Good housekeeping practices are essential to minimizing the impact of upsets. Quick response and clean-up after cyclones plug-up or conveyors spill will minimize wind and storm water dust losses.

6. Control Technology

    Newer plants tend to be more completely equipped with good emission control technology than older mills. Mills that have installed control devices on all emission points, and invested in the latest sophisticated process controls will have the lowest emission rates.

<u>Pollution Control Equipment</u>

The types of pollution control equipment used in particleboard mills is similar across the industry, but the degree to which it is employed varies with the age, size, and location of the plant. Following is a brief description of the technologies typically used to control the various emission issues:

1. Fugitive Dust from Mechanical Handling

    Truck unloading stations, mobile loaders, storage piles, and belt conveyors are all potential sources of fugitive wood dust that can be wind-blown or washed off-site with storm water. Dry and fine materials are more difficult to keep contained than green and large particles. The primary control strategies for preventing fugitive dust losses are:

a. Contain activities in structures and collection pans
b. Place low-pressure negative air on hoods at spill points
c. Enclose conveyors
d. Regularly sweep or water roads and yards

2. PM Emissions from Pneumatic Handling

Most pneumatic conveying systems terminate in either cyclones or baghouses. Simple cyclones can adequately control dust emissions from systems handling only un-refined, wet materials. Most systems handling dry and finely-milled material are now equipped with high efficiency cyclones or baghouses to filter and return fine dust to the system.

Baghouses are sometimes used to control PM emissions from final dryers, but are rarely seen on green dryers because of the risks of both condensation and fire. High-efficiency or multi-stage cyclones are common on indirectly fired dryers. Wet electrostatic precipitators (WESP) and electrified filter beds (EFB) are commonly used where a higher level of opacity and fine PM control is desired.

Wet scrubbers are less common today then they were 10 years ago.

3. VOCs from Drying

Most particleboard mills built before 1995 do not have VOC controls on their dryers. Newer or recently expanded mills in the U.S. have been required to install VOC controls on their green dryers in order to comply with regulations requiring Best Available Control Technology (BACT) and Prevention of Significant Deterioration (PSD) of ambient air quality (see Objective 2).

Incineration is the most common technique used to control dryer VOCs. This is usually accomplished by employing either an RTO (regenerative thermal oxidizer) or RCO (regenerative catalytic oxidizer) fired with natural gas, or by passing the dryer exhaust through the flame zone of a boiler or other thermal energy generator.

Some limited efforts to control dryer VOC emissions with biofilters have been tried, but not proven feasible because of poor temperature compatibility and low destruction efficiency.

4. HAPs from Drying

No particleboard mills in North America are controlling their dryers strictly for the purposes of reducing emissions of Hazardous Air Pollutants. If HAP emissions are controlled, it is coincidental with control of VOCs by incineration through an RTO or RCO.

Biofilters can provide high HAP destruction efficiency if the temperature compatibility issue is adequately addressed. In the U.S., this option may be employed by some mills as they develop compliance strategies for the immanent PCWP MACT regulations (see Objective 2).

5. VOCs and HAPs from Pressing

   The issue VOC and HAP control from the Press is very similar to the Dryer control issue. Most older plants do not employ any gaseous controls on their presses. Newer and expanded plants may have installed RTOs or RCOs on their press exhaust vents for the same regulatory reasons they did their dryers.

6. PM from Pressing

   Particleboard press vents have not historically been equipped with particulate controls. In recent years, some plants have added baghouses to control press vent particulate in conjunction with VOC control to avoid fouling.

7. NO_x from Fuel Combustion

   Limits on NO_x emission from combustion systems have recently been added to some mills located in regions sensitive to ozone. Particleboard sanderdust and other residuals are considered high nitrogen fuels because of the presence of urea-formaldehyde resin. Flue gas recirculation is sometimes required to minimize NO_x generation from these high nitrogen fuels. Low NO_x, and even ultra-low NO_x natural gas burners, are sometimes required.

8. Heavy Metals from Fuel Combustion

   Heavy metals emissions have not historically been a concern with wood fired combustion systems in particleboard plants. However, new Boiler MACT regulations in the U.S. will set limits on emissions of several metals. Most U.S. mills are expected to be able to comply through fuel analysis to demonstrate that the metals are not present in significant quantities.

OBJECTIVE 2

JURISDICTIONAL DISCHARGE STANDARDS

Objective 2
Jurisdictional Discharge Standards

Both nations (Canada and U.S.) have central environmental agencies which promulgate rules, regulations, and standards applicable to all state/provincial/native jurisdictions. Of these, those that are applicable to industry in general are related more to new or modified sources than those operating under existing permits. However, both nations have enacted legislation directed at reducing or eliminating risks attributable to hazardous air pollutants and USEPA has recently promulgated hazardous air pollutant (HAP) regulations specific to the board products industry. These regulations, the Maximum Achievable Control Technology rules for the Plywood and Composite Wood Products industry (PCWP MACT) are contained in 40 CFR Part 63, Subpart DDDD.

These rules include a combination of technology-, performance-, and risk-based standards and operating practices and they apply to both new and existing facilities. As with all U.S. federal standards, States/tribes are required to adopt regulations at least equally stringent. The main provisions of the PCWP MACT are shown in Tables 2-a-d (following this section).

Another feature of U.S. nationwide regulations, promulgated by EPA as a result of the 1995 Clean Air Act Amendments (CAAA), is the requirement for all Major Sources of air pollutants in the U.S. to apply for, receive, and operate under a federally-enforceable Operating Permit (Commonly called a Title V permit, after the Section of the CAAA establishing the base for this program). States were required to develop and get EPA approval of programs to require sources to quantify their emissions sufficiently to determine whether or not they qualified as a major source (≥100TPY of any criteria pollutant, ≥10 TPY of any single HAP, or ≥25 TPY of any combination of HAP), develop a set of standardized application forms, receive and process applications, issue permits, conduct inspection, carry out enforcement actions as necessary, and assess fees to applicants to fund these permitting and enforcement programs. Title V sources are required at least semiannually to certify compliance with all terms of the permit and to identify any non-compliances and actions taken to address those non-compliances. Quantification of emissions, listing of Applicable Requirements, and continuous compliance are major requirements of this set of regulations, codified under 40 CFR Part 70.

States/Provinces

State and Provincial governments in both nations have the responsibility for implementing federal-level environmental regulations as well as developing jurisdiction-specific regulations and standards. Only one state or province, Oregon, has adopted regulations specific to the board products industry. These regulations, adopted in 1968, are codified in Oregon Administrative Rules Chapter 340, Division 234, Emission Standards for the Board Products Industry (Appendix B). The main thrust of these rules is control of particulate matter (PM). Particleboard mills were limited to a total of 3.0 lb PM/MSF ¾ basis from all sources other than truck dumps, fuel burning, and refuse burning.

Almost all states and provinces have some form of PM emission standards based on process throughput (so-called process weight standards). This form of regulation was developed primarily for the mineral processing industry and the equations used are consequently not stringent for the wood products industry sector.

Concentration-based standards for PM are also prevalent with most states/provinces using 460mg/m^3 (0.2 gr/scf) for existing sources (at the time the original standards were adopted) and 230mg/m^3 (0.1 gr/scf) for new or modified sources.

Opacity standards are in effect in virtually all states and provinces and are almost universally 40% for older sources, which existed at the time of rule adoption; and 20% for new or modified sources. The time period varies, but is usually either <6 min/hr or <3 min/hr. The rules apply to all source types.

All states/provinces have either adopted national regulations by reference or have previously developed and adopted standards of practice for operations and maintenance and for monitoring, reporting, and recordkeeping.

Current rulemaking emphasis at the state/province level is on air toxics (HAP), with many states having adopted HAP regulations well in advance of EPA. State-based rules in the main have HAP-specific risk reduction as their basis and depend on ambient air impact modeling to arrive at acceptable source impact levels. Oregon and Arizona are two western states with their own HAP regulations.

To summarize, jurisdictional requirements for operation or modification of particleboard mill process, combustion, and fugitive sources have few differences between the U.S. and Canada. U.S. rules tend to be more industry-specific, “command and control”-based and very detailed, while Canadian rules and permits tend more toward guidelines and objectives, although some Canadian permits currently being negotiated, e.g., Flakeboard at St. Stephen, NB, are structured more like a U.S. Title V permit.

Report Table 2a

PCWP MACT Table 1A to Subpart DDDD of Part 63
Production-Based Compliance Options

For the following process units . . .	You must meet the following production-based compliance option (total HAPa basis) . .
(1) Fiberboard mat dryer heated zones (at new affected sources only)	0.022 lb/MSF 1⁄2″
(2) Green rotary dryers	0.058 lb/ODT
(3) Hardboard ovens	0.022 lb/MSF 1⁄8″
(4) Press pre-dryers (at new affected sources only)	0.037 lb/MSF 1⁄2″
(5) Pressurized refiners	0.039 lb/ODT
(6) Primary tube dryers	0.26 lb/ODT
(7) Reconstituted wood product board coolers (at new affected sources only)	0.014 lb/MSF 3⁄4″
(8) Reconstituted wood product presses	0.30 lb/MSF 3⁄4″
(9) Softwood veneer dryer heated zones	0.022 lb/MSF 3⁄8″
(10) Rotary strand dryers	0.18 lb/ODT
(11) Secondary tube dryers	0.010 lb/ODT

a Total HAP, as defined in § 63.2292, includes acetaldehyde, acrolein, formaldehyde, methanol, phenol, and propionaldehyde; lb/ODT = pounds per oven-dried ton; lb/MSF = pounds per thousand square feet with a specified thickness basis (inches). Section 63.2262(j) shows how to convert from one thickness basis to another.

