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***Safety Rules and Procedures  
for  
KCAI Ceramics Department  
Equipment, Materials, and  
Facilities 2020-21***

**Safety Rules and Procedures for  
KCAI Ceramics Department Equipment, Materials, and Facilities**

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**Failure to use equipment, materials, and facilities properly and respectfully will result in the loss of opportunity to use them.**

## ***1. Security***

- Call 816 931-6666.
- Guards have first aid materials.
- In an emergency call 911 immediately.
- The address for the ceramics building is 4410 Warwick.
- Do not prop open doors to the outside. Keep them closed for safety purposes.

## ***2. First aid***

- There are 2 fire blankets located on the wall in the kiln room.
- An eye wash station is located in the glaze room.
- There are two first aid kits; one upstairs outside of the classroom and one at the bottom of the stairs on the lower level, to the right as you go around the corner to Cary's office. If more first aid materials are needed, call security at 816 931-6666.

## ***3. Fire extinguishers and Alarms***

There are several fire extinguishers throughout the building; familiarize yourself with them. The following is a list of fire extinguishers locations throughout the building:

Studio Main level (east side, Warwick)	right of the sink
Studio main level (west side, FD bldg..)	left of the clay room door
Clay room	left of the exit door to dock
Glaze room	left of sink
Kiln room	right of barrel electric kiln #1
Kiln room	left of electric kiln barrel #5
Mezzanine	left at the top of stairs
Plaster/Equipment room	left of band saw
Lower level studio	right side as you enter the room

**4. Fire alarms** - Fire alarms are located in the following areas.

Main entrance	right as you enter the main double doors
Stairwell entrance (main level)	right as you enter stairwell from main level going down
Studio Warwick (east side)	right of the northeast exit door to Warwick
Clay room	left of the exit door to dock
Mezzanine	tops of steps, left
Kiln room	left of the exit door to outside
Lower level stairwell	to the right as you enter the stairwell, going up
Lower level studio	left of door as you exit to outside (toward Foundation)

## **4. Clothing**

- Open toed shoes are dangerous.
- No bare feet.
- **Tie back loose clothing and hair when you use machinery.**

## **5. Personal safety equipment**

All students must own and use:

1. Respirator masks and cartridges/filters for dust particles and organic vapors.

The proper dust particle filter for the ceramics department will be labeled with the identification **P-100** and you will also need **organic vapor** filters. The organic vapors filters protect you when using lusters, china paint mediums, and other solvent-based materials. It's cheapest to buy a filter that contains protection for both particulate and vapors.

The following facepiece respirator and filters by 3M brand are recommended:

- 3M 6200 Series Half Facepiece Reusable respirator (does not include filters)
- 3M Organic Vapor/Acid Gas Cartridge/Filter 60923, P100 Respiratory Protection –this filter will simultaneously protect against vapors **and** ceramic dust particulates.

These may be available in the KCAI art store and are on Amazon. Be sure to buy the correct size – small, medium, or large.

There are other brands that make these items, be sure to buy the P100 and organic vapor/acid gas filters. They come as a combination cartridge and also as separate units that can be switched out on your respirator.

When wearing, adjust the straps so that air is not entering around the seal of the respirator to your face.

2. Extra respirator filters/cartridges.

When you can no longer suck air, or when you can smell or taste dust or fumes, it is time to replace the filter/cartridge.

3. A ziplock plastic bag for storing your mask and filters.

The filters will quickly become inefficient if left unprotected from dust. It is also important to wash or wipe your mask after each use. Do not get the cartridges wet.

4. Safety eye goggles for use when using the grinding wheel and other activities that can cause flying bits of matter.

5. Heat resistant kiln gloves.

6. Rubber and/or latex gloves for use when mixing and using glazes, overglazes, epoxy, and other materials that are toxic through the skin.

7. Work gloves to protect hands when using machinery and doing heavy work.

Check with your instructor for more information about the appropriate cartridge before using materials that produce toxic fumes with as non-ceramic materials that are solvent based or toxic in any way.

## ***6. Housekeeping, materials, dust, fumes, and ventilation***

- The **main on/off ventilation switch** is located in the lobby, clay room, and glaze rooms. It controls ventilation for the ALL areas EXCEPT the plaster lab.
- The **plaster lab ventilation switch** is located in the equipment room across from the band saw. Press the BLOWER START button to start the vent system. (On the panel, the power switch should be lit green at all times. If it is not, you cannot start the system. ASK a faculty member to help you.) You will need to use this for dust as well as vapors, for example when applying lusters. Pull the vent hoods very close to your work area to keep dust and vapors flowing directly into the hood. Be sure the baffle on the hood is open – the baffle lever should be turned to be parallel with the trunk of the hood.
- Make sure the system is turned on when you are using equipment or performing a procedure that creates dust.
- If you notice the ventilation system is on and no one is using it, please turn off the system.
- When handling materials AVOID making unnecessary airborne dust and fumes! This is one of the best ways to keep the air in the department clean.
- Basic housekeeping: Each student is responsible for keeping their individual studio space clean and for cleaning up after using community areas such as the clay room, the plaster room, the glaze room, the kiln room, etc.
- Ceramics students sometimes use materials other than ceramic ones that create toxic vapors and/or can be ingested through the skin, such as epoxies, adhesives, rubbers, alginates, spray paints, and the like. Read the label to thoroughly understand the hazards/toxicity of a product and use recommended precautions. Use your personal safety equipment such as masks, gloves, and the like. Use these materials in ventilated areas. **You must ask a ceramics faculty instructor before using materials that create noxious fumes, i.e. tool dip, epoxies, adhesives, paint, etc.** If given permission to use these materials, you must use them with the vent system. You may be required to find a better place to use the material than the ceramics department. Do not submit fellow students to hazardous/toxic vapors and materials.
- **The use of resins are prohibited in the ceramics studio.**
- No hot wax allowed in the studio.

