

HAMILTON COLLEGE STUDIO ART DEPARTMENT
Environmental, Health and Safety (EH&S) Handbook
CERAMICS

Purpose:

To serve as a supplemental EH&S guide and reference for students.

General Responsibilities:

- Students—Understand and adhere to all safe work practices as communicated by faculty and staff, and as outlined in this document.
- Student Monitors—Understand safe work practices of the department and assist faculty and staff with implementation and oversight.
- Faculty and Staff—Train students and other staff to ensure compliance with all EH&S regulatory requirements.
- Materials Technician—Coordinate and act as liaison among EP&S Director, department faculty, and students to ensure compliance with EH&S obligations.
- Director of Environmental Protection & Safety—Oversee college EH&S requirements, conduct audits, maintain and update compliance documents and plans, train faculty and staff, collect and dispose of departmental waste, and assist with all other regulatory matters.

Students:

- Must be enrolled in a class in order to use the department's facilities and equipment.
- Must understand all terminology used in this handbook.
- Must understand safety and health hazards associated with chemicals (i.e. through MSDS's).
- Must use equipment and materials for their prescribed purposes only.
- Must know and understand the location and use of safety equipment, e.g. safety showers, emergency eyewashes, fire extinguishers, and emergency exits.
- Must immediately notify the appropriate authority of any unsafe practice or condition, e.g. faculty, Materials Technician, Custodian, student monitor, or campus safety. All chemical spills must immediately be cleaned and disposed of properly.
- Are responsible for cleaning and maintaining all workstation, countertops and sinks, and clearing and discarding all trash after each work session.
- Are responsible for maintaining clean, obstruction-free work areas and access to emergency equipment, exits, electrical equipment, and passageways. All aisle-ways must be kept free of chairs, boxes, equipment, and waste receptacles.
- Must not engage in horseplay, practical jokes or other behavior that might confuse, startle, or distract other students.
- Must wash hands frequently during work session, after contact with any hazardous materials, before eating, drinking or smoking, and before leaving the studio.
- Must not eat or drink in the studio.
- Must not pour any hazardous or solid waste down a sink drain or allow it to evaporate.

CHEMICAL HAZARD INFORMATION

Chemical Hazards

Academic ceramics studios typically contain a wide variety of chemical materials, each with different hazard properties:

- Clay in its dry form contains crystalline silica (inhalation hazard).
- Other clay components (like talc and iron oxide) contain either/both hazardous dusts or toxic metals (inhalation, ingestion, contact hazards).
- Glazes, underglazes and mason stains often contain toxic metal pigments (ingestion, contact hazards).
- Combustible paints contain solvent carriers (inhalation hazards).
- Flammable spray paints contain propellants (inhalation, ingestion, contact hazards).



While ceramic chemical labels and warnings should always be looked at and consulted, more important and thorough safety information can be obtained from MSDS sheets located within the studio (or through the Materials Technician or faculty members)

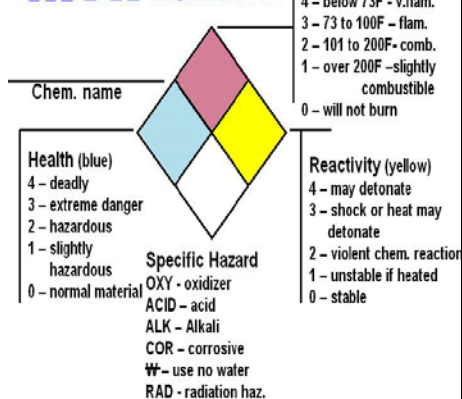


Labeling of Hazardous Art Materials Act (LHAMA)

Many ceramic chemicals have additional chemical safety labeling under the LHAMA. Generally speaking, art materials with the AP seal are considered to be low hazard or non-toxic. Further, art materials with the CL seal, or California Proposition 65 icon, are considered to have some hazardous properties or ingredients that necessitate additional safety precautions. See examples below. You should consult the chemical's MSDS for additional safety information, as per the above.