Note: There is no production-based compliance option for conveyor strand dryers.

Report Table 2b

PCWP MACT Table 1B to Subpart DDDD of Part 63
Add-on Control Systems Compliance Options

You must comply with one of the following six compliance options by using an emissions control system.
For each of the following process units:

Fiberboard mat dryer heated zones (at new affected sources only); green rotary dryers; hardboard ovens; press or predryers (at new affected sources only); pressurized refiners; primary tube dryers; secondary tube dryers; reconstituted wood product board coolers (at new affected sources only); reconstituted wood product to presses; softwood veneer dryer heated zones; rotary strand dryers; conveyor strand dryer zone one (at existing control affected sources); and conveyor strand dryer zones one and two (at new affected sources) control.	(1) Reduce emissions of total HAP, measured as THC (as carbon) \a\, by 90 percent; 2) Limit emissions of total HAP, measured as THC (as carbon) \a\, to 20 ppmvd; or (3) Reduce methanol emissions by 90 percent; or (4) Limit methanol emissions less than or equal to 1 ppmvd if uncontrolled methanol emissions entering the device are greater than or equal to 10 ppmvd; or (5) Reduce formaldehyde emissions by 90 percent; or (6) Limit formaldehyde emissions to less than or equal to 1 ppmvd if uncontrolled formaldehyde emissions entering the device are greater than or equal to 10 ppmvd

\a\ You may choose to subtract methane from THC as carbon measurements.

Report Table 2c

PCWP MACT Table 3 to Subpart DDDD of Part 63
Work Practice Requirements

For the following process units at existing or new affected sources.	You must . . .
(1) Dry rotary dryers.............	Process furnish with a 24-hour block average inlet moisture content of less than or equal to 30 percent (by weight, dry basis); AND operate with a 24-hour block average inlet dryer temperature of less than or equal to 600 °F.
(2) Hardwood veneer dryers........	Process less than 30 volume percent softwood species on an annual basis.
(3) Softwood veneer dryers........	Minimize fugitive emissions from the dryer doors through (proper maintenance procedures) and the green end of the dryers (through proper balancing of the heated zone exhausts).
(4) Veneer redryers...............	Process veneer that has been previously dried, such that the 24- hour block average inlet moisture content of the veneer is less than or equal to 25 percent (by weight, dry basis).
(5) Group 1 miscellaneous coating operations.	Use non-HAP coatings as defined in§ 63.2292.

Report Table 2d

PCWP MACT Table 2 to Subpart DDDD of Part 63
Operating Requirements

If you operate a(n) . . .	You must . .	Or you must . . .
(1) Thermal oxidizer............	Maintain the 3-hour block average firebox temperature above the minimum temperature established during the performance test.	Maintain the 3- hour block average THC concentration \a\ in the thermal oxidizer exhaust below the maximum concentration established during the performance test.
(2) Catalytic oxidizer..........	Maintain the 3- hour block average catalytic oxidizer temperature above the minimum temperature established during the performance test; AND check the activity level of a representative sample of the catalyst at least every 12 months.	Maintain the 3- hour block average THC concentration \a\ in the catalytic oxidizer exhaust below the maximum concentration established during the performance test.
(3) Biofilter..................	Maintain the 24-hour block biofilter bed temperature within the range established according to63.2262(m).	Maintain the 24- our block average THC concentration \a\ in the biofilter exhaust below the maximum concentration established during the performance test.
(4) Control device other than a thermal oxidizer, catalytic oxidizer, or biofilter.	Petition the EPA Administrator for site-specific operating parameter(s) to be established during the performance test and maintain the average operating parameter(s) within the range(s) established during the performance test.	Maintain the 3-hour block average THC concentration \a\ in the control device exhaust below the maximum concentration established during the performance test.
(5) Process unit that meets a compliance option in Table 1A of this subpart, or a process unit that generates debits in an emissions average without the use of a control device.	Maintain on a daily basis the process unit controlling operating parameter(s) within the ranges established during the performance test according to § 63.2262(n).	Maintain the 3-hour block average THC concentration \a\ in the process unit exhaust below the maximum concentration established during the performance test.

\a\ You may choose to subtract methane from THC measurements.

OBJECTIVE 3

EMISSIONS AND COMPLIANCE INFORMATION

Objective 3
Emissions and Compliance Information

Gathering mill-specific emissions data for all 55 North American particleboard mills proved to be far beyond the budget allowed for this project. In the U.S., emission data for criteria pollutants are in state/regional offices and must be viewed in person, since these monitoring and source test reports are not available on-line. Some Provinces, New Brunswick for example, have operating permit data available on-line while others do not. Neither regulatory nor permit or operating data for the mills in Mexico is available in English, so these mills were not included. To develop a set of mill-specific data, we looked for particleboard mills with sawdust and shavings as raw materials, both green and dry rotary dryers, and sanders. For comparison with Newpro, we selected these mills for which we could obtain either operating, permit, or HAP emissions data:

- Flakeboard Canada, Ltd., St. Stephen, New Brunswick
- Flakeboard America, Albany, Oregon
- CanPar, Grand Forks, British Columbia
- Ankmar Door, Sweet Home, Oregon
- Sierra Pine, Springfield, Oregon
- Columbia Forest Products, Hearst, Ontario
- Boise Cascade, Island City, Oregon

By far the largest bank of emissions data from board products plants is that established by EPA during its development of the PCWP MACT standard. According to EPA some 220 plants provided some input to this data and the National Council for Air and Stream Improvement (NCASI) added a significant amount of data as well, some of it duplicating plant data. The purpose of the data-gathering was two-fold, first to identify and quantify emissions of PM, CO, VOC/THC, and speciated organics from particleboard processes; and second, to develop a database from which to establish emission factors for inclusion in EPA's AP-42 Emission Factor Handbook. The dataset is accessible online at:

http://www.epa.gov/ttn/chief/ap42/ch10/related/c10s06-2.html

Pages included are Hot Press, Press Summary, Board Cooler, Cooler Summary, Rotary Dryer, Dryer Summary, Miscellaneous sources (refiners and sanders), miscellaneous source summary.

Regarding the status of compliance of North American particleboard plants with applicable requirements, in the U.S. all plants must certify continuous compliance every six months as part of their Title V operating permits. Such certifications must be signed by no less than the Plant Manager and falsely certifying compliance is a felony punishable by fine and/or imprisonment. We are aware of temporary non-compliances (opacity, for example) and those of an administrative nature (inadequate recordkeeping). In all cases, these were corrected prior to the semi-annual reports. In general, we conclude from our personal experience and that of our contemporaries that U.S. particleboard mills are almost always in compliance with all applicable requirements in their permits and that with few exceptions non-compliance issues are minor and temporary. As an example, of the 882 enforcement actions with monetary penalties in Oregon since 1997, only one appeared to be related to a Title V permit at a board products mill (the infraction was opacity-related and the fine was $2,100 U.S.).

OBJECTIVE 4 and 5

NPRI/TRI DATA AND COMPARISON OF NEWPRO WITH OTHER PARTICLEBOARD MILLS

Objective 4 and 5
NPRI and TRI Data Compilation
and Comparison of Newpro with other Particleboard Mills

Historical emission data from years 2002-2005 for emissions from the eight mills comprising the study group were gathered via on-line searches of the Canadian NPRI and the U.S. TRI data-sites, and presented in Appendix 2. Accessing and retrieving data from the NPRI site was far easier and the datasets included more detail.

Available data from Canadian mills included PM, PM_{10} and $PM_{2.5}$, along with VOC, methanol, and formaldehyde. Data related to fuel burning were available but are not included here, as some sites burn wood and others burn natural gas. Emissions most directly related to the processes were those selected. Canadian data also included the basis for data values, i.e., whether they were based on source tests or emission factors. However, neither U.S. nor Canadian datasets were complete for even those organics most-related to particleboard processes or used in determining compliance with or risks associated with the U.S. PCWP MACT rule, i.e., acetaldehyde, acrolein, benzene, formaldehyde, methanol, or phenol.

This section also compares Newpro's Smithers, BC operations with all other North American particleboard mills for capacity, processes, and air pollution controls.

Capacity

Newpro is the second-smallest of the ten particleboard mills in Canada. The smallest is the 34 MMSF Palliser furniture mill in Winnipeg Manitoba. As noted in Section 1, the Newpro mill is tied for tenth smallest of the 55 North American particleboard mills remaining operational in 2006 (Canada lost five mills to closures in 2005). More plant data and location maps are provided in the Composite Panel Association (CPA) 2006 North American Capacity Report, included as Appendix 1.