## ***7. MSDS (Material Safety Data Sheets) Binders***

Refer to the Material Safety Data Sheets (MSDS) binders available in the lobby and in the lower level studio, which have extensive safety and toxicity information on materials used in the department.

## **8. Mixing and using clay materials**

### **(Clay Mixer)**

- Clay particles are very fine and can cause silicosis and other diseases.
- You must protect your lungs from inhalation when mixing clay, cleaning, and other activities where dust is produced, by using the respirators as described above.
- Each student is responsible for helping to protect the environment from airborne dust by refraining from generating excess dust.
- The department's required Materials and Process course introduces students to the toxicity of individual ceramic materials used in the department.
- Wear an OSHA approved respirator for silica dust (p-100 filters).
- Turn on the ventilation system in the clay room or the main lobby.
- Close doors to the mixing room.
- Measure and weigh materials under vent hood located in front of the outside doors.
- When handling materials avoid making unnecessary airborne dust.
- Clay mixer lid **MUST** be in the closed position (down) when mixing and removing clay from the barrel. Failure to follow this rule can result in severe injury.
- When removing clay never by-pass the automated shut off system.
- Thoroughly clean the mixer after unloading your clay. Use a scraper and a sponge.
- Sweep and mop the floor of the mixing room.
- No food or drink allowed in the clay mixing room.
- **Soldner mixer: Add water first, then dry materials.**
- When using Pug Mill:
  - Pug mill is for use only with clay from the mixer – not to reconstitute scraps.
  - When placing clay into the hopper, do not reach fingers into the grates.
  - To turn on the machine, first push up to “on” the power disconnect switch at the top right of the machine.
  - Then turn on the auger switch – located at the lower right side of the machine.
  - If you wish to de-air your clay, push the start button on the de-air switch.
  - After pugging – Turn off all switches and clean the machine and the area.
  - Keep clay inside the pug mill from drying out by putting a wet sponge in the hopper, covered by plastic, and a wet sponge and plastic on the end.
  - Pay special attention to this!

## **9. Mixing plaster**

- Plaster particles are very fine and can cause respiratory illness.
- You must protect your lungs from inhalation when mixing plaster and other activities where dust is produced by wearing your respirator and P100 filters.
- Refer to the Material Safety Data Sheets (MSDS) binders available in the lobby and the lower level studio, which have extensive information on materials used in the department.
- Turn on the plaster lab ventilation system in the tool room by pressing the Blower On switch.
- Mix plaster under a vent hood. Open the baffle on the duct so that the baffle lever is parallel with the trunk.

- When handling materials avoid making unnecessary airborne dust.
- When you are finished working close the baffle on the vent hood.
- When you are finished sweep and mop the tabletops and floor.
- Throw away empty plaster bags and other trash.
- No food or drink allowed in the plaster room.

## **10. Band saw**

- Wear an OSHA approved respirator for silica dust (p-100 filters).
- Plaster particles are very fine and can cause respiratory illness.
- You must protect your lungs from inhalation when cutting plaster.
- Turn on ventilation system in lobby or glaze room.
- Wear eye and ear protection.
- **Make sure** the blade guard is adjusted to the appropriate height according to the size of the material you are using.
- Keep hands and hair away from the saw. **Tie back hair, remove jewelry, and restrain loose clothing.**
- Hold material firmly and feed into the blade at a moderate speed. If there is a problem, turn off the saw.
- Keep your hands and fingers free of the blade.
- Do not force the tool. Make “release” cuts before cutting long curves.
- Never leave the saw unattended when it is switched “ON.”
- Use the Central Shop for cutting metal. Do not cut metal on the ceramics dept band saw.
- Be mindful of alternative sawing options, like hand sawing or using a surform.

## **11. Mixing and using glaze materials**

- You must protect your skin from contact with glaze materials as the toxicity can be ingested through skin.
- Wear vinyl or latex gloves when measuring materials, mixing and applying glazes.
- Glaze particles are very fine and can cause silicosis and other diseases.
- You must protect your lungs from inhalation when measuring materials, mixing and using glazes, cleaning, and other activities where glaze dust is produced.
- Wear an OSHA approved respirator for dust (p-100 filters).
- Turn on the ventilation system.
- Place one of the ventilation ducts over your work area. Open the baffle on the duct so that the lever is parallel with the trunk.
- If there is not enough suction, close some of the other dampers that are nearest your work area, this will increase the suction to your vent.
- When handling materials avoid making unnecessary airborne dust.
- When you are finished close the baffle on the vent hood you were using.
- After mixing and using glazes, thoroughly wipe counters and clean floors.
- No food or drink allowed.
- The use of hot wax is not allowed.
- The use of any lead product in a glaze is not allowed (except china paint, see below).

This includes commercial glazes that are marked safe that include lead as an ingredient. When buying commercial glazes, including online and at garage sales, check ingredients carefully.

- Make sure lids are tight on all containers.