NFPA Label



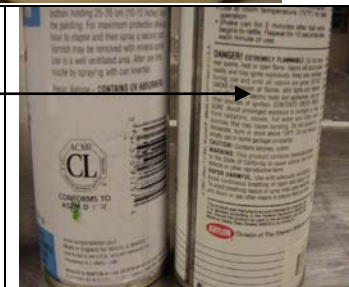
OSHA HAZCOM Labeling & Info

Chemicals that are transferred to other secondary containers typically have an NFPA Hazcom label applied to them. These labels provide information in accordance with the detail on the left. See examples below.



Other Chemical Labeling Information

Information regarding chemical safety on original containers from the manufacturer can also be regularly found on container labels. Students should be familiar with all 3 forms of chemical safety information via the labeling strategies noted herein.



Restricted Chemical Materials in Ceramics

Chemical materials in Ceramics that contain EPA-regulated metals (barium, cadmium, chromium or lead), and other metals like cobalt, copper and zinc, are of special concern from both a safety and environmental perspective (especially if the MSDS identifies both the **CL** and **CA Prop 65** icons). However, the metal pigment named “Red Lead” is a restricted material and may not be used within the Ceramics studio for any purpose.

PHYSICAL HAZARD INFORMATION

Physical Hazards

Academic ceramics studios also typically contain a variety of equipment types that represent both a physical hazard (from the equipment itself) and/or an additional chemical hazard from the materials they process. See examples below.



Ceramic Kilns

Gas-fired (left picture) and electric-fired kilns use high temperatures to remove water during the creation of ceramic wares. As such, high heat, electricity, natural gas, carbon monoxide, and the generation of toxic vapors, are just some of the physical/chemical hazards associated with ceramic kiln use.



Sand Blasting & Etching

The sand blasting and etching devices depicted on the left and right rely on the abrasive properties of sand, propelled by high velocity through compressed air. As a result, both the physical hazards associated with the abrasive materials, combined with the respiratory hazards associated with silica dusts, makes sand blasting and etching another important physical hazard.



Clay Mixer

The clay mixer typically utilizes some residual wet clay, and mixes it with both water and virgin/dry clay ingredients (such as silica/flint, alumina, talc and other fluxing agents). The result of this process is new pottery clay. But this process is hazardous both because it's inherently dusty (thereby generating airborne respiratory hazards), and due to the electrically powered augers that knead/mix the clay materials together.

Other Physical Hazards & Summary

Other types of equipment used in ceramics, such as the bench grinder to the right, have additional physical hazards that are equipment specific. For example, bench grinders have both flying debris hazards, as well as nip/pinch points.






For many equipment-related physical hazards in ceramics, the studio has developed "standard operating procedures" regarding their safe use, either as a part of a course syllabus or other handout, or as a standalone safety document. You **MUST** consult these sources of information, your faculty member, or the Materials Technician before you use any equipment with a physical hazard. See the equipment/physical hazard SOP for the bench grinder below.

Additionally, equipment with physical hazards that have been taken out of practical day-to-day use, or are deemed to be dangerous due to some material defect, should be secured in a way that they cannot be used (such as a lockout/tagout device—depicted to the right).








ENGINEERING/VENTILATION & CHEMICAL STORAGE CONTROL MEASURES

Since the ceramics discipline is very dependent upon dry chemical ingredients, there are host of different engineering and ventilation control measures to reduce the risk of exposure. In addition to the ventilation hoods over the kilns in the pictures above, the ceramics studio has the following additional ventilation system:

