



Harvey Mudd Makerspace

General Usage Manual

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Introduction

The purpose of this manual is to provide Makerspace users with information about the Makerspace, how it is run by the student stewards and Makerspace Manager, machines available in the space, swipe access requirements, and other aspects of the space. The General Safety Quiz needs to be completed by everyone who intends to check out tools in the Makerspace, or use any of the machines locked behind a swipe door.

Honor Code and User Responsibilities

- Violating any policies or safety protocols at the Makerspace is a violation of the Harvey Mudd Honor Code which may result in revocation of Makerspace privileges. This includes stealing Makerspace property, ignoring the safety quizzes and other safety protocols while using machines, or harassing stewards on and/or off duty and refusing to leave after a steward requests you to, along with other offenses. Users caught doing any of these offenses will lose their privileges, which include their swipe into the Makerspace for either a semester or year, and could potentially be banned from the space.
- Makerspace users are also not allowed to work in the Makerspace when...
 - They are intoxicated
 - They are alone and want to use an electronic tool/machine.
 - They are alone and no steward is present
 - They are sleep deprived to the point of danger
- To learn more about the Harvey Mudd College Honor Code:
<https://www.hmc.edu/ashmc/honor-code/>
- All Makerspace users are responsible for:

- Completing the Makerspace safety training requirements and following guidelines
- Making sure that you have checked in with a Makerspace Steward before using any Makerspace equipment that you are unfamiliar with
- Reporting all Makerspace related accidents to stewards, the Makerspace Manager, a Residence Hall proctor on-call or Campus Safety. Always report injuries, no matter how minor.
- Cleaning up after themselves after using the Makerspace

General Makerspace Policies and Student Projects

- All HMC students have 24/7 access to the central area of the HMC Makerspace. Students from the other Claremont Colleges can either...
 - have access while the building is open (M-F, 8am-5pm) and can request 24/7 swipe access from F&M on Harvey Mudd's campus.
 - [Complete the General Safety Quiz](#)
 - This quiz, nor do any other quizzes, give you access to the HMC Machine Shop. The Machine Shop is managed separately.
- After completing the General Safety Quiz, users can access the main Makerspace, Student Storage, and can checkout machines from the Tool Cage.
- Other areas of the Makerspace — the Digital Production Studio, 3D Printing and Laser Cutting Room, Spray Paint Booth, Composite Room and Welding Station — each require all users to pass a safety quiz before gaining swipe access (welding requires training first before solo use).
 - Head to make.hmc.edu to start filling out safety quizzes
 - The make.hmc.edu website also contains our inventory, workshops, current tool checkouts, and FAQ.
- Each year all returning Makerspace users must complete and pass the Makerspace safety tests before being granted access to access-restricted Makerspace rooms, even if they have passed the tests in a previous year.
- The Makerspace has stewards on duty...
 - Monday - Thursday 2:00 PM - 10:00 PM
 - Friday - Saturday 2:00 PM - 7:00 PM
 - Sunday 2:00 PM - 9:00 PM
 - Hours may differ during holidays and the end of the semester, and updates will be posted in the [Makerspace discord](#).
- You're able to work on machine-based personal projects either...

- By yourself while stewards or the Makerspace Manager (Elissa) is nearby.
- Or when the Makerspace is closed and you have a buddy nearby.
 - Users will be asked to leave if neither of these 2 conditions apply.
- If you are alone and want to use a tool that doesn't require electricity
- Makerspace users will not use materials or machines in the makerspace to sell large quantities of made items (eg: on etsy)
 - Making one item as a personal project and selling it at a local craft/art show is permitted (within reason)
 - Please contact Makerspace-management-l@g.hmc.edu if you have questions about this policy or need additional details
- Food and drink may only be consumed in the lounge or main work area while not actively working on a project.
- Nothing should be made in the makerspace that requires a sterile environment, chemical safety procedures, or uses molten metal. This includes things such as:
 - Casting or molding using metals
 - Making medical devices
 - Chemistry or biology experiments

Tool Check-Out

- Users must complete the General Safety Quiz before being allowed to check out any tools in the tool cage. Only currently hired stewards can check out tools to users. To check out a tool, please ask a steward to check it out for you.
- You have the option to do an Overnight Checkout, which is when you need to use a tool past the open hours of the Makerspace. If you have a tool checked out to you overnight, you'll need to put it into one of the black lockers labeled Overnight Checkout next to the Composite Room. Ask a steward for more help if you're confused.
- All users will be found liable to any broken or missing tools checked out, and may be financially charged the cost of the tool.
- Users are not allowed to take tools out of the Makerspace without getting permission from a steward first (up to their discretion).
- All users must return the items they have checked out themselves and may not send a friend to do it on their behalf.

