Yale *Environmental Health & Safety*

Shop Safety Procedure

Equipment/Task Name:	WOOD MITER SAWS
Equipment/Task Hazard Class:	3 http://ehs.yale.edu/forms-tools/tool-classification-matrix
Shop Name:	
Shop Hazard Class:	

Purpose

Miter and compound miter saws are typically used to make cross-cuts on wood and wood composite materials. Typical configurations are listed below and are provided in the Diagrams/Illustrations section of this procedure. This procedure does not apply to metal chop saws.

- Standard miter saw – This saw pivots from a single point with the blade always cutting square to the table. Typically, this saw is used to cut miters across the width of a board by swinging the saw table to the left or to the right. In this case, the face of the board lies flat on the saw table with the edge tight against the fence. A standard miter saw also can cut a bevel with the board on edge and with one face held against the fence. Standard miter saws are sometimes called "chop saws".
- Compound miter saw – This saw can cut miters like a standard miter saw, but the blade and motor assembly also can flop tilt over to one side, allowing you to cut a bevel with the face of the board lying flat on the table. You also can cut a miter and a bevel at the same time—a compound miter—which is used for joining crown molding as well as for framing roofs and cutting stairs.
- Sliding miter saw – This tool can cut miters, bevels and compound miters like a compound miter saw. Instead of a fixed pivot point, however, the blade and motor assembly can slide forward and back on a rail. A sliding saw can cut significantly wider stock than a fixed head saw.
- Dual compound-miter saw – This saw functions exactly like a compound miter saw, except the blade and motor assembly can tilt either to the left or to the right, allowing you to cut bevels and compound miters in either direction. The key advantage here is that you can cut a board with the miter and bevel oriented the same way it will be installed, which can save a lot of head scratching.

Hazards

As with all shop tools there are many potential hazards associated with their use and exposure. Miter saws are Class 3 tools (http://ehs.yale.edu/forms-tools/tool-classification-matrix). There are a number of particular hazards associated with the operation and use of miter saws.

- Amputation – The high speed large diameter rotating blade poses significant risk of amputation. Body parts must be kept out of path of blade at all times. No adjustments to cutting angles, fences or stops should be attempted until the blade has come to a full stop.
- Sharp tooling – Blade poses risk for cuts, lacerations and puncture wounds during handling, replacement and setup.

Hazards (cont'd)

- Projectiles/flying objects – The high speed blade can cause kick back and move the saw violently. In addition, work pieces, cutoffs, dust and chips can become projectiles. Proper PPE must be worn at all times and do not make adjustments unless the tool is off and the blade is at a complete stop.
- In-running nip point – The blade cuts in a climb/cut mode which means that the blade is trying to pull the work piece into the cut at all times. This has two direct hazards – you being pulled into the blade/cut and the saw coming out violently toward you should you not have the cutting head in firm control by the handle.

Limitations

- Miter saws can only be used for cross cutting of work pieces.
- The width of the work piece is generally limited to 10-12 inches.
- Material choices are generally limited to wood, wood products and composite wood products. This procedure does not apply to metal chop saws.

Required Personal Protective Equipment

- Refer to the Shop Safety Postings and instructions provided by the Shop Supervisor.

Shop specific required PPE:

Required Training

- Applicable Shop Rules
  - **Student Shop Rules** (http://ehs.yale.edu/forms-tools/shop-rules-student-accessible-shops)
  - **Professional Shop Rules** (http://ehs.yale.edu/forms-tools/guidelines-professional-shops)
- For Class 2 through 5 Student Shops, review and signing of the **Yale University Shop/Tool Use Safety Agreement** (http://ehs.yale.edu/forms-tools/shoptool-use-safety-agreement).
- Shop Supervisors or Instructors must evaluate the tool user based on successful demonstration of the Training Competencies listed below as applicable.
  Training Competencies:

  □ Identify and describe all controls, adjustments, and functions of the miter saw.
  □ Dress appropriately and wear appropriate personal protective equipment for the cutting operation.
  □ Correctly setup and adjust the miter saw for all types of required cuts.
  □ Apply good judgment in selecting clamping/securing method for work piece and accurately position work piece for cutting operation.
  □ Students must be able to reset all saw functions to square, perpendicular cuts and clean up saw in preparation for next user.

Shop specific training requirements:

Authorized Tool Users

Shop Supervisor, Shop Monitors and those authorized by shop supervision to operate the tool.

Tool Safety Rules

- Observe and follow all Yale Professional or Student Shop Rules as posted.
- Understand and follow manufacturer operating procedures.
- Inspect the tool for damage prior to use.
- Verify all guards are in place and adjusted properly.
- Do not bypass any safety devices.
- Only use the tool when it is secured to the floor via a pedestal or work bench.

Tool Safety Rules (cont'd)

- Always stay at the machine while it is running.
- Clean the tool after use.
- Report any malfunction or damage to the Shop Supervisor after tagging the tool "Out of Service, do not use".
- Always disconnect the plug from the power source before making any adjustments, changing, or physically inspecting the blade.
- Never use another person as a substitute for a table extension or as additional support.
- Do not attempt to cut pieces of stock that are too small to easily hold with your hands. Use clamping devices and/or jig fixtures instead.
- Never make free-hand cuts by raising the work piece into the blade.
- Never feed the saw into the work piece at a rate faster than it can accept.

Shop specific rules:

Proper Setup and Use

Prior to use:

- Evaluate the work piece material type and appropriateness of the saw and saw blade. Inspect the material for nails, screws, or other foreign objects.
- Determine the location and angle(s) of cuts required.
- Determine the required fixturing/tooling/clamping/supports needed.
- Obtain personal protective equipment (safety glasses /shields) hearing protection and remove all loose clothing, jewelry and securely tie back all long hair/beards.