	<p>Measuring/Weighing Ventilation</p> <p>The 3 ventilation intakes depicted to the left are designed to provide a small amount of negative exhaust ventilation when individuals are working with dry chemical powders in small quantities. It's important to note that this system is only effective within a short distance from the intakes, like during the measuring or weighing process. As needed, dependent upon the quantity of measuring/weighing or the toxicity of the dry chemicals in use, other control measures (like the use of personal protective equipment) might be warranted, as outlined below.</p>	
	<p>Clay Mixing Ventilation</p> <p>When the clay mixer is used, a local exhaust ventilation system is utilized to draw silica-based dusts away from the clay mixer and out of the room itself, for HEPA filtration by the main body of the device. It is important to note that this system filters the air, rather than simply exhausting it to the environment, so it cannot be used for other chemical ventilation purposes involving gases or vapors. Also, individuals using the clay mixer under ventilation controls are required to wear personal protective equipment—namely, an air purifying respirator.</p>	
	<p>Paint Spray Booth</p> <p>The ceramics studio also has a paint spray booth at its disposal, which exhausts contaminated air out of the building. The intent of the booth is to provide negative exhaust ventilation during the use of aerosol spray paints. But the booth can also be used, for example, when 2-part epoxies are being utilized with other chemical exposure risks.</p>	
	<p>Chemical Storage</p> <p>All chemical materials that are flammable or combustible in nature should be stored in the studio's 45-gallon flammable storage cabinet when they are not in use. This shared storage cabinet must also be kept neat and clean at all times.</p>	



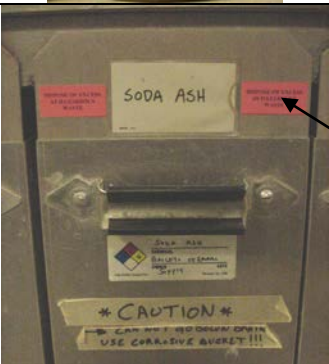







PERSONAL PROTECTIVE EQUIPMENT (PPE)

General Attire		Clothing should cover arms, legs, and torso. Wear close-toed shoes (no sandals, crocs).	
Eye Protection	While the handling of dry ceramic chemicals generally does not require the use of eye protection, the use of certain chemicals with splash or toxicity hazards, or the use of equipment with flying debris hazards, requires the use of safety glasses.		
Hand Protection	Again, while the handling of dry ceramic chemicals does not normally represent a skin/hand hazard, the use of painting solvents or glazes with toxic metal components should employ hand protection, via single-use nitrile gloves. Also, use thermally protective gloves when contacting or handling ceramic pieces recently fired from the gas or electric kilns.		
Respiratory Protection	Use ventilation controls as your first, best way to minimize exposure to ceramic dust hazards. The voluntary use of an N-95 dustmask is acceptable as a safe work practice when dealing with low hazard or fugitive dusts on an intermittent basis. The use of the clay mixer requires full inclusion in the college's respiratory protection program, as well as an air-purifying respirator with HEPA P-100 filters.		

ENVIRONMENTAL PROTECTION & COMPLIANCE

The Management of Ceramic Studio Wastes

Across the many chemicals routinely used in the ceramics studio, there are 4 general classes of materials regulated as hazardous waste by the EPA, each of which must be managed in accordance with the following:

	<p>Oxidizers</p> <p>There is only 1 oxidizer in the ceramics inventory, where excess material must be managed as hazardous waste. The chemical is manganese dioxide, and it is identified with a “red sticker”. Excess wastes must be contained within the hazardous waste collection area between the ceramics working table.</p>	
	<p>Corrosives</p> <p>There is only 1 corrosive chemical in the ceramics inventory, where excess material must be managed as hazardous waste. The chemical is soda ash, and it is identified with a “red sticker”. Excess wastes must be contained within the hazardous waste collection area between the ceramics working table.</p>	
	<p>Flammable Aerosol Paints (& Related Materials)</p> <p>Aerosol paint cans that are not entirely used up, and have some remaining propellant or flammable materials within, must be managed as hazardous waste. Other flammable solvents or paints that have not been entirely been used up are also hazardous waste. Any of these waste streams must be contained within a 5-gallon yellow bucket within the hazardous waste collection area depicted to the right.</p>	
<p>Chemicals With Toxic Metal Components</p> <p>Ceramic chemicals with some toxic metal component are the largest and most diverse class of materials that must be managed as hazardous waste in the studio. Generally, all materials with a toxic metal are identified with a “red sticker”, as in the pictures below. Excess wastes from any of these chemicals must be contained within the hazardous waste collection area depicted to the right.</p>		
<p>Metal Pigments</p> 	<p>Metal Stains</p> 	<p>Glazes With Metals</p> 

EMERGENCY EQUIPMENT—KNOW THE LOCATION OF THE FOLLOWING...