Processes

Newpro's process steps, and the equipment employed in those steps, are typical of those at other North American mills. Green sawdust and dry shavings are received in live-bottom trucks. Dry materials are stored both in the A-frame and outside, and sawdust is stored in the open. Initial handling is by wheeled loaders. Green sawdust is initially dried in a sanderdust-fired rotary dryer, reclaimed in a high-efficiency cyclone (this cyclone is a replacement for the less-efficient unit formerly on the dryer), and routed to the A-frame. Dry material is mechanically conveyed from the A-frame to Pallman flakers, which feed the sanderdust-fired dry rotary dryer within the building. The dried material is reclaimed via a pair of Fisher-Klosterman high efficiency cyclones, screened and sent via surge bins to the blenders where the furnish is blended with resin. From the blenders the furnish is routed to the windswept former and then to the single-opening hot press. Oversize material from the screens is routed to a refiner and returned to the process upstream of the screens. After pressing, the panels are trimmed and stacked, then sent to the sander. Sanderdust is captured by a baghouse. The refiner and flaker exhausts are routed through a baghouse which vents inside the main building. In addition to those cyclones serving the two dryers, there are three others which vent to the atmosphere – the sawdust collection cyclone, the former/cutoff saw cyclone, and the A-frame cyclone. Newpro's raw material types and handling methods, manufacturing processes, and by-product handling are all typical of the industry.

Emission Controls

PM. Virtually all mills in North America utilize pneumatic and mechanical conveying systems, to handle both raw materials (chips, shavings, and sawdust), recycled material (hogged board trim and reject board, mat trim and sawdust), and by-products (hogged waste, sanderdust). Cyclones in pneumatic systems and conveyors in mechanical systems are sources of PM emissions. High-efficiency cyclones (which have substantially lower emissions) have typically replaced standard-design units formerly used on dryers and dry sawdust, while standard-design cyclones are employed for wet and larger size materials. As VOC controls have come into play on green dryers, PM controls in the form of scrubbers, wet electrostatic precipitators (WESP), or electrified filter beds (EFBs) have been applied ahead of the VOC control device to eliminate or minimize fouling caused by the particulate. Baghouses are the control of choice on sanderdust. Covers or enclosures are used on mechanical conveyors. Increasingly, baghouses are replacing cyclones as primary collectors on final dryers.

VOC. Until the early 1990s, VOC control was unheard of in the panelboard industry and only after regulatory initiatives in the U.S. and Canada did VOC controls appear, first in SE U.S. and then spreading in response to interpretations of EPA's Prevention of Significant Deterioration (PSD) rule and promulgation of the PCWP MACT standard. Control technologies, still being developed and refined, are presently limited to thermal or biological destruction, except for press emissions which can also be lowered incrementally by employing phenol-formaldehyde (PF) resins in place of UF.

Emissions

Pollutant-specific emissions data for PB mills vary between states/provinces and between USEPA and Environment Canada. Canada's NPRI data includes both criteria and HAP data; data sources, e.g., source tests or emission factors, are identified. USEPA's TRI data are limited to HAP and are in almost all cases estimates. PM, PM_{10}, $PM_{2.5}$, formaldehyde, methanol, and VOC data retrieved from NPRI, TRI, and operating permits for 2002-2005 for study group plants are presented in Appendix 2.

Since emissions are in most cases directly related to plant capacity, available emissions data were normalized on a capacity basis and a summary of the results are shown in Table 5a below. On that basis, comparing Newpro's maximum annual emissions to the maxima, average, and minima of the other seven mills, Newpro performs better than all but one mill (CanPar) on PM and PM_{10} and better than all mills on $PM_{2.5}$. All Newpro PM results after 2002 are reportedly from source tests. CanPar's total PM is from tests, but PM_{10} and $PM_{2.5}$ data are from general emission factors. Newpro's maximum VOC emissions are lower than all but one mill (Columbia Forest Products) and far better than average. Note that in both cases in which Newpro's emissions were the second-lowest, the best-performing mills were both Canadian (see Appendix 2). Methanol and formaldehyde emission data is not available from several mills, including Newpro.

Newpro's emission controls are those representative of the industry at large and the performance of these controls and control systems, as indicated by the NPRI and source test data, is better to much better than those of a sample of other similar particleboard mills.

Table 5a: Newpro Emissions Compared to Other Mills

Production-Normalized Annual NPRI/TRI Data - tonnes/MCM

Other Mills	PM	PM_{10}	$PM_{2.5}$	Methanol	Formaldehyde	VOC
Maximum	1.71	0.96	0.89	0.18	0.34	2.88
Average	0.74	0.45	0.28	0.14	0.15	1.52
Minimum	0.30	0.11	0.08	0.10	0.05	0.91
Newpro (maxima)	0.68	0.17	0.06			0.98

Production-Normalized Annual NPRI/TRI Data - tons/MSF 3/4

Other Mills	PM	PM_{10}	$PM_{2.5}$	Methanol	Formaldehyde	VOC
Maximum	3.66	1.87	1.72	0.35	0.73	5.59
Average	1.47	0.89	0.56	0.27	0.30	3.01
Minimum	0.57	0.22	0.15	0.20	0.10	1.78
Newpro (maxima)	1.32	0.37	0.12			1.90

OBJECTIVE 6

PLANT LOCATIONS, CLIMATE, DEMOGRAPHY

Objective 6
Plant Locations, Climate, Demography

This section summarizes the air quality, topography, climate, and demography of the regions in which most North American panelboard plants are located. For simplicity and to address the spatial distribution of plants in the U.S. and Canada, the area is divided into Western U.S. and Canada, North Central U.S. and Central and Eastern Canada, and Southeastern U.S.

Western U.S. and Canada

Almost all of the 14 western mills are in or adjacent to cities or towns and in most cases these are located in valley environments with moderate to severe dispersion climates. However, two of the three California mills are in coastal environments with land- and sea-breeze effects. Some mills are directly across a roadway from residences. In some cases the mills are part of an integrated forest products facility, which may include pulp mills, lumber or veneer production, or other panelboard mills. Some of the U.S. mills are located in former non-attainment areas for particulate (TSP) or CO. Existing and new sources in these maintenance areas are subject to more restrictive limits than their counterparts in areas still in attainment with national ambient air quality standards (NAAQS).

North Central U.S., and Central and Eastern Canada

This region includes 14 mills. All U.S. mills in this area are in the Dakotas, Minnesota, Wisconsin, and Michigan while the Canadian mills are in Southern Manitoba, Southern and Central Ontario, Southern Quebec, and New Brunswick. As in the west, most mills are located in or adjacent to cities and towns, and most are in more open to rolling terrain with better dispersion. Few of these mills are in areas of current or former particulate or CO non-attainment.

Southeastern U.S.

There are 20 mills in this region, which extends from Eastern Texas to Southern Virginia. The majority of these mills are located in flat to gently rolling terrain. One is located in a coastal environment and four are located Appalachian Mountain valleys with more limited dispersion. Many of the mills are in or near one of the existing ozone non-attainment or maintenance areas which are scattered across the Southeast U.S. Consequently, VOC and their control are major concerns at these facilities. Here also, more than a few mills are located in rural environments away from settled areas. Of those located in or adjacent to settled areas, almost all are in small or medium-size towns.

OBJECTIVE 7

OBSERVATIONS AND RECOMMENDATIONS

Objective 7
Observations and Recommendations

1. It appears to us that Newpro's overall air emissions and degree of control are comparable to or better than similar particleboard plants in North America.

2. The Newpro plant appears to have PM emissions under good control. Normalized PM emissions from the plant are lower than six of the seven plants with which it was compared.

3. Newpro is employing Best Industry Practices for PM control in most systems. The only exceptions to this are:

    - Use of two standard-efficiency cyclones to reclaim small amounts of dry material from pneumatic transport systems.
    - The practice of storing some dry planner shavings outdoors.
    - Use of a wood dust burner to direct fire its green dryer without fine particulate control.

    No analysis has been done to determine the cost/benefit of upgrading PM control on these systems. Our impressions are:

    - It may be reasonable to invest in improved control of the cyclones.
    - It would be difficult to justify enclosing the dry shavings storage area on the basis of reduced fugitive dust losses.
    - The Newpro plant is located in a valley with poor air dispersion characteristics, and an area where residential wood stoves are commonly used. Under certain weather conditions, Newpro's wood dust fired dryer does contribute to poor ambient air quality. However, the agreement presently in place to curtail green dryer operations during such episodes is a practical and adequate control measure.

4. Although Newpro does not employ any VOC or HAP control on either of its dryers or press exhaust vents, this is not unusual for plants of its size and location. VOC controls on particleboard plants built before 1995 are not the norm in North America. VOC controls are required on new, major sources that emit over 100 tons per year, and on older plants that have expanded significantly.

    New USEPA regulations will soon come into force that will require all US particleboard plants to either control HAP (mainly formaldehyde) emissions, or demonstrate that they do not pose significant risk to public health. We are very familiar with both the regulations and the associated risk analysis. It is our opinion that if Newpro was located in the United States it would be able to demonstrate Low Risk and become exempt from HAP control requirements.