At the miter saw:

- Turn on the dust collection system if available.
- With the tool off inspect the tool. Look for damage, missing guards, and blade condition.
- Inspect the work area and remove any obstructions and trip hazards.
- Adjust and set cutting angle(s) for work piece.
- Set up fixturing/supports and stops to make required cuts.
- With saw blade stationary move saw through entire range of motion to ensure that there is no interference with blade, machine parts or guards/fences.
- Ensure that if stops and clamps are used together that they are both on the same side of the blade cut so that the potential for jamming and kickback are minimized.

Cutting process:

- Locate work piece on saw. Ensure that it is placed firmly against the back fence of the saw.
- Be sure that any clamping of the work piece is on the same side of the cut as the stop so that potential for jamming /kickback against stop is minimized.
- Let the blade reach full speed before attempting the cut.
- It is usually good practice on the first setup to make a sacrificial cut in the work piece material to ensure that fixturing and angle setup is performing as expected and that the saw is capable of cutting thru the entire work piece.
- If trial cut is satisfactory – setup and make required cuts to work piece(s).
- Allow blade to come to a complete stop before releasing the handle and prior to adjusting/advancing work piece.

Proper Setup and Use (cont'd)

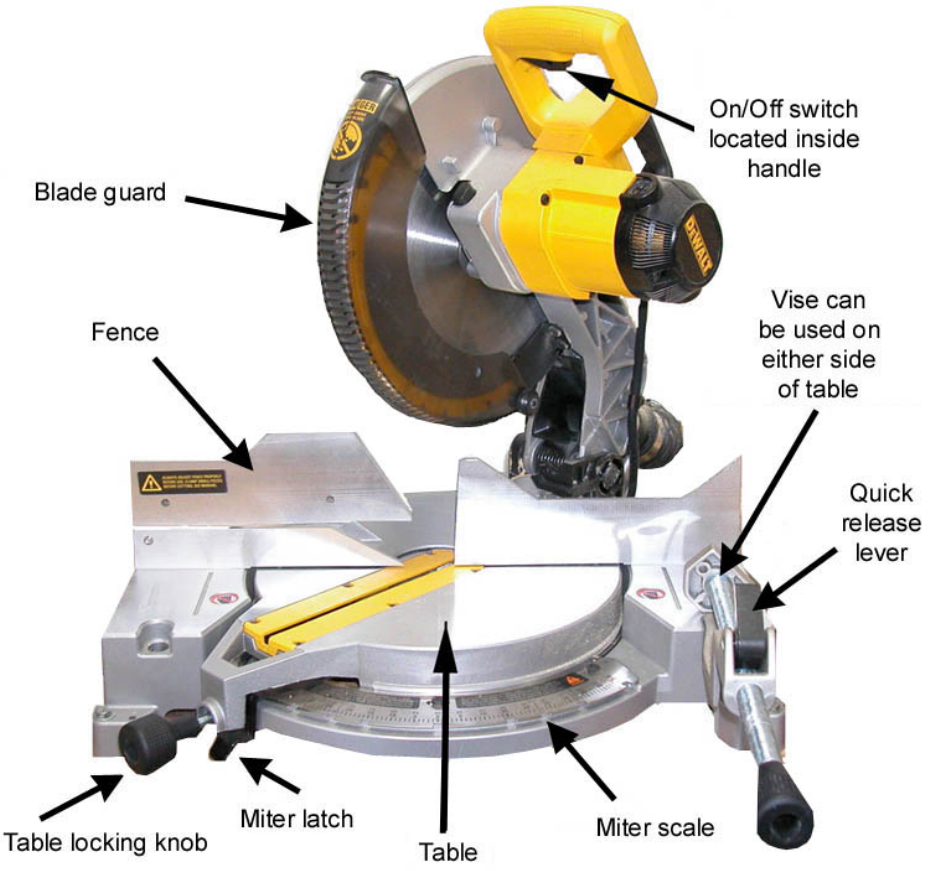
Completion:

- Allow blade to come to a complete stop before releasing the handle and carrying out completion tasks.
- Disengage dust collection system (if available and as directed by the shop supervisor).
- Clean up saw and work area for the next user.
- Report any issues to the shop supervisor.

Shop specific procedures:

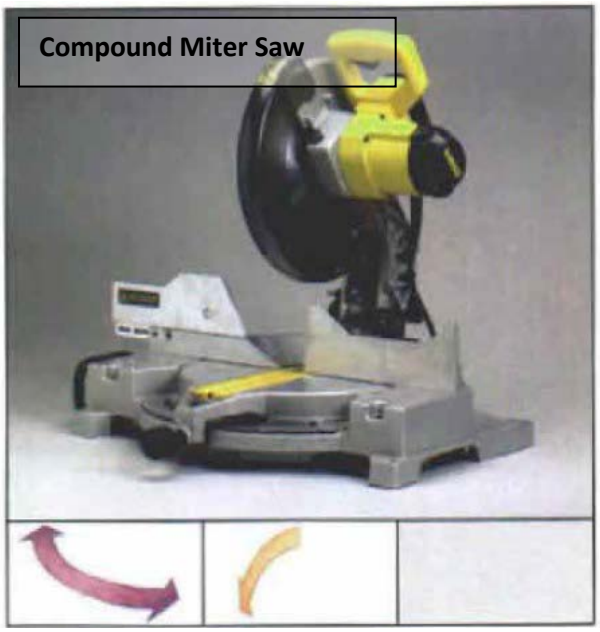
Diagrams/Illustrations

Miter Saw Components



Diagrams/Illustrations (cont'd)

Miter Saw Configurations



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Suggestions, questions, or comments? Please contact your shop supervisor or EHS.	