Emergency Eyewash Equipment:

- Emergency Personal Eyewashes (bottled) and a plumbed Emergency Eyewash Station (sink-mounted) are located within the main Ceramics studio.

First Aid Kit

- A first aid kit is also located within the main Ceramics studio.



Chemical Spill Kits:

- 2 spill kit types are located in List.
- The larger acid and solvent spill kit (left) is located in the Materials Technician's office, and smaller spill buckets are located throughout List near flammable storage cabinets.

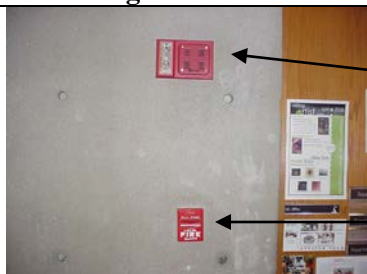


Emergency Shower

2nd floor List Printmaking corridor.

Fire Extinguishers

Main hallways/exit corridors of List, and in all studios.



Fire Alarm Visual/Audible Enunciators & Pull Stations

- There are 4 fire alarm enunciators and pull stations on the west side of List (all near building exits), by or within rooms 111, 114, 115b and 230.
- In the event of a fire alarm signal, evacuate the building and proceed to your designated initial gathering point.
- In the event of a fire or some other emergency warranting immediate Campus Safety notification (and in the absence of direct access to a phone), use the pull station to call Campus Safety to the scene.

Emergency Phone #'s

Campus Safety—4000 (emergency line), 4141 (non-emergency line)
Physical Plant—4500
HCEMS—4000
Environmental Protection & Safety—4647
Materials Technician—4827

Ceramics Studio Use & Misc. Safety Considerations

- While studio art activities often require independent work, working alone or without supervision is generally discouraged. Further, studio art activities that utilize hazardous chemicals or dangerous equipment may be subject to other restrictions, as per the below.
- All List studios are open Mon-Fri 9 am to midnight, and Sat/Sun noon to midnight. Students are not to be in the building or studio areas outside of these time frames.
- The electric/gas kilns may only be used by students under the direct supervision of the Materials Technician or their Professor, and the clay mixing equipment may never be used by students.
- The Safety Agreement in attachment A below may be used by the Studio Art department to help facilitate a safe and environmentally friendly place of working and learning.
- Student studio monitors with additional supervisory roles for the art department, and who are compensated for their efforts, require additional training beyond the scope of this handbook.

ATTACHMENT A
CERAMICS STUDIO SAFETY AGREEMENT FOR STUDENTS

Hamilton College Student Safety Agreement Form

Hamilton College is committed to providing *all workshop/studio users* a safe environment in which to work and learn. Students must be well informed of the chemical and physical hazards associated with workshop/studio activities, and conform to the following rules established for the use of these facilities:

1. The use of any hazardous chemical material, or the use/operation of any equipment/machinery/power tool, must be approved by your instructor.
2. Unauthorized facility use, horseplay or pranks are strictly prohibited in the workshop/studio.
3. Report all injuries to your faculty member or instructor immediately. Any student injured in a workshop or studio must be seen by the Health Center.
4. Eating, drinking or smoking in a workshop or studio where chemicals are actively in use is strictly forbidden. Eating or drinking is acceptable in suitable non-chemical use or storage areas, or as specified by your instructor.
5. Everyone who uses a workshop or studio must know the locations of emergency equipment, such as fire extinguishers, fire blankets, eyewashes, showers, first aid kits, spill kits and telephones.
6. Wear the appropriate attire when working with chemicals or dangerous equipment in a workshop or studio. Wear the necessary Personal Protective Equipment as specified by your instructor, and do not wear loose clothing, dangling jewelry, or your hair in an unconfined manner when using equipment that may catch these loose items.
7. When using equipment, machinery or power tools, obey the instructions, Standard Operating Procedures, or manufacturer's recommendations/warnings governing their use at all times.
8. All hazardous chemical materials must be properly used, stored, labeled and disposed of.
9. Know the flammability, reactivity, health hazard and special hazards of any hazardous chemical material you must use. Report any signs or symptoms indicating a potential overexposure to a hazardous chemical to your instructor.
10. After using chemicals in the workshop/studio, always wash your hands prior to leaving, even after wearing protective gloves.
11. Dispose of hazardous chemical materials in a manner specified by your instructor. Do not use sinks to drain dispose of chemical materials. Sinks are only to be used for rinsing or other hygienic purposes. Do not dispose of any residual chemical waste materials unless you are certain that the waste stream may be discarded as trash/solid waste. Report all spills to your instructor immediately.
12. Maintain the areas you use in the workshop/studio in a tidy, neat, and well-kept manner. Since you individually are in the best position to know what chemicals or products are in use during certain workshop/studio activities, do not assume that others within your class, your instructor's, or college support staff will clean up messes they were not responsible for.

