Identifying Treated Wood

This document is intended as guidance and can be modified based on your facility operations. Each facility will determine how they will achieve compliance with the ban on disposing treated wood within C&D debris disposal cells. This may include charging differential tipping fees to encourage source separation, accepting mixed loads containing treated wood and charging the hauler for processing or other options as applicable.

What is treated wood?

Treated wood is wood that is chemically treated during manufacturing so that it will resist decay. During a factory treatment process, creosote, pentachlorophenol or other chemical preservatives are injected into the wood. Treated wood does not include wood treated at home, like stained or painted wood.

Where is treated wood used in constuction?

Treated wood is used in both residential and commercial construction projects, where wood is in direct contact with water (like docks, wharves, wooden road culverts, bridge cribwork) or in contact with soil (like telephone poles, fences, decks and retaining walls).

Why is treated wood banned from disposal in C&D debris disposal cells?

Treated wood is designed to keep the preservatives within the wood while it is in use. But, over time, the preservatives will leach, or seep, out of the wood while it decays. Treated wood is banned from disposal at C&D sites by the Province of Nova Scotia for the following reasons:

- Municipal solid waste landfill cells are designed and built to provide a higher level of environmental protection than C&D debris disposal cells.
- Disposal cells can have large volumes of treated wood. A typical deck on a home requires about 1 tonne of treated wood, while a C&D debris facility can receive 100s of tonnes of treated wood each year.

- The preservatives that leach from the treated wood as it decays in a C&D disposal cell can contaminate groundwater and surface water.

How to identify treated wood

Visual Identification

New treated wood is easily identified because it is tagged to identify the type of preservative that was used to treat the wood.

If there are no tags, there are other ways to identify treated wood:

Creosote timber often looks like brown, tan, or black tarry-coated beams and lumber that may leak tar when warmed. Old creosote timber may be a grey color. Creosote timber will often have an oily smell when new or if the wood is cut.

Pressure treated wood is typically green or brown in color. The surface of the wood may have small slits where the preservative was injected into the wood during the manufacturing process. You may be able to see a darker colored ring around the outside edge of the wood when you cut it. This is where the preservative penetrated the wood.

Creosote treated wood

Pressure treated wood tags

New treated wood

New treated wood

Treated wood walkway

Treated wood retaining wall

Where generated

Visual inspections and physical audits should focus on projects that may produce treated wood debris. Because treated wood is used in exterior construction projects, it would be uncommon to find treated wood mixed with wastes from building interiors, such as drywall, flooring, or insulation, unless a house is being fully demolished.

For large, industrial projects (ex. DFO-Small Craft Harbours, Defence Construction Canada, Department of Public Works) you may see treated wood as separated loads or mixed with soil, gravel, brick, and concrete.

For smaller, residential/commercial projects, it's more likely that you will see treated wood as separated loads or mixed with roofing, siding, soil, paving or paver blocks, and concrete.

It should be assumed that wood from the construction, renovation, or demolition of wharves, fences, decks and retaining walls, along with old telephone poles and railway ties, is treated wood.

Questions for hauler

The following are sample questions that could be asked to help determine if treated wood is likely to be present in a load and whether a visual audit or physical inspection is necessary. This is not an exhaustive list and facilities are encouraged to develop questions based on their operations and the haulers who deliver to their facilities.

1) Did the hauler load the vehicle / trailer / roll off bin?

2) Does the load contain treated wood?

3) Is the load from multiple job sites?

4) Can you describe the contents of the vehicle?

5) Are you aware of the treated wood disposal ban at C&D debris disposal facilities?

    - Opportunity to explain ban comes into effect July 5, 2024, distribute educational materials, facility requirements with respect to treated wood.

6) Was the waste generated from an interior or exterior construction, demolition, or renovation project?

    - Interior construction/demolition projects unlikely to contain treated wood.

7) Is the waste generated from a residential or industrial project? If industrial, what is the project?

   - Specific industrial activities are more likely to use treated wood than clean or painted/stained wood (e.g., docks, wharves, culverts, bridges)

8) Who is the hauler and have they previously brought treated wood to the facility?

   - May be a contractor who specializes in landscaping, fence installation, deck construction.

Conducting a visual audit

The visual audit method outlined below is not intended to be used for every C&D load received at your facility, as not every load will contain treated wood. Operators should assess incoming loads to determine if a visual audit for treated wood is needed and what action is necessary. The information noted below provides a method for visually estimating the amount of treated wood that may be present in a load and can be modified to suit your facility operations.

When conducting a visual audit, you should look for visible treated wood at the surface of the incoming load while it is still in the truck/trailer. The scale operator can then question the hauler to determine if the load contains treated wood or is likely to contain treated wood, based on the questions listed above, plus any additional questions the facility has developed.

Next, the following steps can be taken to conduct the visual audit:

- Measure the dimensions of the incoming load and estimate the percentage of volume occupied by C&D debris.
- Weigh the vehicle including its contents.
- Tip the load and spread it out to help identify the different wastes present.
- Make a 1st pass around the debris pile, classify the waste into broad categories (wood, plastics, shingles, drywall, insulation, etc.) and estimate the volume of the various waste types.
- Make a 2nd pass around the debris pile to classify the various types of wood waste (clean, coated, treated, etc.) and estimate the volume of the wood types.
- Add up the percentages of the broad waste categories and the percentages of wood waste categories. It should equal 100%. Adjust the estimated percentages until the total equals 100%.