## ***12. Applying and firing lusters, china paints, and decals***

- Many china paint colors **contain lead**. It's often hard to keep track of the lead content in the many colors that are available, so the departmental policy is to treat all paints as if they contain lead.
- Wear gloves so you do not get china paints on your skin.
- Wear P-100/organic vapor filters on your respirator so that you do not inhale powder or potential fumes from the china paint medium you select. Use vent trunk that is located in close proximity to your work so that fumes are collected and vented.
- The fumes released during firing are toxic so proper kiln venting is critical. Upon firing, the paints may or may not be food safe unless testing is performed, so **do not use china paints on areas of utilitarian ware that may come into direct contact with food**.
- Apply the same care to using and firing the mixing mediums as you do to the china paints.
- Lusters are mixed with solvents that are **highly toxic** to inhale while applying and firing. When applying lusters, use gloves, an organic vapor filter on your respirator, and a vent trunk that is located in close proximity to your work so that fumes are collected and vented. **Do not apply lusters to areas of utilitarian ware that may come into direct contact with food**.
- Some silk screened and digital decals contain lead. Treat all screened and digital decals as if they do contain lead unless you have communicated with the supplier. Treat all vintage or second party decals as if they contain lead. Use gloves when applying the decals. **Do not apply digital or screened decals to ware in areas that may come into direct contact with food. (Laser toner decals made on the photocopier machine in the department MAY be applied to surfaces that come into contact with food. These are the only decals that fall into this category.)**
- When firing lusters, china paints, and digital decals, **always be sure that the kiln lid and peeps are closed from the beginning of the firing and turn on the vent system**, to insure that fumes are properly vented.

### **SUMMARY - When applying, firing, and using ware with china paints, lusters, digital decals:**

1. Do not eat or drink.
2. Wear protective clothing.
3. Wear latex gloves and respirator with both P100 and organic vapor filters.
4. Work under the vent hoods under/behind the stairs in the plaster lab **only**, so that dust and fumes are collected and drawn away from contact with you and other students.
5. Work on newspaper so that table surfaces do not absorb toxic substances. After your work session, dispose of the newspaper safely into trash receptacles.



7. Fire and use kiln vents correctly. Be sure that the kiln lid and peeps are closed from the beginning of the firing and turn on the vent system, to insure that fumes are properly vented. Kilns #6 and #7 are for the use of these materials. If you must use another kiln, seek permission from the faculty.

8. Be aware of concerns regarding use of decals, luster, and digital/screened decals on utilitarian ware that may come into contact with food. Do not apply them in these areas.

8. After your work session:
- Clean up your area very well.
  - Throw away newspaper and gloves.
  - Remove and clean protective clothing.
  - Wash your hands thoroughly.

### ***13. Spray booth***

- Turn on spray booth ventilation.
- Wear an OSHA approved respirator for particulate (p-100 filters).
- Wear eye safety goggles.
- Wear vinyl or latex gloves.
- No eating or drinking.
- Clean booth and floor when finished. Use a sponge.

### ***14. Sand blaster***

- Turn on main ventilation switch, located in the glaze room.
- Close both doors to the tool room to contain the noise.
- Wear an OSHA approved respirator for silica dust (P100 filters).
- Wear safety eye goggles.
- When changing blasting media, wear a respirator with P100 filters.

### ***15. Kiln Shelf Care: Downdraft table and Angle***

#### ***Grinder***

- Grind shelves on the downdraft table only.
- Ensure work area is clean, free from slip, trip, and fall hazards.
- Ensure the floor around the work area is clean. Do not clean shelves and operate grinder while standing on wet floors.
- Clear off the down draft table so that you have plenty of room to work freely.
- No drinking or eating in the grinding area.
- Wear safety glasses or goggles, a respirator with P100 particulate filter, and hearing protection to guard against hearing loss.
- Wear snug fitting gloves.
- Turn on the ventilation system, located in the glaze room, and close both doors to the tool room to contain the noise.
- First knock off large glaze chunks from shelves with a rubbing brick, or use a hand chisel at a shallow angle.
- Then remove smaller chunks using the hand held angle grinder.

- To prepare for using the hand held angle grinder:
  - Do not wear jewelry or other items that could become entangled in moving parts.
  - Avoid wearing loose clothing or secure loose clothing very well.
  - Tuck, tie back, or secure long hair.
  - Wear snug fitting work gloves to avoid snagging on abrasive wheel or wire brush.
  - Keep the power cord away from the grinding wheel and the material being ground.
  - Have other people not involved in the immediate work step away a safe distance from the grinding area.
  
- To operate grinder:
  - Be sure that the safety guard is in place.
  - Stand to one side and switch on grinder.
  - Ensure the grinder operates smoothly and does not vibrate. Do not use wheels that are cracked or those that excessively vibrate. If you notice any unusual cracks, vibrations or noises, STOP and speak to a staff member.
  - You must ask staff to assist when changing grinding disks.
  - Use both hands to maintain hold of the grinder. The handle may be fitted to either side depending on your dominant hand.
  - Allow grinder to reach full rpm before grinding.
  - When grinding avoid placing excessive pressure on abrasive wheels.
  - Materials may become hot when grinding – wear snug fitting gloves and be alert.
  - Switch off grinder when done. Wait until the wheel has stopped turning before placing the grinder on the working surface.
  - Unplug the power cord from the power supply.
  - Store grinder in yellow box for kiln shelf kit.
  - Turn the downdraft table off.
  - Clean area, including floor, and dispose of grinder particles.
  
- **Washing shelves:** Wash only the tops of the shelves. Wipe or wash off the sides and backs of shelves. Loose kiln wash can fall onto ware in the kiln, marring a glaze surface.

For safety, there should always be another person around the area when you are operating a grinder, but be sure they are not in danger.

## ***16. Brick Saw Operation***

- **USE ONLY UNDER SUPERVISION OF FACULTY OR TECHNICIAN.**
- **Tie back long hair and loose clothing, remove jewelry that could get caught in the grinder. Very dangerous.**
- Close both doors to the tool room to contain the noise.
- Wear eye protection.
- Wear ear protection.
- Keep hands clear from blade.
- Guide fence must be used at all times.
- Never operate the saw without water being pumped to the blade.
- Be cautious of wet floor around saw.
- After your work session: dry the floor around your work area and be sure the brick saw is properly stored and locked.