I, _____, have carefully read the workshop/studio safety agreement for Hamilton College and understand that these rules will be rigorously and impartially enforced. I also understand that willful and/or repeated violations of these safety rules will result in my being dismissed from the class.

Student Signature:

Date:

Class Name/Section & Instructor:

STUDIO ART EQUIPMENT/PHYSICAL HAZARD SOP

Equipment Name:

- Dayton Bench Grinder Model 2LKR9

Principal Department & Location:

- Studio Art, Ceramics Studio, List 115

Link To Manf. Operating Instructions:

- <http://www.grainger.com/ec/pdf/Dayton-Bench-Grinders.pdf>

Other Information:

- [Link to OSHA information](#)



Identified Health and Physical Safety Hazards:

- | | |
|---|---|
| <input checked="" type="checkbox"/> Respiratory/Nuisance Dust Hazards
<input checked="" type="checkbox"/> Flying Debris/Eye Hazards
<input type="checkbox"/> Chemical Splash Hazards
<input type="checkbox"/> Cut/Laceration Hazards
<input checked="" type="checkbox"/> Point of Operation/Nip/Pinch Hazards | <input checked="" type="checkbox"/> Rotating Parts/Entanglement Hazards
<input checked="" type="checkbox"/> Noise Hazards
<input type="checkbox"/> Electrical Hazards
<input type="checkbox"/> Other (describe): |
|---|---|

Hazard Control Strategies:

Primary Engineering Controls:

- ☒
- Guarding
-
- ☒
- Shielding
-
- ☒
- E-Stop/Anti-Restart

Describe:

Spindle guard; work rest guard; tongue guard
 Eye shield near point of operation
 At machine

Other Engineering Controls

- ☐
- Ventilation
-
- ☐
- Interlocks
-
- ☒
- Other:
- Nip Control**

Describe:

Maintain work rest at 1/8" gap and tongue guard at 1/4" gap

Administrative Controls:

- ☒
- Training
-
- ☒
- Signage
-
- ☒
- Other

Describe:

Required prior to use
 Labeling on the machine
 Shop/equipment SOP posted; no jewelry/loose clothing/unrestrained hair

PPE (check all that apply):

- ☒
- Safety glasses
-
- ☐
- Chemical goggles
-
- ☐
- Face Shield
-
- ☐
- Apron/Lab Coat
-
- ☐
- Gloves/Hand Protection
-
- ☒
- Ear plugs/muffs
-
- ☒
- Other:
- N95 Dustmasks**

Describe:

Impact resistant safety glasses are required during use

 Face shield to protect the face/neck should be used as necessary

 Plugs/muffs recommended for any use, required for prolonged use (>1 hour)
 Voluntary use N95 dustmasks recommended during prolonged use only

Emergency Controls:

- | | | | |
|---|--|--|--|
| <input type="checkbox"/> Chemical Spill Kit | <input checked="" type="checkbox"/> First Aid Kit | <input checked="" type="checkbox"/> Communications | <input checked="" type="checkbox"/> LOTO |
| <input checked="" type="checkbox"/> Fire Extinguisher | <input type="checkbox"/> Emergency Shower/Eye Wash | <input type="checkbox"/> Emergency Power Kill Switch | |

SOP Approved By:

Name	Signature	Date