

Processing Wood – Breathing the Air in a Woodshop (1 of 4) Avoid Creating a Potential Hazard -- Sawdust

Info in red font is for the benefit of the teacher (notes and ideas for differentiated learning etc). Delete text in red font from the copies that are distributed to students.

In a document / template that is intended to be "filled in" by students for assessment / evaluation purposes, the Version History table can be retained for students to use. Making an improved version is great learning.

Version History:

V #	Date	Author	Short Listing / Description of Changes
1	July 16/12	D.B. McCowan	Initial Version -- uploaded to OCTE Safety Portal
2			

Parts

- 1 **Expectations; Introduction; Review; Sample Situation; Hardwood vs Softwood**
- 2 Thinking -- Finding Information: Properties of Wood Species
- 3 Observation and Research: Processing Wood Using Tools; Sanding and Limitations
- 4 Integrate New Knowledge With Old; Assignment for Marks

1 **Expectations: Can I Extrapolate from a Trusted Information Source?**

Design / Build a Marketable Picture Frame Using Scrap Wood Flooring	
1 Curriculum Expectation <i>In this unit the student will demonstrate / practise the following:</i>	2 Activity -- What You Will Do in this Lesson
<p>D1.2 -- demonstrate an understanding of and follow personal and environmental health and safety procedures with respect to processes, materials, tools, equipment, and facilities throughout the design process and related activities (e.g., use protective equipment; set tool and equipment guards properly; ensure adequate ventilation and ergonomic seating and other workplace arrangements; follow safe operating procedures; keep work areas clean and organized; store materials and dispose of wastes properly).</p> <p>DL-M (mid) and DL-H (high): --Do not show these students the blue font highlighted portions above. These students can think this through during the assessments – which key aspects of the Expectation D1.2 are addressed in this lesson? -Encourage these students to write their thoughts (in their portfolio) for at least one of the “Think Critically About This...” boxed items below</p>	<p>Critical Thinking – “Risk Assessment” ---When I process wood, will I actually <i>create</i> a sawdust hazard? ---Is there an MSDS for the species of wood dust that I am working with? Should there be? ---Do I have sufficient information in order to start my wood processing task? ---Can I “extrapolate” from some other source of information?</p> <p>Assessments -Knowledge -Thinking -Communication -Application of concepts</p>

2 This Lesson is Extremely Important Because...

Trees are good for us, consuming carbon dioxide and generating oxygen that we breathe. Wood is a naturally-occurring material. But the dust from wood is, generally, **not** harmless. In some cases and in some situations, wood dust can be irritating, sensitizing / allergenic, hazardous and even toxic.

Information “is a means to an end” – not the end itself. Having “*Hazardous Materials Information*” is not just about getting the MSDS for that stuff that you bought at the store. Rather, the onus is often on you -- the user or the worker -- to make sound decisions based on an apparent **lack of** what you might hope is complete information!

This lesson is not about never using a power sander. This lesson is all about making you think about the possible consequences of creating a dust-laden hazardous working environment and making your own decisions regarding how to understand and minimize the risk to you and to others.

Investigate and Think Critically About This:

When you go to the craft store or the lumber store to buy some wood, do they give you an MSDS for the wood? What processing of the wood will you be doing – splitting, whittling, cutting, turning, drilling, planing, sanding?

3 Review... You Already Know...

3.1 Some Fundamentals about Material Safety Data Sheets (MSDS)

You should have already studied WHMIS in science class – Workplace Hazardous Materials Information Systems. And you should already know something about the importance of Material Safety Data Sheets. First, take another look at very official document LePage_Carpenter_Glue_MSDS.pdf in one of your previous lessons in this unit.

Think Critically About This in Relation to Material Safety Data Sheets:

For people using a one litre bottle of LePages Carpenter Glue in a classroom or school shop, the four most important issues in the MSDS are:

- a (1) Where to buy it; (6) Accidental Release Measures; (10) Stability; (13) Disposal
- b (3) Ingredients; (5) Fire Fighting Measures; (11) Toxicological Info; (14) Transport
- c (8) Exposure Controls; (9) Chemical Properties; (12) Ecological Info; (15) Regulatory
- d (2) Hazards identification; (4) First Aid Measures; (7) Handling and Storage; (10) Reactivity

3.2 And a Little Bit about Wood and Cutting Tools

You already know that using a knife – or any cutting tool -- for any kind of work is extremely dangerous. You also already know that there are both:

- Hardwoods and
- Softwoods

4 Sample Situation -- Wood-Carving – Extrapolate from Current Knowledge

When you start a new project, you should always start by thinking critically about what you already know. By all means, when you are in doubt, you should find some more data that will help you with your decision-making. For example, if you don't get an MSDS at the store where you bought your wood, what exactly are the material safety issues that you must be concerned about?

So, you think wood-carving is a pretty cool thing to do. As a beginner, you'd prefer to carve a block of wood that is relatively easy to work, ie carve. It seems to follow that carving a softwood is probably easier than carving a hardwood. You could do a little experiment with some good-sized samples just to convince yourself. Regardless, you knew there were woods called hardwoods and woods called softwoods. Without knowing anything at all about which tree species are hard or soft and without knowing anything of the relative properties of hardwoods and softwoods, you quickly drew the pretty reasonable conclusion that softwoods are generally a better bet for a beginning wood carver.

Fair enough... you go find yourself a block of softwood. If you can use your thumbnail to scratch a good dent across the grain, you've found yourself a softwood. Hardwoods are denser – a piece of hardwood that is of the same volume (3-dimensional size) as your piece of softwood is heavier than your softwood piece. But you are inquisitive – you decide to dig a bit deeper to find out which woods would be most appropriate for your project – and you may even be able to determine which species you have in hand. You can use the already-discovered-and-recorded properties of wood species to determine which wood you have. In general, denser woods are harder and stronger than less dense woods – but be sure to compare densities that are measured at the same moisture content.

Regardless, in a new project, you must first know and understand what you are working with. **What are the properties of the wood you are using?** Both hazardous and non-hazardous properties are important.

Go to Part 2:

**Thinking -- Finding Information: Properties of Wood Species
(15.2_Wood_Dust_Species.doc)**