Safety Policies

- The Makerspace has first aid kits and fire extinguishers in the space.

- Before starting a machine, always check it for the correct setup and if possible, check to see if the machine is clear by operating it manually. You must read the operational manual and safety manual for a specific machine before operating the machine, whether you have previous experience with similar equipment outside the makerspace.
- No weapons are allowed in the Makerspace, nor are weapons allowed to be created inside the Makerspace or with Makerspace materials.
- Do not make alterations or perform repairs on any equipment without specific permission.
- Operate only those machines and equipment you have been specifically trained and qualified to use.
- Heating up of PVC is not allowed in the Makerspace

General Safety Quiz

Additional Information: Personal Protection Equipment (PPE) and Hazards

Hearing Protection

Many manufacturing processes are very noisy and can result in permanent deafness if suitable precautions are not taken. For example, hand grinders produce very high noise levels. Also, people using a pneumatic chisel or power saw are likely to be exposed to noise levels that can seriously damage their hearing.

REMEMBER: The danger is irreversible - a hearing aid will not replace lost hearing.

PPE, including earplugs and noise-reducing headphones, are available in the tool checkout room for Makerspace users and are free of charge. The foam earplugs fit inside the ear canal and can be reusable or disposable according to the manufacturer's instructions. Note that reusable earplugs can be distinguished by their ability to expand after being pinched. If they do not expand, throw them away. They may sometimes be attached to a cord to prevent being lost. Ear plugs may not be suitable for people with a history of ear problems (Figure 1).

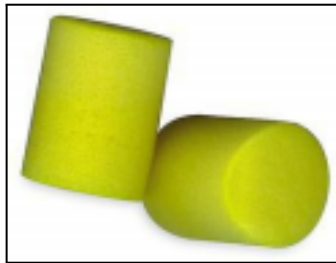


Figure 1. Disposable ear plugs are made of soft, noise-absorbing foam.

For the noise-reducing headphones, only wear them when absolutely necessary; otherwise, they may make it more difficult to be aware of your surroundings, or hearing that a tool is operating correctly, et cetera.

Selecting Hearing Protectors

There are three main things to consider when selecting hearing protectors:

1. Will they give sufficient protection? The frequency, content, and volume of the noise must be considered. The information should be used to ensure that the equipment is suitable.

2. Are they right for the working conditions? If processes are dusty or dirty, soft plugs, which need to be molded by hand, could lead to ear infections unless good personal hygiene is observed.
3. Are they right for the wearer? Long hair or thick spectacle frames may prevent the muffs from forming a close seal to the head or otherwise reduce the muffs' effectiveness.

Using Hearing Protectors

Hearing protectors will only give proper protection if they fit, are worn properly, and are used whenever the wearer is exposed to high noise levels. The more comfortable they are, the more likely it is that wearers will use them properly. Taking them off even for a short time when noise levels are high can quickly allow hearing damage to occur.

REMEMBER: Hearing protectors that don't fit, don't protect!

Eye Protection

Many Makerspace activities present a risk of injury to the eyes and face. For example, protection will be needed against flying chips or particles when using an angle grinder, against molten metal splash when using welding equipment, and against corrosive or irritant chemical splashes when working with epoxy resins and concrete.

REMEMBER: Personal protective equipment (PPE) is always the last line of defense; wherever possible use face shields and machine guards.

Selecting Eye Protection

There are three types of eye and face protectors available: spectacles, goggles, and face shields.



Hazardous Materials

Federal and state law dictates that employers must provide information to their employees about hazardous materials and chemicals that employees may be exposed to in the workplace. The vehicle for that information is the Material Safety Data Sheet

(MSDS). A Material Safety Data Sheet (MSDS) is used by chemical manufacturers and importers to convey both the physical hazards (pH, flashpoint, flammability, etc.) and the health hazards (carcinogenicity, teratogenicity, etc.) of their chemicals to the end user. The Cal- OSHA MSDS format has the following required categories that must be on every MSDS:

- Manufacturer's Name and Contact Information
- Hazardous Ingredients/Identity Information
- Physical/Chemical Characteristics
- Fire and Explosion Hazard Data
- Reactivity Data
- Health Hazard Data

Working with Hazards

1. If you have not worked with a particular material before, check the hazardous materials' MSDS for any specific precautions to be taken while working with the material.
2. Spilled materials are to be cleaned up properly, promptly, and completely, whether liquid or solid. If immediate cleanup is not possible, the area must be barricaded to prevent accidents.
3. Follow all appropriate precautions when working with solvents, paints, adhesives or other chemicals. Use appropriate protective equipment.
4. Always store oily rags in an approved metal container.