5. There is no reason to suspect that the VOC or HAP emissions from the Newpro plant are any different in composition than those from other particleboard plants in North America.

   The industry has done some "speciation" work to determine the composition of VOCs emitted from particleboard plants. Some of this data can be found in the USEPA AP-42 tables referenced elsewhere in this study. We are also aware of academic publications on the subject, and will supply additional reference information if we can find it.

6. The impact of Newpro's VOC and HAP emissions on ambient air quality and public health are undoubtedly much less than from most North American particleboard plants because of its small size.

7. NOx, SOx, CO and metal emissions from Newpro have not been quantified. However, because of its small size and fuel burning practices, there is no reason to believe these emissions adversely impact ambient air quality.

In summary, it is Evergreen Engineering's expert opinion that the Newpro particleboard plant is meeting or exceeding industry standards with respect to air emission controls and should not be burdened by further regulation unless warranted by some local condition.

We offer no recommendations for further study.

APPENDIX 1

2006 NORTH AMERICAN CAPACITY REPORT

2006 North American Capacity Report

Particleboard
Medium Density Fiberboard
Hardboard

COMPOSITE PANEL ASSOCIATION[SM]

OVERVIEW

This report summarizes the annual production capacity of particleboard, medium density fiberboard (MDF) and hardboard plants in North America, as reported by producers in a survey conducted and compiled by the Composite Panel Association (CPA). The report includes all plants known to CPA, including those that have recently ceased operations.

Capacity is defined as "the total amount of product that could be produced in a plant during one year assuming maximum press utilization". For the purposes of this definition, it is assumed that the plant operates 24 hours a day, 6 $^{2}/_{3}$ days per week, for 52 weeks per year, except where the plant is restricted by labor contracts or government regulation. In other words, capacity is the maximum amount of product a plant could produce in a given year, as opposed to the amount of product a plant could ship, if operated under optimal conditions.

For purposes of this report, the United States has been divided into Eastern and Western regions. The US Western Region is defined as the 11 contiguous states of Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington and Wyoming. The US Eastern Region is defined as all remaining states.

The tables listing "Planned Expansions/New Plants" and "Plants Closed, But Intact/Restorable" were developed through communication with industry representatives and review of industry media. The plants within the latter table are listed alphabetically by product class within the year they closed.

Capacity estimates listed in this report are in million square feet–3/4 inch basis (MMSF), thousand cubic meters (MCM) and million square feet-1/8 inch basis for hardboard. Estimates are converted between the units of measure using the following conversion factors.

Conversion Factors:			
	1 MMSF	=	1.76979 MCM
	1 MCM	=	0.56504 MMSF ¾"

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EXECUTIVE SUMMARY

Based on an 84% response rate to CPA's annual capacity survey of North American particleboard, MDF and hardboard facilities, overall industry capacity decreased 2% between 2005 and 2006. The decrease was predominately due to the 27% reduction in Canadian particleboard production. In fact, United States particleboard and MDF production capacity, as well as Canadian MDF production capacity, increased from 2005 levels.

In the United States, two existing facilities were re-opened in the southeastern region – Stuart Forest Products LLC in Stuart, Virginia and Waverly Particleboard Company, LLC in Waverly, Virginia. These re-openings, in addition to the vast majority of US particleboard plants either maintaining or slightly increasing operating capacity from 2005 levels, resulted in a 3% or 170 MMSF (301 MCM) increase in US particleboard capacity to 5,092 MMSF (9,012 MCM). Due in part to the re-opening of these two plants, the southeastern United States now comprises the majority share of North American particleboard production. Thirty three percent, or 2,380 MMSF of capacity (4,212 MCM), is online in the southeastern United States, with eight of the top fifteen particleboard producing states/provinces (based on aggregate capacity) located in this region.

Based on actual estimates of product shipped by all US particleboard facilities during 2005, the average operating rate was 82% (where operating rate is generally defined as reported shipments divided by reported capacity). The projected operating rate for 2006 is 79%, with the decrease attributed to further declines in domestic furniture production and increased competition from offshore producers.

Trends indicate that 2006 will be a restructuring year for Canadian particleboard producers, with business conditions leading to the closure of four plants and partial closure of one plant. The closures were due to a host of factors including increased energy costs, lack of available fiber supply, strong Canadian dollar and in the case of the agricultural fiber-based facility, lack of market demand. The closures resulted in a 27% or 593 MMSF (1,049 MCM) reduction in production capacity from 2005. Of the ten remaining operational facilities, a maximum of 1,582 MMSF (2,799 MCM) of capacity will be available during 2006. The average operating rate for Canadian particleboard mills in 2005 was 81%. The projected operating rate for 2006 is 80%, with the slight decrease attributed to the aforementioned pressures.

Production capacity for Mexican-based particleboard producers in 2006 decreased 4% or 21 MMSF (38 MCM) from 2005. These estimates are based on limited information of Mexican production capacity.

US MDF production capacity increased 8% or 159 MMSF (281 MCM) in 2006 to 2,267 MMSF (4,012 MCM), due primarily to the restarted Paragon Panels facility in Eufaula, Alabama. Of the 18 existing MDF facilities, 3 increased and 2 decreased their production capacity, with the balance reporting no change from last year. The average operating rate for US MDF mills in 2005 was 85%, the highest operating rate recorded among the six substrate groups. The projected operating rate for 2006 remains essentially unchanged from 2005 at 86% due to the competing market forces of decreasing domestic furniture production and increasing demand for laminate flooring.

MDF production capacity at Canadian facilities increased 3% or 24 MMSF (42 MCM) to 990 MMSF (1,752 MCM) in 2006. Of the seven facilities, only one reported a year over year decline and three reported increases. The average operating rate for Canadian mills in 2005 was 84%. The projected operating rate for 2006 is 89%, with the 5% increase attributed to increased focus by Canadian producers on flooring, thin MDF and other value-added products.

US hardboard capacity decreased 3% or 136 MMSF (1/8” basis) (40 MCM) to 5,267 MMSF (1,554 MCM) between 2005 and 2006. All CPA member companies reported either minor capacity reductions or no reductions for 2006. Thus, the decrease in production capacity from this segment is attributed to declines at non-member facilities and the conversion of one facility to a non-hardboard production process (fiberboard sheathing). The average operating rate for US hardboard plants in 2005 was 81%. The projected operating rate for 2006 is 77%, with the decrease attributed to further gains in market share by thin MDF products as well as moderation in residential construction and repair and remodeling activity.

Similar to US hardboard, Canadian hardboard capacity decreased in 2006. Aggregate capacity for the three facilities decreased 2% or 12 MMSF (1/8” basis) (4 MCM) to 496 MMSF (147 MCM) between 2005 and 2006. Two of the three facilities opted not to participate in CPA’s monthly and annual shipment reports, and as a result operating rates for 2005 and 2006 are not available.

The remainder of the report is organized by substrate and country, with individual facilities listed alphabetically within their respective state, province and region. The reported capacity for 2006 is listed along with the change in plant capacity from 2005. US particleboard facilities are listed first followed by Canadian and Mexican particleboard facilities. US, Canadian and Mexican MDF facilities are listed next with the final section of the report US and Canadian hardboard facilities. Maps displaying the location of each facility are provided after each section.

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PARTICLEBOARD–USA

Million Square Feet–¾ Inch Basis (MMSF) and Thousand Cubic Meters (MCM)