## **17. Plaster Wheel Operation**

**Use only after receiving instructions for use by an instructor.**

- Tie back long hair.
- No loose clothing.
- Respirator and P100 filter required if lathing dry plaster.
- Clean up after yourself, including equipment and floor.

## **18. Electric Kilns**

- Be sure your name is on the kiln schedule if you are firing a kiln.
- If you cannot use a kiln, erase your name from the kiln schedule and announce to others that the kiln is open for use.
- All electric kilns are equipped with fans/vents that remove harmful fumes and vapors during all parts of the firing process, including cooling. **Be sure they are activated during the firing and are on until the kiln is cool (150 degrees F).**
- Keep lids, doors, and spy holes closed through the entire firing until the kiln is almost cool.
- Use shaded kiln glasses for protection against ultraviolet rays when observing cones in hot kilns.

### **Computer controlled electric kiln venting operation:**

- The controllers on computer controlled electric kilns have been programmed to recognize that a venting fan is in place. If the fan does not turn on see a faculty member.
- **DO NOT PROP KILN LIDS OR DOORS.** Be sure the spy holes are closed.
- These kilns are designed to be fired with the lids and spy holes closed at all times to insure proper ventilation and firing.
- Any moisture that may be driven off during firing will be removed by the vent system.
- If long candling periods are needed the “preheat” function may be utilized if Cone Fire mode is being used.
- If Ramp Hold mode or Vary Fire mode is being used, the first segments programmed can act as a preheat.
- Lids and doors being propped open can cause the computer system to activate an error code and stop the firing. Noxious fumes will also be released into the kiln room.

### **If Cone Fire mode is used:**

- The vent fan will turn on shortly after the Start button is pressed after a program is chosen.
- The fan will remain on until the kiln has cooled to 150 degrees Fahrenheit.

**If Ramp Hold mode (Skutt barrel kilns) or Vary Fire mode (Tucker Cone Art oval kilns) is used:**

- At the end of each segment entered the display board will say the fan is either **on** or **off**.
- If the display reads **off**, press any number on the keypad to turn the fan **on**, and then press enter, then proceed with programming the kiln.
- If the display reads **on**, press enter and proceed with programming the kiln.
- After all segments have been programmed with the fan **on**, press the Start button and the vent fan will turn on.
- The fan will remain on until the kiln has cooled to 150 degrees Fahrenheit.

**Test Kiln/Luster and China Paint kilns venting:**

The test kilns along with the luster and china paint kilns are located in a room that has its own window louver controls and overhead vent hood.

BEFORE FIRING, make sure the following vents are activated:

- The window louvers control switch is to the right of the door before you enter the room. Turn this switch so that the louvers are open (turn switch to UP position).
- Turn on the overhead metal vent for the room (sheet metal vent above barrel kilns) with the switch located to the right of kiln #6. It has an arrow pointing to it.
- Kiln #7 is a manual kiln so you must manually turn on the vent that is attached. It is labeled Environvent and is located to the left of kiln #7.
- Kiln #6 is a programmable kiln, so the fan is programmed into the firing schedule – see instructions above (page 10) under the section titled Computer controlled electric kiln venting operation.

***Loading and firing electric kilns***

- Record your firing schedule using a kiln log for future reference.
- Always visually inspect the kiln before you load. Make sure the floor and element tracks are clean and free of debris.
- Before you load, make sure all the switches/digital programs are turned to off.
- Use visual cones for every firing (computers don't always give an accurate reading).
- Carefully load your work. Be certain you are not scraping the sides of the kiln with the shelves or ware.
- Kiln shelves should not touch the side walls of the kiln.
- Make sure that your stiling system is consistent throughout your stack. Place stilts one above one another throughout the stack.
- Be sure to put excess bricks on the shelf and shelves in the rack. Put spies and lid props in the bins attached to the wall.
- Use only the lid props attached to the kiln.
- Be sure to close the peepholes for the entire firing and until the kiln is almost cool.

NEVER COUNT ON THE KILN COMPUTER ALONE TO TURN OFF THE KILN. YOU MUST USE VISUAL CONES AND BE THERE UNTIL THE KILN IS OFF.

- Do not put hard bricks, ware boards or ware, or other items on the lids of the kilns.

### ***After firing electric kilns***

- When items are cool enough, use the lid prop that is attached to kilns to prop open the lid. Do not use bricks.
- Make sure all kiln furniture is clean and free of debris before returning to the bins.
- Vacuum kiln bottom and element tracks carefully.
- Note any firing problems and report them to the technician.

### ***Electric Kiln Rules***

- Burn out is not allowed in the electric kilns, except in the use of paper clay. If you are using paper clay, you must check with your instructor before firing it in an electric kiln. Do not fire any non-ceramic materials, for example paper, wood, foam, straw, clothes, shoes, etc.
- Temperature limits:  
Check with instructors to find out which electric kilns can be fired to a maximum of Cone 6.  
No kilns may be fired over their temperature limit. **Ware fired at temps over cone 6 must be fired in the gas kilns.**

## ***Gas Kilns***

### ***19. Kiln wash and wadding***

#### Kiln wash recipe (for gas and electric kilns)

Alumina Hydrate	50
Silica	35
1 EPK or Tile 6	15

#### Wadding for soda/salt and gas oxy/reduction

1 Alumina Hydrate
1 EPK or Tile 6

#### Wadding Recipe for in between glazed surfaces

*This wadding will be hard and stuck to the glazes upon unloading, but if you soak it in water, or give it a couple of days to soak up some moisture, it will crumble away and your glazed pieces will come apart easily.*

95 Whiting
5 Bentonite

Instructions for using wash and wadding:

- Check kiln wash on each shelf and if necessary apply more wash before loading.
- Remove all wash from the bottom and sides of shelves or it may fall off during firing onto the ware below.

