



Smoke firing

In Barrel, Iron Pot and Pit

Two day's course with
Katrin V. Karlsdottir

We will be making kilns for three different types of smoke firing

Barrel, Iron pot and Pit firing

- To make your work stronger for smoke firing it is best to bisque fire them in electrical or gas kilns beforehand.
- For barrel firing you need barrels with lid, oil barrels (or similar) cut in $\frac{2}{3}$. Drill about 1 cm big holes 10 cm above the bottom all around the barrel with 10 cm in between. Steel plates can be used for lid.
- For iron pot firing you need a big Iron pot or two/three smaller ones and a good place to dig a pit in the ground. Barrel or bale that fits over the iron pots for isolation after firing.
- For pit firing you have to dig a pit in the ground. Ca. 50 x 100 cm. And 40 cm deep. Does not have to be accurate and the size depends on how much work is going to be fired.
- Choose the surroundings carefully as to not start a fire were fire should not be.



Organic Materials to collect before smoke firing

It is not necessary to collect everything, but fire wood and sawdust is mandatory. With the other materials it is possible to obtain various colors, patterns and textures. Wrap these materials around the ware and put it directly in the kilns.

- Dried grass, leaves, straws and flowers (if possible put some of it in a strong salt solution for 24 hours and then dry it).
- Dried manure from cows, horses, sheep, goats, donkeys. (grass eating animals).
- Dried vegetarian kitchen waste, vegetables and fruit peels, eggshells, nut shells, coffee grounds, banana peel (can be fresh).
- Pine and spruce cones and needles.
- Dried and half dried seaweed.
- Feathers, horsehair, wool, cotton strips (salt soaked is good).
- Fire wood and sawdust (both softwood and hardwood).
Driftwood contains sea salt and is very good firewood source.
- Anything else you can think of and want to try.



Chemicals for smoke firing

Take extra care when using chemicals. Wear masks (respirator when working with toxic materials) protective eyewear and gloves. Of this list I would say salt is mandatory and copper carbonate a must to obtain colors. These chemicals are either used directly in the pit or mixed with water and sprayed/ brushed on the ware.



- Lot of all kinds of salt, coarse, fine, sea salt, epsom salt, baking soda etc. (used in pits and on wares).
- Copper carbonate (toxic fumes, used in pits and on wares).
- Cobalt carbonate. (used in pits and on wares)
- Iron sulfate, cobalt sulfate, copper sulfate and ferric chloride. In addition it would be exciting to experiment with Gold Chloride (gold luster contains gold chloride), Potassium Dichromate, magnesium sulfate, Use these only directly on your ware but not as is in the pits. (**These are all VERY TOXIC, USE RESPIRATORS, PROTECTION CLOTHES AND GLOVES AND HANDLE WITH CARE**).
- Try mixing two or more chemicals together to brush or spray on your work (dilute and dissolve with warm water).
- Anything else you can think of and want to try. Many chemicals can be toxic so take care and wear mask and gloves (This cannot be said too often).

Various other things to collect for smoke firing

- **Two pipes to use for the pit to give oxygen circulation in the pit. (optional, but may increase chances of colors), metal plates for covering up the pit. Mineral-fiber wool for isolation (optional).**
- **Copper wires, various sizes and Chore Boy (copper wool) to wrap around pots.**
- **Gold pens, (shake and push type). Other pens to experiment with (for decoration).**
- **Steel wool to wrap around pots for iron source and for cleaning the pots.**
- **Masking tape. For sealing the packages and decorating pots.**
- **Wax crayon and paint to experiment with (for decoration).**
- **Newspaper for packing the pots for the kilns.**
- **Aluminium foil to make saggar fired pots in the kilns.**
- **Spoons or polished stones for burnishing.**
- **Sponge with coarse side for cleaning the pots.**
- **Knives or scrapes to clean off carbon knobs on pots.**
- **Beeswax and cloth to polish pots after firing.**



Suggested experiments for ceramic ware in smoke firing

- No treatment, naked work.
- Burnishing,, the whole work or in parts.
- Paint with Terra sigillata, the whole work or in parts.
- Wrap work in aluminium foil to make saggar for the kilns.
- Pattern made with masking tapes of different sizes.
- Mixing two or more methods on one ware.
- Pack organic materials with the ware.
- All kind of chemical solutions brushed or sprayed on.
Try mixing them.
- Draw with gold pen
(experiment with other pens, crayola, paints).
- Everything else you can think of and want to try.



What colors you can expect from different materials in smoke firing

Collections from ceramicist experiments. There is no guarantee though. You will never know exactly what you get.