STATE	MAP ID	COMPANY	CITY	CAPACITY MMSF	CAPACITY MCM	∆
Alabama	19	Giles & Kendall, Inc.*	Huntsville	6	11	NC
	50	Temple-Inland	Monroeville	150	265	NC
Arkansas	50	Temple-Inland	Hope	220	389	NC
Florida	17	Florida Plywoods, Inc.	Greenville	17	30	NC
Georgia	18	Georgia-Pacific Corporation	Vienna	150	265	NC
	46	SierraPine Ltd.	Adel	138	244	NC
	50	Temple-Inland	Thomson	145	257	NC
Louisiana	21	GreenTech Panels, LLC	Minden	21	38	+
	57	Weyerhaeuser Company	Simsboro	255	451	+
Michigan	18	Georgia-Pacific Corporation	Gaylord	270	478	NC
Minnesota	14	Environ Biocomposites, LLC	Mankato	55	97	+
Mississippi	18	Georgia-Pacific Corporation	Louisville	160	283	NC
	18	Georgia-Pacific Corporation	Taylorsville	185	327	NC
North Carolina	5	Broyhill Furniture Industries, Inc.	Lenoir	36	64	+
	1	ATC Panels, Inc.	Moncure	160	283	NC
North Dakota	32	Masonite International Corporation*	Wahpeton	60	106	NC
South Carolina	18	Georgia-Pacific Corporation	Russellville	185	327	NC
	57	Weyerhaeuser Company	Bennettsville	255	451	+
South Dakota	33	Merillat Industries, Inc.	Rapid City	114	202	+
Texas	50	Temple-Inland	Diboll	149	264	NC
Virginia	1	ATC Panels, Inc.	Franklin	130	230	NC
	48	Stuart Forest Products LLC	Stuart	25	44	NA
	54	Waverly Particleboard Company, LLC	Waverly	112	198	NA
	55	Webb Furniture Enterprises, Inc.	Galax	30	53	+
Wisconsin	31	Marshfield DoorSystems, Inc.	Marshfield	85	150	+
	43	Rodman Industries	Marinette	42	74	NC
26 Mills		**SUBTOTAL EASTERN REGION**		**3,155**	**5,584**	**+**
California	23	Hambro Forest Products, Inc.*	Crescent City	50	88	NC
	24	Humbolt Flakeboard, LLC	Arcata	120	212	–
	46	SierraPine Ltd.	Martell	200	354	NC
Idaho	41	Potlatch Forest Products Corporation	Post Falls	74	131	NC
Montana	44	Roseburg Forest Products Co.	Missoula	200	354	NC
Oregon	4	Boise Cascade Corporation	La Grande	216	382	NC
	9	Collins Products LLC	Klamath Falls	135	239	+
	2	Ankmar Door, LLC*	Sweet Home	17	30	NC
	44	Roseburg Forest Products Co.	Dillard	410	726	NC
	46	SierraPine Ltd.	Springfield	180	319	NC
	51	Timber Products Company	Medford	95	168	NC
	57	Weyerhaeuser Company	Albany	240	425	NC
12 Mills		**SUBTOTAL WESTERN REGION**		**1,937**	**3,428**	**–**
38 Mills		**TOTAL ANNUAL CAPACITY**		**5,092**	**9,012**	**+**

∆ Indicates whether mill capacity increased (+), decreased (–) or stayed the same (NC) in 2006 compared to 2005. NA implies "Not Applicable" because the mill was not operational in 2005.
* Capacity was estimated by CPA.

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PARTICLEBOARD–CANADA

Million Square Feet–¾ Inch Basis (MMSF) and Thousand Cubic Meters (MCM)

PROVINCE	MAP ID	COMPANY	CITY	CAPACITY MMSF	MCM	Δ
British Columbia	7	CanPar Industries	Grand Forks	100	177	NC
	35	Northern Engineered Wood Products Inc.	Smithers	50	88	NC
Manitoba	36	Palliser Furniture*	Winnipeg	34	60	NC
New Brunswick	16	Flakeboard Company Ltd.	St. Stephen	122	216	+
Ontario	10	Columbia Forest Products	Hearst	90	159	+
	15	Fibratech Manufacturing Inc.	Atikokan	85	150	+
	38	Panolam Industries International Inc.	Huntsville	110	195	–
Quebec	49	Tafisa Canada & Company Ltd.	Lac-Megantic	547	968	NC
	52	Uniboard Canada, Inc.	Sayabec	206	365	–
	52	Uniboard Canada, Inc.	Val d'Or	238	420	–
10 Mills		**TOTAL ANNUAL CAPACITY**		**1,582**	**2,799**	–

PARTICLEBOARD–MEXICO

Million Square Feet–¾ Inch Basis (MMSF) and Thousand Cubic Meters (MCM)

REGION	MAP ID	COMPANY	CITY	MMSF	MCM	Δ
Baja California	22	Grupo Bajaplay, SA de CV*	Tijuana	18	33	+
Chihuahua	13	Duraplay de Parral, SA de CV*	Parral	79	140	+
	42	Rexcel, SA de CV - Paneles Plant	Chihuahua	114	201	–
Durango	30	Maderas y Sinteticos, SA de CV*	Durango	84	149	+
Jalisco	25	Industrias Emman, SA de CV*	Ocotlan	45	80	+
Mexico	29	Maderas Conglomerados, SA de CV*	San Juan	57	100	+
Michoacan	42	Rexcel, SA de CV	Zitacuaro	102	180	+
7 Mills		**TOTAL ANNUAL CAPACITY**		**499**	**883**	–

PARTICLEBOARD–NORTH AMERICAN SUMMARY

Million Square Feet–¾ Inch Basis (MMSF) and Thousand Cubic Meters (MCM)

COUNTRY	MILLS	CAPACITY MMSF	MCM	Δ
USA	38	5,092	9,012	+
Canada	10	1,582	2,799	–
Mexico	7	499	883	–
TOTAL ANNUAL CAPACITY	**55**	**7,173**	**12,694**	–

PARTICLEBOARD

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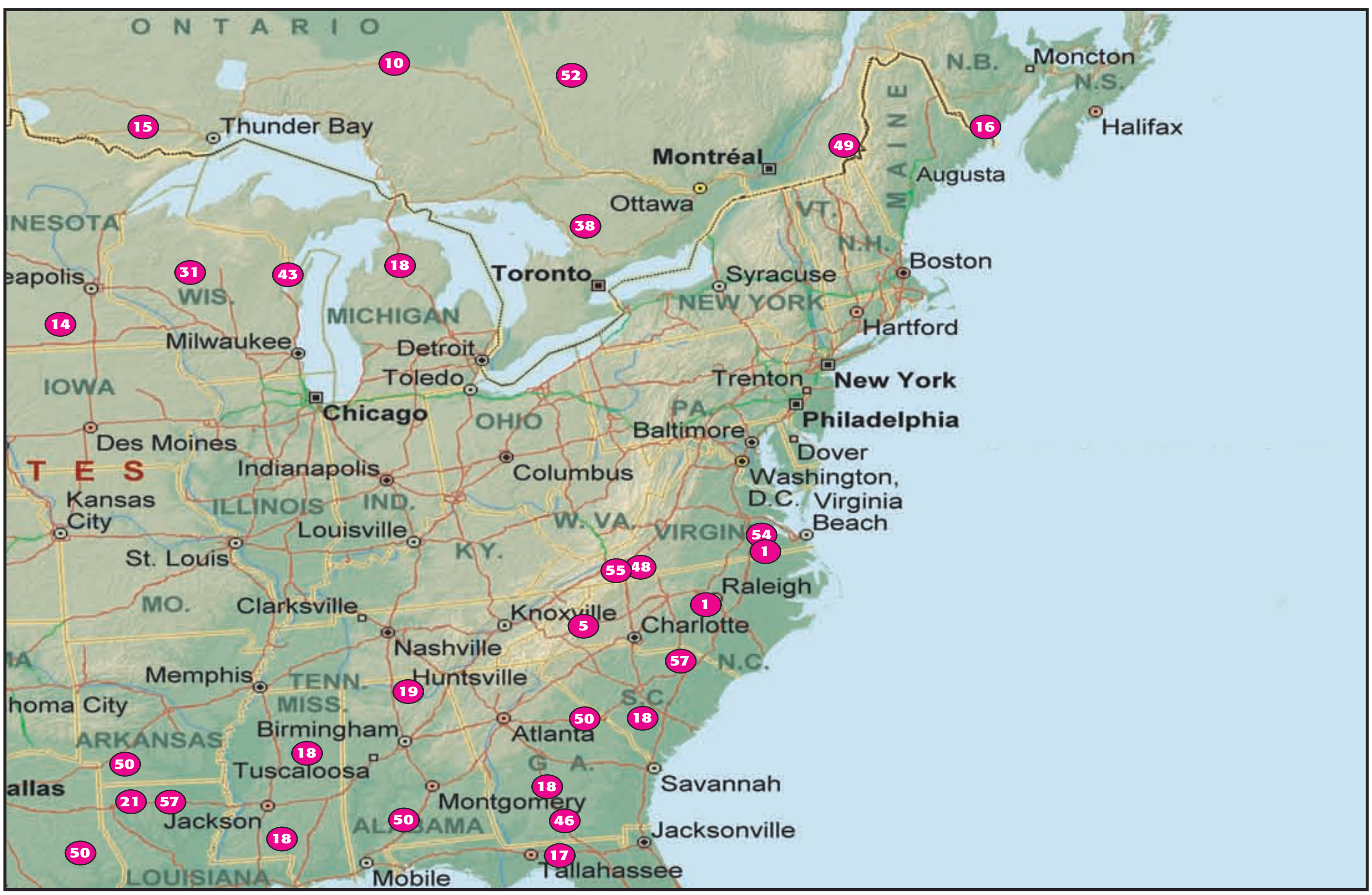
PARTICLEBOARD



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MEDIUM DENSITY FIBERBOARD–USA

Million Square Feet–¾ Inch Basis (MMSF) and Thousand Cubic Meters (MCM)