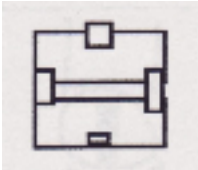
- Level the bottom shelves with wadding.
- Wadding is necessary only on the tops of posts. Do not wad the bottoms of posts.
- On subsequent kiln shelf layers, use the minimum amount of wadding necessary (usually the size of a grape is sufficient). If your wads are the size of golf balls, they may blow up and send debris all over your work.

## ***20. Kiln shelf storage***

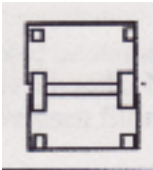
Your kiln shelves are fragile and expensive. Keep them clean and stored properly. Always store the kiln shelves vertically. If they are stacked flat they will crack.

## ***21. Three posting***

Shelves will warp down in the middle of the 2-posted side and down on the corners of the single posted side. To counteract this, turn shelves 180 degrees when warping becomes apparent



## ***22. Four posting***



When shelves become warped:

- Remove all wash using the wire brush attachment on the grinder.
- Turn the shelves over and rewash the new topside.

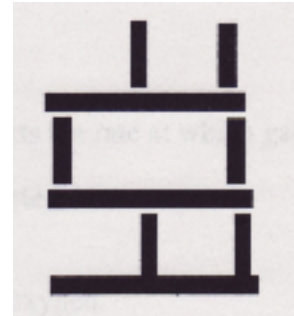
## ***23. Stacking furniture***

- Always place one post over another post.

ALWAYS:



NEVER



## ***24. Safety procedures for gas kilns***

### **Ventilation System Operation:**

- The kiln room is equipped with a ventilation system that removes harmful fumes and vapors that are associated with firing gas kilns.
- It is recommended before gas kilns are lit (especially if multiple gas kilns are being fired), turn on the ventilation system with a toggle switch located on a panel to the left of the barrel electric kilns.
- This system should remain on throughout the duration of the firing.

### **Refer to instructions for each kiln for specifics regarding lighting and firing individual kilns.**

Gas is explosive when it is concentrated into a sealed container with enough air for combustion. A kiln full of unburned gas is a bomb. NEVER try to light a kiln if you smell gas or suspect that a burner may have been filling the kiln with gas.

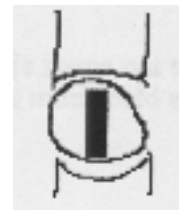
#### **If you suspect this:**

- Turn off the main and open the kiln door to allow gases to dissipate.
- Turn off all valves including the main. Call and speak to an instructor before relighting.
- Valves are off when perpendicular to the pipe. Valves are on when parallel to the pipe.

OFF:



ON:



- NEVER BYPASS A BASO VALVE. This can cause a very dangerous situation with gas in

- the kiln.
- Only use a plumber's torch for lighting kilns.
  - Never put your face directly behind a burner and never run a forced air burner without the blower on.
  - **There is a button for emergency gas shut off right outside the collection/classroom door. In case of emergency, use this button to shut down gas in all kilns in the new kiln room.**
  - Always wear shaded kiln goggles to protect your eyes against harmful ultraviolet rays when looking through peep holes at bright kiln atmospheres.
  - At the end of the firing, close the damper, all peeps, and burner ports.
  - The vents behind the oval kilns and the windows above the gas kilns should always be open to insure air flow.

## ***25. Kiln Journals***

For each firing, keep a thorough kiln journal that documents every setting, adjustment, and observation.

## ***26. Bailey (gas downdraft)***

**You must have had instruction on the gas kilns and permission to fire them on your own from Paul Donnelly.**

### **Ventilation:**

- Turn Main ventilation toggle switch to the on position.

### **Kiln Log**

- All kiln logs must be filled out with the names of all participants and their phone numbers.
- All gas kilns are fired with the buddy system meaning a team of at least two students who are in charge of the firing.
- The cones that are in the kiln must be reflected on the kiln log for emergency reasons.
- The kiln needs to be checked every 45 to 60 min and all of the setting must be recoded through every stage of the firing: Time, Damper, Gas, Air, Oxy, Cone, Atmosphere.

### **Loading:**

- Make sure the support bricks for the first layer of shelves coincide with the Bailey diagram posted on the kiln. The target bricks should be 16.5 inches from the back wall. Shelves should be placed 2 inches from the back wall, 4 inches from the front wall and have ¼ inch gap between shelves. (The kiln will not fire correctly if it is not set up correctly).
- When stacking the kiln the first course should be 9" tall. The stack should be evenly loaded.
- Make sure each course of shelves are level.
- Make sure the baffle bricks are in place on both sides of the back 2 shelves of the first layer.
- Check that peepholes and cones correspond. The cones should be clearly visible.



- Make sure the track for the car is clean of debris and will roll smoothly, roll the cart into the kiln very slowly, watch your stack to make sure it will clear the sides and top of the kiln.