Sodium Chloride (salt)

orange, yellows, salmon, peach, gold

Copper Carbonate

greens, blues, maroons, reds

Cobalt Carbonate

blues, violets, lilac

Steel wool

blues, grays, pinks

Banana peels

greens, grays

Copper wire depending on

wire thickness and

temperature of the fire

red, black, blue, green, whites

Sawdust

black, gray, blue-gray

Cow pies, grass eating

blacks, metal-black, golden yellow

Cow pies, corn eating

Dark green, grey, black, brown, blue



Katrín V. Karlsdóttir 2015, pitfiring



Katrín V. Karlsdóttir 2017, barrefiring



Katrín V. Karlsdóttir 2018, barrefiring

Copper Sulfate

greens, blues, maroons, reds

Coffee Grounds

browns, greens, blues, shiny spots

Nails

Neat blue/gray dots with halos

Leaves

brown/greens

Grass clippings

brown/greens

Red Iron Oxide

browns, maroons, rust

Driftwood

Blue-grey, aqua-blue, gray-black

Seaweed

Brown, rustred, honey, yellow, orange, peach, golden yellow, green

Egg Shells

lots of texture and calcium and carbon spots

Ferric Chloride

reds, yellows, oranges



Katrín V. Karlsdóttir 2017, barrefiring



Katrín V. Karlsdóttir 2017, barrefiring



Katrín V. Karlsdóttir 2018, barrefiring

Short Story of Barrel Firing

- Prepare material for the firing
- Pack the pots for firing.
- Put sawdust in bottom of the barrel.
- Put pots in the barrel.
- Put chemicals and organic material over and around the pots.
- Put firewood carefully over the pots.
- Light the firewood in the barrel. Feed the fire for about two hours.
- Cover the barrel with lid when the firewood have all turned to burning coals.
- Wait until next day.
- Open and unload the barrel.
- Evaluate and admire the result.



Short Story of Iron Pot Firing

- Dig a hole and load it with sawdust.
- Pack the ceramic pots in newspaper.
- Put the ceramic pots on the sawdust.
- Put the iron pot upside down over the ceramic pots and put sawdust around it.
- Make bonfire over the iron pot. Feed the fire for at least 2 hours.
- Put isolation bale over the iron pot.
- Wait until next day.
- Unload the kiln.
- Evaluate and admire the result.



Short Story of Pit Firing

- Dig a hole in the ground. 40-50cm deep. Lay down two pipes for oxygen (optional).
- Prepare all material needed for the firing
- Pack the ware for firing.
- Put sawdust in bottom of the pit.
- Put pots in the pit.
- Put chemicals and organic material over and around the ware.
- Put lots of firewood carefully over the pots.
- Light the firewood.
- Cover the pit with metal plates and mineral-fiber wool for isolation (optional) when the fire is almost out.
- Wait until next day (can take longer to cool down).
- Open and unload the pit.
- Evaluate and admire the result.



Safety equipments



- Fire extinguisher, blankets, buckets with water, just in case of fire where it's not supposed to be.
- Protection masks, to avoid breathing in smoke, ash, sawdust and chemical vapors.
- Gloves for protection when using chemicals to decorate pots.
- Heat resistant gloves for when handling the fires.
- Long tongs to arrange logs on the fires.
- Good closed shoes to protect against sparks and cinders.
- Good clothes that protect bare skin and doesn't catch fire.
- Everything else you can think of for safety measures.



Links to ceramicists who smokefire

Article by Eduardo Lazo on Ceramic arts network about smokefiring and colors

<https://ceramicartsnetwork.org/pottery-making-illustrated/article/pit-firing-color-palette/>

Another article by Eduardo Lazo with detailed information about smokefiring

<http://www.eduardolazo.com/pitiinstruct.html>

Hilary Chan blogg with the results of his smokefired experiments

<http://www.claymonk.com/blog/category/arts-crafts/pottery/pitfire/>

Chad & Kiesha, Up in smoke pottery, website about smokefiring

<http://www.upinSmokepottery.com/pit-firing.html>

Robert Compton about pitfiring

<http://robertcomptonpottery.com/index.php/firing-methods/firing-met-hods-pit-firing/>

Jane White's pitfiring

<http://janewhiteceramics.com/pit-firing/>

Martina Mcleod's website

<http://www.mudnessceramics.com/smoke-fired.html>

Jane Perryman's website

<http://www.janeperryman.co.uk/gallery/>

Alex Mandly, saggar and pit fired ceramic

<http://www.alexmandli.com/work/pit-pottery.html>

Pit-firing Pottery With Chris Dunn on Youtube

<https://www.youtube.com/watch?v=iof4xwRUW8s>

Funny video from Earth Nation Ceramics about experiments in pitfiring

<https://www.youtube.com/watch?v=2XMd8vloDm4>

Barrelfiring with Donna Winton on Youtube

<https://www.youtube.com/watch?v=1IEGOywmmFg>

John Jensen shows his barrelfiring on Youtube

<https://www.youtube.com/watch?v=kqbZeCZ7mC8>

Gabriele Koch's website

<https://www.gabrielekoch.co.uk/gallery/>

Story about pitfiring from Matt Hoogland

http://www.pitfire.com/pit_firing.htm

Judy Blake's website

<http://www.judyblake.ca/ceramic-art-portfolio>

Made of Australia's website

<https://madeofaustralia.com/gallery/gallery/>