STATE	MAP ID	COMPANY	CITY	CAPACITY MMSF	MCM	Δ
Alabama	39	Paragon Panels*	Eufaula	135	239	NA
Arkansas	12	Del-Tin Fiber LLC	Eldorado	162	287	NC
	57	Weyerhaeuser Company	Malvern	175	310	+
Georgia	18	Georgia-Pacific Corporation	Monticello	42	74	+
	27	Langboard, Inc.	Willacoochee	135	239	NC
New York	20	Great Lakes MDF, LLC	Lackawanna	112	198	+
	34	Norbord Industries, Inc.	Deposit	90	159	NC
North Carolina	53	Unilin US MDF	Mount Gilead	140	248	–
Oklahoma	37	Pan Pacific Products, Inc.	Broken Bow	74	131	–
Pennsylvania	1	ATC Panels, Inc.	Shippenville	120	212	NC
	50	Temple-Inland	Mount Jewett	122	216	NC
South Carolina	18	Georgia-Pacific Corporation	Holly Hill	100	177	NC
	57	Weyerhaeuser Company	Bennettsville	145	257	NC
Virginia	3	Bassett Furniture Industries, Inc.*	Bassett	21	37	NC
14 Mills		**SUBTOTAL EASTERN REGION**		**1,573**	**2,784**	**+**
California	46	SierraPine Ltd.	Rocklin	97	172	NC
	46	SierraPine Ltd.	Rocklin	54	96	NC
Montana	40	Plum Creek MDF, Inc.	Columbia Falls	316	559	NC
Oregon	46	SierraPine Ltd.	Medford	142	251	NC
	57	Weyerhaeuser Company	Eugene	85	150	NC
5 Mills		**SUBTOTAL WESTERN REGION**		**694**	**1,228**	**NC**
19 Mills		**TOTAL ANNUAL CAPACITY**		**2,267**	**4,012**	**+**

MEDIUM DENSITY FIBERBOARD–CANADA

Million Square Feet–¾ Inch Basis (MMSF) and Thousand Cubic Meters (MCM)

PROVINCE	MAP ID	COMPANY	CITY	CAPACITY MMSF	MCM	Δ
Alberta	56	West Fraser Mills Ltd.	Whitecourt	160	283	NC
British Columbia	56	West Fraser Mills Ltd.	Quesnel	140	248	+
New Brunswick	16	Flakeboard Company Ltd.	St. Stephen	108	283	+
Ontario	16	Flakeboard Company Ltd.	Sault Ste Marie	210	283	+
	1	ATC Panels, Inc.	Pembroke	130	230	NC
Quebec	52	Uniboard Canada, Inc.	La Baie	149	264	–
	52	Uniboard Canada, Inc.*	Mont-Laurier	93	165	NC
7 Mills		**TOTAL ANNUAL CAPACITY**		**990**	**1,752**	**+**

MEDIUM DENSITY FIBERBOARD–MEXICO

Million Square Feet–¾ Inch Basis (MMSF) and Thousand Cubic Meters (MCM)

COUNTRY	MAP ID	COMPANY	CITY	CAPACITY MMSF	MCM	Δ
Mexico	29	Maderas Conglomerados, SA de CV*	San Juan	20	35	NC

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MEDIUM DENSITY FIBERBOARD

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HARDBOARD–USA

Million Square Feet–1/8 Inch Basis (MMSF) and Thousand Cubic Meters (MCM)

STATE	MAP ID	COMPANY	CITY	CAPACITY MMSF	MCM	Δ
Iowa	26	Jeld-Wen, Inc.*	Dubuque	120	35	–
Michigan	11	Decorative Panels International, Inc.	Alpena	381	112	NC
Minnesota	18	Georgia-Pacific Corporation	Duluth	280	83	NC
Mississippi	32	Masonite International Corporation*	Laurel	475	140	+
North Carolina	28	Louisiana-Pacific Corporation	Roaring River	900	265	NC
Oregon	9	Collins Products LLC	Klamath Falls	490	145	NC
	26	Jeld-Wen, Inc.*	Klamath Falls	120	35	NC
	47	Stimson Lumber Company	Forest Grove	155	46	–
Pennsylvania	8	CMI	Towanda	1000	295	+
South Carolina	18	Georgia-Pacific Corporation	Catawba	290	86	NC
	26	Jeld-Wen, Inc.*	Marion	130	38	–
Texas	50	Temple-Inland	Diboll	576	170	NC
Washington	26	Jeld-Wen, Inc.*	White Swan	120	35	–
West Virginia	26	Jeld-Wen, Inc.*	Craigsville	140	41	+
Wisconsin	18	Georgia-Pacific Corporation	Phillips	90	27	NC
15 Mills		**TOTAL ANNUAL CAPACITY**		**5,267**	**1,554**	–

HARDBOARD–CANADA

Million Square Feet–1/8 Inch Basis (MMSF) and Thousand Cubic Meters (MCM)

PROVINCE	MAP ID	COMPANY	CITY	CAPACITY MMSF	MCM	Δ
British Columbia	6	Canadian Forest Products	Vancouver	96	28	–
Nova Scotia	28	Louisiana-Pacific Canada Ltd.	East River	300	89	NC
Quebec	45	Sacopan Inc.*	Sacre-Coeur	100	30	–
3 Mills		**TOTAL ANNUAL CAPACITY**		**496**	**147**	–

FIBERBOARD–NORTH AMERICAN SUMMARY

Million Square Feet–¾ Inch Basis (MMSF) and Thousand Cubic Meters (MCM)

COUNTRY	MILLS	CAPACITY MMSF	MCM
USA	34	3,145	5,566
Canada	10	1,073	1,899
Mexico	1	20	35
TOTAL ANNUAL CAPACITY	**45**	**4,238**	**7,500**

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HARDBOARD

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NORTH AMERICAN CAPACITY SUMMARY

Thousand Cubic Meters (MCM)

STATE/PROVINCE	Particleboard	MDF	Hardboard	Total
Oregon, USA	2,288	402	226	2,916
Quebec, Canada	1,753	429	30	2,212
South Carolina, USA	779	434	124	1,337
Ontario, Canada	504	602	0	1,106
Georgia, USA	766	313	0	1,079
Arkansas, USA	389	596	0	985
California, USA	655	267	0	922
Montana, USA	354	559	0	913
North Carolina, USA	347	248	265	860
Mississippi, USA	611	0	140	751
Pennsylvania, USA	0	428	295	723
Michigan, USA	478	0	112	590
Virginia, USA	525	37	0	562
British Columbia, Canada	265	248	28	541
Alabama, USA	276	239	0	515
Louisiana, USA	489	0	0	489
Texas, USA	264	0	170	434
New Brunswick, Canada	216	191	0	407
New York, USA	0	358	0	358
Chihuahua, Mexico	341	0	0	341
Alberta, Canada	0	283	0	283
Wisconsin, USA	225	0	27	252
South Dakota, USA	202	0	0	202
Michoacan, Mexico	180	0	0	180
Minnesota, USA	97	0	83	180
Durango, Mexico	149	0	0	149
Mexico, Mexico	100	35	0	135
Idaho, USA	131	0	0	131
Oklahoma, USA	0	131	0	131
North Dakota, USA	106	0	0	106
Nova Scotia, Canada	0	0	89	89
Jalisco, Mexico	80	0	0	80
Manitoba, Canada	60	0	0	60
West Virginia, USA	0	0	41	41
Iowa, USA	0	0	35	35
Washington, USA	0	0	35	35
Baja California, Mexico	33	0	0	33
Florida, USA	30	0	0	30
TOTAL CAPACITY	**12,694**	**5,799**	**1,701**	**20,194**

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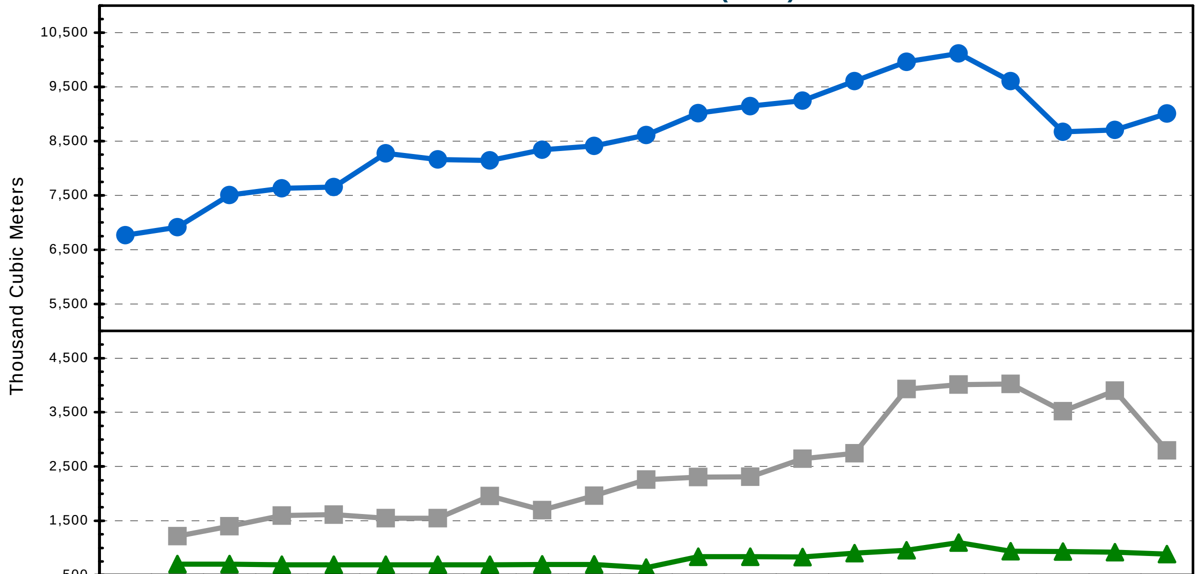
Particleboard Historic Capacity