#### **Lighting the pilots:**

- Make sure all gas valves on the kiln are turned off. If they are not then the main burners will ignite when the second base valve is lit. This could result in injury.
- Press the start solenoid (outside of the teaching collection). This will allow gas to the kiln room.
- Leave kiln door slightly ajar.
- Make sure damper is open to specified location about 3.25"
- Turn on the main gas line, which is to the right and back of the kiln. Gas valves are "on" when they are parallel to the gas pipe.
- Turn on the secondary gas valve.
- Turn on the "light switch" to the main control panel (located below the main control panel). This will turn on the ventilation to the hood above the Bailey and allow power to the main control panel.
- Turn on the main power to the control panel (top switch) "push on off".
- Push in the "reset switch" on the main panel (second from top) this will allow the gas to the pilots. **YOU WILL NOT BE ABLE TO LIGHT THE PILOTS IF THE RESET SWITCH IS NOT ENGAGED.**
- Select manual mode by toggling the switch to the right on the main panel (third from the top).
- Press the base valve and put a flame to the pilot burner (hold 20-30 seconds) until pilot stays lit. You must light the right pilot (west side) first then the left pilot (east side) second.
- There must be 2 people to light the kiln safely. To light the pilot, use a small propane torch.
- Make sure the blowers are reading about .7 to .8 WCI.
- Once lit, close and tighten the door. Make sure the speedball handles (fasteners) are pointing outboard and are not in the way of the door closing. Make sure that the door is well sealed to the front of the kiln. **DO NOT OVER TIGHTEN THE DOOR....TWIST THE KNOBS UNTIL THE DOOR IS SEATED TO THE FRONT OF THE KILN.**

#### **Lighting the main burners:**

- There are two gas valves on the kiln. The left gas valve (west side) reads "Manual/ first stage gas". This is the valve that you will use for all manual firings. The right gas valve (east side) reads "second stage gas". This valve you will use when firing the kiln in the programmable mode (it will not work in the manual firing mode).
- To light the kiln swiftly turn up the "first stage gas" valve (left side / west side) till there is 3 WCI reading on the gage then turn the valve down so it the gas is "just on" and reading less than .25 WCI on the gas gage. If you do not turn up the gas swiftly then the burner will not ignite properly and result in "back burning". This means that the burner is not doing its job of mixing the gas and air correctly.
- If the burners were lit correctly you will see a nice blue flame at the end of the burner. If it was lit incorrectly then the flame will be yellow in appearance and will eventually blow out which will result in delaying your firing. This may also damage the burner over time.

#### **Firing:**

- "Turn ups" are made every hour by increasing the gas 1 WCI until you get to body reduction.
- The Max Gas pressure for a reduction firing is 5.5 WCI. **YOU DO NOT NEED TO FIRE WITH THE GAS HIGHER THEN 5.5 WCI.**
- Refer to the gas firing handout for further oxy probe readings, damper and air adjustments.

- Use shaded kiln glasses for protection against ultraviolet rays when observing cones in hot kilns.

**Shut Down:**

- Turn off the main gas.
- Shut down air valves.
- Shut down gas valves.
- Close damper.
- Turn off the power on the control panel (top switch) "push on off".

DO NOT SHUT OFF THE MAIN POWER TO THE CONTROL PANEL (THE LIGHT SWITCH), AS IT WILL TURN OFF THE VENTILATION TO THE HOOD. LEAVE THE MAIN VENTILTON ON AS WELL!!!!

**Unload:**

- Unload the kiln, DO NOT REMOVE THE FIRST LAYER OF SUPPORT FURNITURE. ON THE FLOOR OF THE KILN CAR. NEVER REMOVE THE TARGET BRICKS
- Clean the kiln, kiln furniture, and shelves. Store them properly. ALL FURNITURE MUST BE SCRAPED AND PUT AWAY.
- Sweep the area in front of and around the kiln. IT SHOULD BE SPOTLESS!!

## ***27. Blaauw Kilns***

**You must have had instruction on the gas kilns and permission to fire them on your own from Paul Donnelly.**

**Ventilation:**

- Turn Main ventilation toggle switch to the on position.

**Kiln Log**

- The Firing Curve Sketcher Log needs to be filled out with your instructor or Tom, printed and posted on the clipboard behind the proper kiln. Please include the kiln (small or large Blaauw), the type of firing, your name and phone number.

**Title**  
**School Small Blaauw 10 reduction**

**Program**

**Description**  
 Paul Donnelly: 215-910-2948

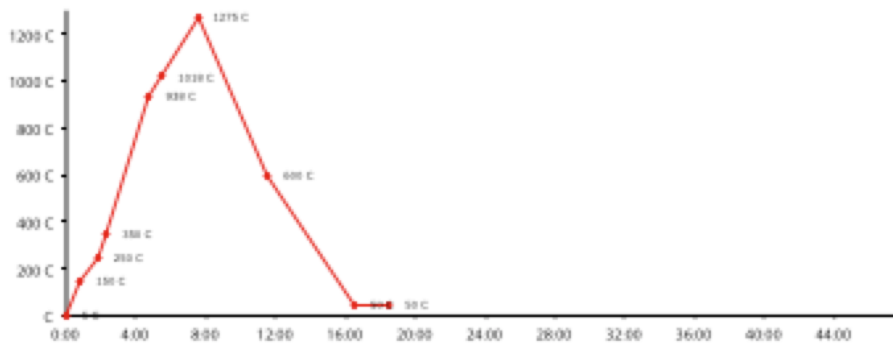
**Kiln**  
**SB**

Created	Modified
8/1/17	

LINE	TIME	TEMP	ACTION	RATE	ELAPSE	NOTES
00			start	--		
01	0:00	5 C		--		
02	0:45	150 C		193 C/h	0:45	
03	1:00	250 C		100 C/h	1:45	
04	0:30	350 C		200 C/h	2:15	
05	2:30	938 C		235 C/h	4:45	cone 08 body reduction
06			94%	--		
07	0:45	1018 C		107 C/h	5:30	
08			97%	--		
09	2:00	1275 C		129 C/h	7:30	
10			cooling	--		
11	4:00	600 C		-169 C/h	11:30	
12	5:00	50 C		-110 C/h	16:30	
13	2:00	50 C		0 C/h	18:30	
14			stop			
15						
16						
17						
18						
19						
20						