Calculating the weight of treated wood

Different C&D debris materials have different densities. This means that the same volume of different materials will have different weights. One way to think about this is with weight ratios compared to wood. A material that is denser than wood has a weight ratio greater than 1 while a material that is less dense than wood has a weight ratio less than 1. Here are some examples of weight ratios compared to wood: rock (5.5), concrete (5.1), roofing (4.3), gypsum (2.8), metals (0.9), and plastics (0.2).

For a load that is mainly or completely wood, 20% by volume is approximately 20% by weight.

As the load becomes more mixed with roofing materials, soil or concrete, the wood volume must increase significantly if it is to approach 20% by weight within the load (see Appendix 1).

Both the estimated volumes and the densities of the various waste materials in the loads need to be considered when calculating the weight of treated wood. Follow the following steps:

- Use Table 1 to find the densities (lb/yd^3 and kg/m^3) of the C&D materials you identified during the visual audit.
- Use the following equations to estimate the treated wood percentage within the load:
  - Vehicle volume (m^3) * % (treated wood in load) = Treated wood volume (m^3)
  - Treated wood volume (m^3) * treated wood density (kg/m^3) = calculated treated wood (kg)
  - Treated wood (kg) / Total C&D debris weight (kg) = % treated wood

Additional considerations

- During audits, the calculated weights of the C&D debris materials should be compared against actual weights of the C&D debris streams. This can be used to improve the estimation of treated wood present within the loads.
- In addition to the variable density of the C&D wastes, other things can influence the volume and weight of the load:
  - rigid debris like concrete slabs, steel, or wood can create “bridging” that decreases density by adding spaces of air in the load.
  - soil density increases with moisture content and can decrease 5-25% due to “bulking” after excavation.

- It is recommended that for loads where the estimated treated wood volume exceeds 40%, a physical audit should be performed to determine the actual treated wood weight present.
- It is recommended that a record of visual /physical audits, inclusive of photos, be developed by each facility to improve the accuracy of the visual audits.

Table 1: Densities of C&D Debris Materials

	Density	
	lb/yd^3	kg/m^3
CONCRETE		
Concrete (with or without rebar)	860	510
Asphalt Paving	773	459
ROOFING		
Composition Roofing	731	434
Other Asphalt Roofing	731	434
Other Aggregates	860	510
WOOD		
Clean Dimensional Lumber	169	100
Clean Engineered Wood	268	159
Other Recyclable Wood	169	100
Painted/Stained Wood	169	100
Treated Wood	169	100
Wood Chips, green	473	281
Wood Chips, dry	243	144
Saw Dust, wet	530	314
Saw Dust, dry	275	163
Pallets (single)	25	11
Pallets and Crates	169	100
Christmas Trees, loose	30	18
Leaves	300 -383	178-227
Mixed Yard Waste (uncompacted)	250	148
Mixed Yard Waste (compacted)	640	380
Prunings & Trimmings	127	75
Branches & Stumps	127	75
GYPSUM BOARD		
Clean Gypsum Board	467	277
Painted/Demolition Gypsum	467	277

Table 1: Densities of C&D Debris Materials *(cont)*

	Density	
	lb/yd^3	kg/m^3
AGGREGATE		
Large Rock	999	593
Small Rock/Gravel	999	593
Dirt and Sand	929	551
Remainder/Composite Construction and Demolition	417	247
Construction & Demolition Bulk	484	287
METAL		
Major Appliances	145	86
Other Ferrous	225	133
Other Non-Ferrous	225	133
Remainder/Composite Metal (avg of metals, without used oil filters)	143	85
HVAC Ducting	47	28
CARPET		
Carpet	147	87
Carpet Padding	62	37
Paper		
Old Corrugated Containers, flattened	106	63
Old Corrugated Containers, baled	750-1000	445-593
PLASTICS		
LDPE, loose	35	21
LDPE, Baled	150	89
Expanded Polystyrene Insulation	32	19

**Volume-to-Weight Conversion Factors, April 2016 (epa.gov)*

Appendix 1

Impact of mixed loads on visual percentage

When visually estimating the amount of treated wood present, it would be common for treated wood to be received either as a dedicated load of wood or mixed with soil and/or rock. If the load is only wood, then a 20% visual estimate of treated wood will weigh approximately 20%. As soil, rock, and concrete have a density that is more than 5 times higher than wood, the load will have to be 50% or more by volume of treated wood to approach 20% by wood. The examples below show the impact of mixed loads upon estimating the weight of treated wood present.

1) A load contains 4.5 m^3 of mixed C&D debris. The estimated volumes are clean wood 60%, treated wood 25%, and roofing 15%. Total weight equals 1000 kg.

   25% * 4.5 m^3 = 1.125 m^3 of treated wood

   1.125 m^3 * 100 kg/m^3 = 112.5 kg of treated wood

   112.5 kg / 1000 kg = 11.2 % of the load was treated wood.

   Note that under optimal conditions, without any void spaces in the load, the weights of the various C&D debris materials would be 292 kg roofing, 270kg clean wood and 112 kg treated wood, for a total weight of 832kg.

2) If a load of 800 kg of soil and 200 kg of treated wood was received, the soil volume would be 1.45 m^3 and the wood volume would be 2m^3. Therefore, the treated wood percentage would be equivalent to 58% of load volume.

   200 kg wood / 1000 kg load = 20% by weight

   200 kg / 100 kg/ m3 = 2 m^3 wood; 800 kg / 551 kg/ m^3 = 1.45 m^3

   Total volume = 3.45 m^3

   Volume treated wood / total C&D volume = 2 m^3/ 3.45 m^3 = 58%