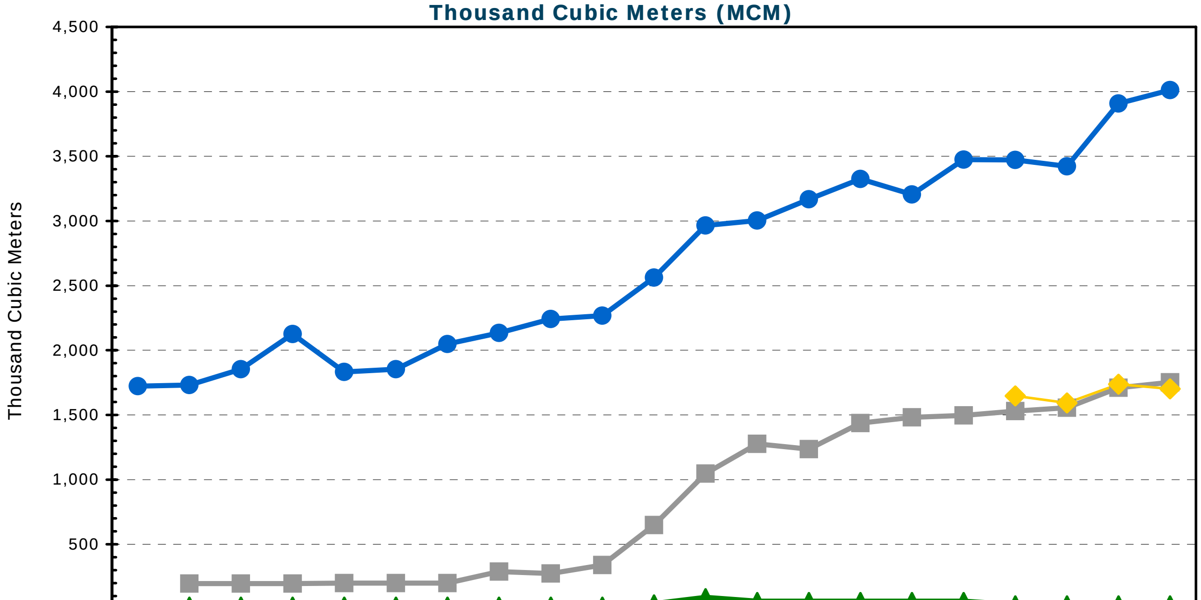
Thousand Cubic Meters (MCM)



	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
USA	6,764	6,916	7,507	7,630	7,654	8,278	8,164	8,144	8,343	8,414	8,611	9,017	9,148	9,246	9,606	9,965	10,115	9,611	8,675	8,711	9,012
CAN		1,216	1,398	1,597	1,611	1,549	1,549	1,956	1,694	1,963	2,261	2,305	2,310	2,642	2,743	3,928	4,010	4,026	3,523	3,899	2,799
MEX		699	699	687	687	687	687	689	693	693	635	835	835	834	903	956	1,099	939	933	920	883

Medium Density Fiberboard & Hardboard Historic Capacity

Thousand Cubic Meters (MCM)



	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
USA	1,722	1,731	1,853	2,127	1,832	1,853	2,049	2,135	2,243	2,268	2,563	2,965	3,004	3,168	3,325	3,205	3,474	3,472	3,423	3,908	4,012
CAN		196	196	196	200	200	200	289	274	340	649	1,047	1,276	1,236	1,437	1,482	1,496	1,530	1,556	1,710	1,752
MEX		25	25	25	25	25	25	25	25	25	42	90	60	60	60	60	60	35	35	35	35
NA HB																		1,647	1,593	1,737	1,701

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PLANNED EXPANSIONS / NEW PLANTS

Million Square Feet – ¾ Inch Basis (MMSF) and Thousand Cubic Meters (MCM)

			NEW / ADDITIONAL CAPACITY		
DATE	COMPANY	LOCATION	TYPE	MMSF	MCM
2007	Kronotex USA, Inc.	Barnwell, South Carolina	MDF	249	440
2008	ATC Panels, Inc.	Moncure, North Carolina	MDF	120	212

PLANTS CLOSED, BUT INTACT / RESTORABLE

Million Square Feet – ¾ Inch Basis (MMSF) and Thousand Cubic Meters (MCM)

				CAPACITY	
YEAR CLOSED	COMPANY	LOCATION	TYPE	MMSF	MCM
2005	Canadian Fibretech Inc.	Forestburg, Alberta, CN	PB	21	37
2005	Dow BioProducts, Inc. (Agrifiber)	Elie, Manitoba,CN	PB	130	230
2005	Northern Engineered Wood Products Inc.	Wanham, Alberta, CN	PB	75	133
2005	Uniboard Canada, Inc.	New Liskeard, Ontario, CN	PB	87	154
2004	Parkland Panel Products	St. Albert, Alberta, CN	PB	30	53
2004	Temple-Inland	Mt. Jewett, Pennsylvania	PB	185	327
2002	Louisiana-Pacific Corporation	Silsbee, Texas	PB	80	142
2004	Sonoco Structural Fiber, LLC	Hartsville, South Carolina	MDF	10	18
2004	Evanite Fiber	Corvallis, Oregon	HB	140	41
2004	Harvest Board International, Inc.	Lisbon, North Dakota	HB	30	9
2004	Oregon Panel Products	Lebanon, Oregon	HB	103	30

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Columbia Forest Products
CMI / CraftMaster Manufacturing, Inc.
Del-Tin Fiber LLC
Duraplay de Parral, S.A. de C.V.
Fibratech Manufacturing Inc.
Flakeboard Company Ltd.
Florida Plywoods, Inc.
Georgia-Pacific Corporation
Great Lakes MDF, LLC
GreenTech Panels, LLC
Grupo Bajaplay, S.A. de C.V.
Langboard, Inc.
Louisiana-Pacific Corporation
Marshfield DoorSystems, Inc.
Merillat Industries, Inc.
Norbord Industries, Inc.
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Pan Pacific Products, Inc.
Panolam Industries International Inc.
Plum Creek MDF, Inc.
Potlatch Forest Products Corporation
Rexcel, S.A. de C.V.
Roseburg Forest Products Company
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SierraPine Ltd.
Stimson Lumber Company
Tafisa Canada and Company Ltd.
Temple-Inland
Timber Products Company
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Composite Panel Association

Main Office
18922 Premiere Court
Gaithersburg, Maryland 20879-1574
301-670-0604 ▪ Fax 301-840-1252

99 Bank Street, Suite 701
Ottawa, Ontario K1P 6B9
613-232-6782 ▪ Fax 613-232-8386

Toll Free 1-866-4COMPOSITES
www.pbmdf.com

Composite Panel Association

The Composite Panel Association (CPA), founded in 1960, represents the North American composite panel industry on technical, regulatory, quality assurance and product acceptance issues. CPA General Members include 39 of the leading manufacturers of particleboard, medium density fiberboard, hardboard and other compatible products. Together they represent nearly 95% of the total manufacturing capacity throughout North America.

CPA also brings together the complete value chain affiliated with the composite panel industry. CPA's 200 members worldwide, primarily in the US and Canada, are committed to product advancement and industry competitiveness. Associate Members include manufacturers of furniture, cabinets, decorative surfaces and equipment as well as laminators and distributors.

CPA is a vital resource for both producers and users of industry products. As an accredited standards developer, CPA writes and publishes industry product standards. It also participates in the standards development work of ANSI, ASTM and others, sponsors product acceptance activities and works with federal and state agencies and model building code bodies. In addition, CPA conducts product testing and third-party certification programs, while helping manufacturers create in-plant quality control programs.

Outreach and education are also focal points of the CPA. The Association publishes industry performance data and conducts seminars to assist specifiers, manufacturers and other users of composite panels. CPA produces a series of technical bulletins and develops publications, videos, and other materials to inform key audiences about the attributes of industry products.