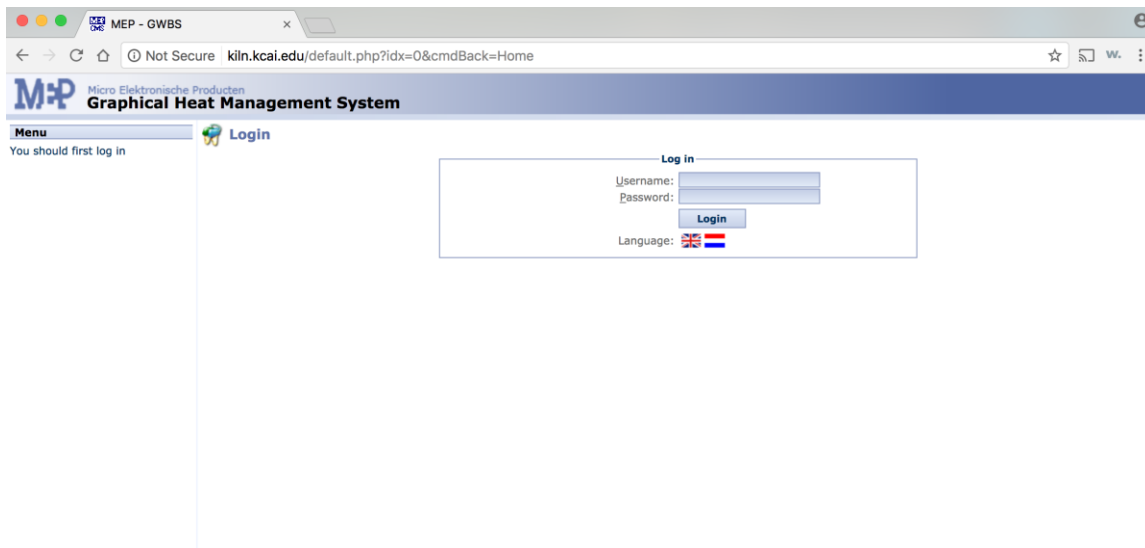
**18:30 Total Elapse Time**

designed by Jeff Chown, updated June 2011

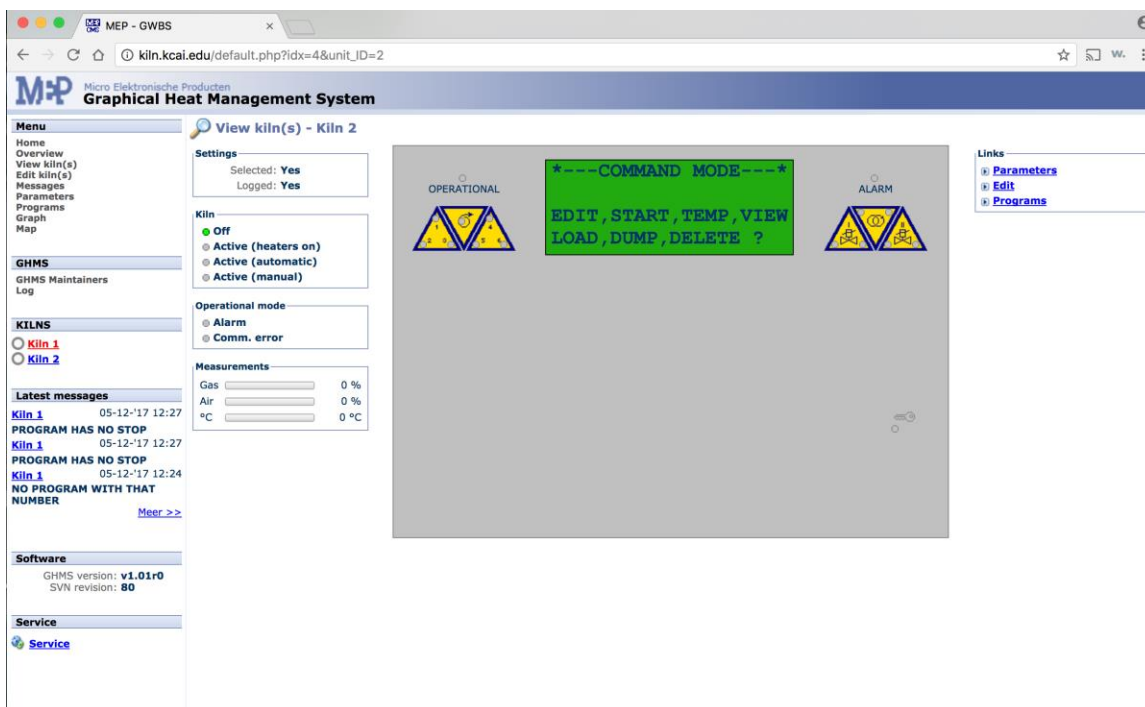


**B  
L  
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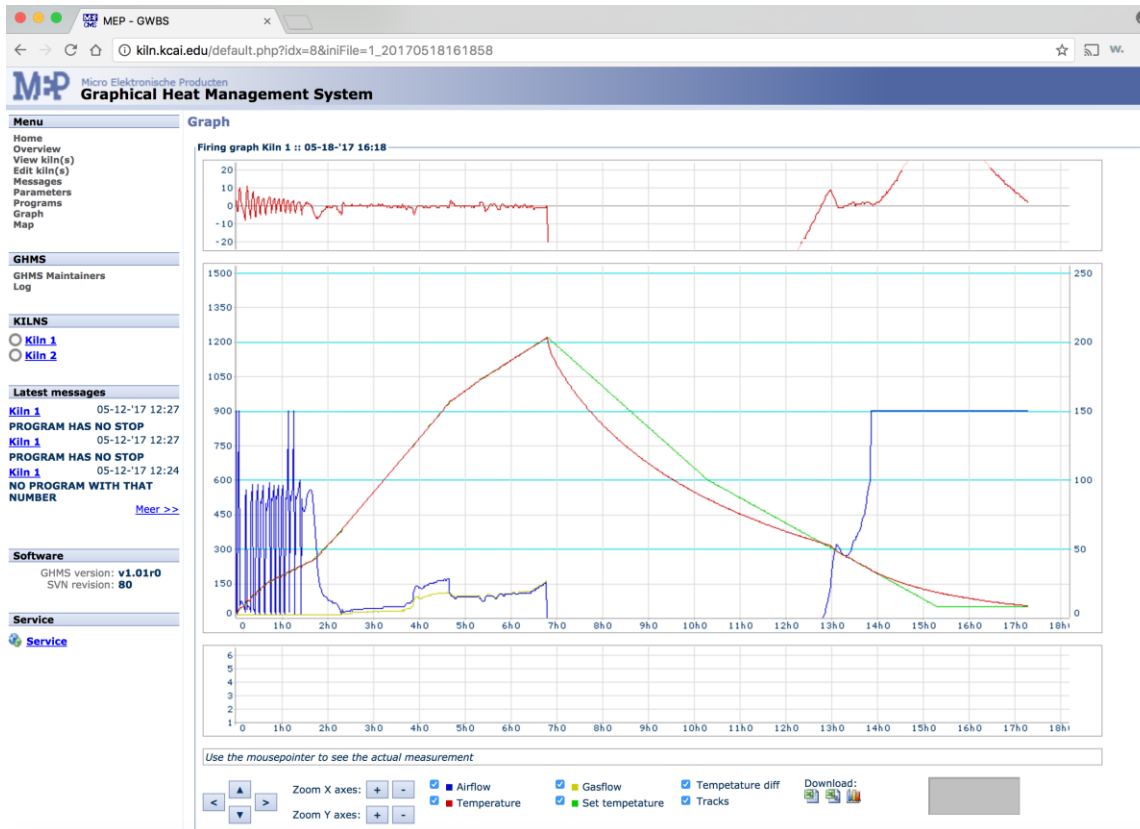
- The kiln must be periodically checked throughout the firing. Students can log onto the graphical heat management system at the following address to monitor their firing remotely: [kiln.kcai.edu](http://kiln.kcai.edu)  
 Username: student Password: shino



- Please note that, while logged in, Kiln #1 is the small Blaauw and Kiln #2 is the large Blaauw. Select the desired kiln to access the correct kiln information



- Selecting the graph option will allow you to see the progress of your firing.



- Note that the kilns CANNOT be controlled from this sight, only monitored. If you receive a general alarm or another issue arises contact your instructor immediately.

### Loading:

- Loading and closing the door will be done under the supervision of faculty or staff.
- The SMALL Blaauw can only be loaded with two 12in. x 24in. shelves. The stack should be placed 3 inches from the leading edge and centered between the side walls. When stacking the kiln the first course should be 9" tall. The stack should be evenly loaded. Make sure there is nothing in front of the burner block which is located in the lower left rear corner of the small Blaauw
- The LARGE Blaauw can be loaded with up to four 12in.x24in. shelves AND CAN ONLY BE POSTED IN THE DESIGNATED AREAS. PLEASE REFER TO THE FLOOR OF THE KILN FOR FURTHER DETAILS. The stack should be placed 1.5 inches from the back edge of the shuttle and centered between the sides of the shuttle. When stacking the kiln the first course should be 9" tall. The stack should be evenly loaded. Make sure each course of shelves are level. Make sure there is nothing in front of the burner blocks which are located in the front of the kiln in the ceiling of the large Blaauw
- The large Blaauw is a shuttle kiln. DO NOT STEP ON SHUTTLE while loading (damage to the shuttle will result). There is a step ladder in the kiln room that should be used.
- Always use the red handle to move the shuttle in and out of the large Blaauw. When pushing the shuttle in make sure there is nothing on the track and move it is slowly, making sure it moves in easily. Always return the handle to the brackets located under the computer console.
- When closing the door make sure it stays parallel with the front of the kiln. When latching the door secure one latch and then secure the opposite corner latch, then the others can be fastened.

- Once the door is closed on the large Blaauw, the shuttle track should now be lifted off the floor and secured to the door using the pin that is attached to the track bracket.

**Lighting:**

- Programming and lighting will be done under the supervision of faculty or staff.
- The ignition of Blaauw kilns are done with the door closed.
- Once a program has been entered and a start mode selected (see Blaauw manual) the kiln will clear it's firing chamber with the blower and then the ignition sequence will commence.

**Firing:**

- Monitoring will be done in conjunction with faculty or staff
- In the event of a power outage or the main gas valve being turned off inadvertently, contact faculty or staff to re-light the Blaauws.

**Shut Down:**

- Done under the supervision of faculty and staff.

**Unload:**

- DO NOT OPEN KILN WITHOUT CHECKING THE TEMPERATURE READOUT FIRST. THESE KILNS ARE INSULATED VERY WELL AND WILL NOT FEEL HOT ON THE OUTSIDE OF THE KILN.
- Opening and unloading is done under the supervision of faculty or staff.
- When opening the door unsecure one latch and then unsecure the diagonal corner latch, then the others can be unfastened.
- As the door is opened make sure it stays parallel with the front of the kiln.
- If there appears to be any damage to the kiln DO NOT UNLOAD until faculty or staff has been notified.
- Clean the kiln, kiln furniture, and shelves. Store them properly. ALL FURNITURE MUST BE SCRAPED AND PUT AWAY.
- Sweep the area in front of and around the kiln. IT SHOULD BE SPOTLESS!!

**Be safe,  
and if you have questions,  
ask the ceramics technician or a ceramics faculty member.**