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APPENDIX 2

EMMISSIONS DATA FOR SELECTED PARTICLEBOARD PLANTS

Appendix 2, Table 1
Plant Data

Plant	Province/State	City/Town	Population	Plant Setting	Annual Production*	
					MMSF 3/4	MCM
Newpro	British Columbia	Smithers	5,414	Suburban/Rural	50	88
Flakeboard	New Brunswick	St. Stephen	5,000	Suburban/Rural	122	216
Columbia Forest Products	Ontario	Hearst	5,900	Community Suburban	90	159
CanPar	British Columbia	Grand Forks	4,100	Community Suburban	100	177
Flakeboard	Oregon	Albany	42,300	Industrial/Commercial	240	425
Boise-Cascade	Oregon	Island City	920	Rural	216	382
Ankmar	Oregon	Sweet Home	8,500	Commercial/Residential	17	30
Sierra Pine	Oregon	Springfield	57,050	Industrial/Suburban	180	319

* From CPA 2006 Capacity Report

Appendix 2, Table 2
NPRI and TRI Data - English Units

Plant	NPRI/TRI Data - Annual Emissions in tons						Production-Normalized NPRI/TRI Data - tons/MSF 3/4					
Newpro	PM	PM_{10}	$PM_{2.5}$	Methanol	Formaldehyde	VOC	PM	PM_{10}	$PM_{2.5}$	Methanol	Formaldehyde	VOC
2005	66.0	11.8	6.1			95.0	1.32	0.24	0.12			1.90
2004		18.5				24.1		0.37				0.48
2003		17.1				22.2		0.34				0.44
2002		17.1				22.2		0.34				0.44
Flakeboard (NB)												
2005	230.3	83.5	65.2		89.1	452.7	1.89	0.68	0.53		0.73	3.71
2004	239.0	84.0	66.2		89.3	456.3	1.96	0.69	0.54		0.73	3.74
2003	352.1	78.0	60.3		76.7	516.1	2.89	0.64	0.49		0.63	4.23
2002	446.5	78.4	60.1		76.4	399.2	3.66	0.64	0.49		0.63	3.27
Columbia Forest Products												
2005	146.7	108.9	38.1	23.1		159.9	1.63	1.21	0.42	0.26		1.78
2004	198.0	167.9	95.8			219.6	2.20	1.87	1.06			2.44
2003	168.2	159.4	155.2			201.3	1.87	1.77	1.72			2.24
2002	100.5	43.3	42.8			188.1	1.12	0.48	0.48			2.09
CanPar												
2005	69.4	22.1	15.2	37.6		313.0	0.69	0.22	0.15			3.13
2004	71.8	22.9	15.6	38.1		286.0	0.72	0.23	0.16			2.86
2003	92.3	68.1	38.6	38.1		289.4	0.92	0.68	0.39			2.89
2002	81.7	46.0	21.6	37.3		280.9	0.82	0.46	0.22			2.81
Flakeboard (OR)												
2005	440.0	319.0		66.9	34.7	579.0	1.83	1.33		0.28	0.14	2.41
2004	440.0	319.0		47.5	31.8	579.0	1.83	1.33		0.20	0.13	2.41
2003	440.0	319.0		81.5	46.3	579.0	1.83	1.33		0.34	0.19	2.41
2002	440.0	319.0		84.2	49.1	579.0	1.83	1.33		0.35	0.20	2.41
Boise-Cascade												
2005	124.0	106.0	0.0	52.9	54.0	511.0	0.57	0.49		0.24	0.25	2.37
2004	124.0	106.0	0.0	53.5	54.6	511.0	0.57	0.49		0.25	0.25	2.37
2003	124.0	106.0	0.0	61.2	44.0	511.0	0.57	0.49		0.28	0.20	2.37
2002	124.0	106.0	0.0	59.0	39.7	511.0	0.57	0.49		0.27	0.18	2.37

Appendix 2, Table 2
NPRI and TRI Data - English Units

Plant		NPRI/TRI Data - Annual Emissions in tons						Production-Normalized NPRI/TRI Data - tons/MSF 3/4					
Ankmar		PM	PM_{10}	$PM_{2.5}$	Methanol	Formaldehyde	VOC	PM	PM_{10}	$PM_{2.5}$	Methanol	Formaldehyde	VOC
	2005	24.0	14.0				95.0	1.41	0.82				5.59
	2004	24.0	14.0				95.0	1.41	0.82				5.59
	2003	24.0	14.0				95.0	1.41	0.82				5.59
	2002	24.0	14.0				95.0	1.41	0.82				5.59
Sierra Pine													
	2005	246.3	217.0		38.7	17.1	346.0	1.37	1.21		0.22	0.10	1.92
	2004	246.3	217.0		48.1	18.2	346.0	1.37	1.21		0.27	0.10	1.92
	2003	246.3	217.0		43.4	21.2	346.0	1.37	1.21		0.24	0.12	1.92
	2002	246.3	217.0		51.0	26.5	346.0	1.37	1.21		0.28	0.15	1.92

Blanks in the table indicate no data was available

Data in these boxes are Title V Permit Plant Site Emission Limits
Actual measured emissions will be lower and variable

Production-Normalized Annual NPRI/TRI Data - tons/MSF 3/4

Other Mills	PM	PM_{10}	$PM_{2.5}$	Methanol	Formaldehyde	VOC
Maximum	3.66	1.87	1.72	0.35	0.73	5.59
Average	1.47	0.89	0.56	0.27	0.30	3.01
Minimum	0.57	0.22	0.15	0.20	0.10	1.78
Newpro (maxima)	1.32	0.37	0.12			1.90

Appendix 2, Table 3
NPRI and TRI Data - Metric Units

Plant		NPRI/TRI Data - Annual Emissions in tonnes						Production-Normalized Annual NPRI/TRI Data - tonnes/MCM					
Newpro	PM	PM_{10}	$PM_{2.5}$	Methanol	Formaldehyde	VOC		PM	PM_{10}	$PM_{2.5}$	Methanol	Formaldehyde	VOC
2005	60.0	10.7	5.5			86.4		0.68	0.12	0.06			0.98
2004		16.8				21.9			0.19				0.25
2003		15.5				20.2			0.18				0.23
2002		15.5				20.2			0.18				0.23
Flakeboard (NB)													
2005	190.3	69.0	53.9		73.6	374.1		0.88	0.32	0.25		0.34	1.73
2004	197.5	69.4	54.7		73.8	377.1		0.91	0.32	0.25		0.34	1.75
2003	291.0	64.5	49.8		63.4	426.5		1.35	0.30	0.23		0.29	1.97
2002	369.0	64.8	49.7		63.1	329.9		1.71	0.30	0.23		0.29	1.53
Columbia Forest Products													
2005	133.4	99.0	34.6	21.0		145.4		0.84	0.62	0.22	0.13		0.91
2004	180.0	152.6	87.1			199.6		1.13	0.96	0.55			1.26
2003	152.9	144.9	141.1			183.0		0.96	0.91	0.89			1.15
2002	91.4	39.4	38.9			171.0		0.57	0.25	0.24			1.08
CanPar													
2005	63.1	20.1	13.8	34.2		284.5		0.36	0.11	0.08			1.61
2004	65.3	20.8	14.2	34.6		260.0		0.37	0.12	0.08			1.47
2003	83.9	61.9	35.1	34.6		263.1		0.47	0.35	0.20			1.49
2002	74.3	41.8	19.6	33.9		255.4		0.42	0.24	0.11			1.44
Flakeboard (OR)													
2005	400.0	290.0		60.8	31.5	526.4		0.94	0.68		0.14	0.07	1.24
2004	400.0	290.0		43.2	28.9	526.4		0.94	0.68		0.10	0.07	1.24
2003	400.0	290.0		74.1	42.1	526.4		0.94	0.68		0.17	0.10	1.24
2002	400.0	290.0		76.5	44.6	526.4		0.94	0.68		0.18	0.10	1.24
Boise-Cascade													
2005	112.7	96.4		48.1	49.1	464.5		0.30	0.25		0.13	0.13	1.22
2004	112.7	96.4		48.6	49.6	464.5		0.30	0.25		0.13	0.13	1.22
2003	112.7	96.4		55.6	40.0	464.5		0.30	0.25		0.15	0.10	1.22
2002	112.7	96.4		53.6	36.1	464.5		0.30	0.25		0.14	0.09	1.22

Appendix 2, Table 3
NPRI and TRI Data - Metric Units

Plant	NPRI/TRI Data - Annual Emissions in tonnes						Production-Normalized Annual NPRI/TRI Data - tonnes/MCM					
Ankmar	PM	PM_{10}	$PM_{2.5}$	Methanol	Formaldehyde	VOC	PM	PM_{10}	$PM_{2.5}$	Methanol	Formaldehyde	VOC
2005	21.8	12.7				86.4	0.73	0.42				2.88
2004	21.8	12.7				86.4	0.73	0.42				2.88
2003	21.8	12.7				86.4	0.73	0.42				2.88
2002	21.8	12.7				86.4	0.73	0.42				2.88
Sierra Pine												
2005	223.9	197.3		38.7	17.1	314.5	0.70	0.62		0.12	0.05	0.99
2004	223.9	197.3		48.1	18.2	314.5	0.70	0.62		0.15	0.06	0.99
2003	223.9	197.3		43.4	21.2	314.5	0.70	0.62		0.14	0.07	0.99
2002	223.9	197.3		51.0	26.5	314.5	0.70	0.62		0.16	0.08	0.99

Blanks in the table indicate no data was available

Data in these boxes are Title V Permit Plant Site Emission Limits
Actual measured emissions will be lower and variable

Production-Normalized Annual NPRI/TRI Data - tonnes/MCM

Other Mills	PM	PM_{10}	$PM_{2.5}$	Methanol	Formaldehyde	VOC
Maximum	1.71	0.96	0.89	0.18	0.34	2.88
Average	0.74	0.45	0.28	0.14	0.15	1.52
Minimum	0.30	0.11	0.08	0.10	0.05	0.91
Newpro (maxima)	0.68	0.17	0.06			0.98