KAC Ceramics Glazing Guide:

HIGH FIRE (CONE 10 REDUCTION)

What is Cone 10 Reduction?

Cone 10 Reduction firings happen in either our Bailey or Rocket gas-fired kilns. These kilns reach our highest temperatures at 2345°F. This type of firing is preferred for production potters and remains an esteemed and sought-after traditional firing technique. KAC is only one of 2 studios that offer Cone 10 Firings in western Washington.

Benefits: High range of depth and variation to glazes, creates strong wares, allows the maker to focus on form, and let the kiln do the magic with glazing.

Setbacks: Flatwares often crack or warp under stress from high temperatures, less control over glaze outcome, and lots of factors that affect firing meaning there is a large range of variation in glaze outcomes.

History:

In the mid-1900s high fire (cone 10) reduction firings became increasingly popular across the United States during the rise of the Arts and Crafts movement. These highly regarded and traditional Eastern firing techniques and ideas became the backbone of the American potter. With the introduction of more accessible electric kilns in the late 1900's, cone 10 reduction kilns have become difficult to find. However, the results are incomparable. Gas kilns are unique because of their ability to reach a high temperature and to manipulate the atmosphere in the kiln. This higher temperature and reduction atmosphere provides a depth of expressive surface.

Setting Expectations:

Work fired in gas kilns has a wide array of variations because of the many variables that go into a firing. All gas-fired reduction firings at KAC are done manually, meaning no firing is exactly the same. While all of our firings reach peak temperature, there are still hot and cold spots in the kiln that vary. The fuel, air, heat, and flame are difficult to control and predict. It's important to keep this in mind when firing your work in a gas kiln as your results may differ from the studio test tiles. This is normal and expected! Let go of expectations and embrace the unpredictable nature of the process.

How to read our cone 10 test tile wall:

Our cone 10 reduction test tiles are laid out in a grid formation, this way our students can see all of the possibilities available using the glazes we offer in the studio. The label on the left indicates the first piece of information: which glaze went on each test tile first. The labels on top indicate two different things: for the first 3 columns, the top label indicates which clay body was used, for the remaining columns, it indicates the second glaze dip. All test tiles that are not in the first 3 columns are B-Mix 10. Each dip on our test tile wall was done for one second (1 Mississippi).

An introduction:

First, look at the first three columns, highlighted in yellow. These tiles are all single-dips on three of our clay bodies to demonstrate how much the different clay bodies will affect results.

Next, find the double dip of each glaze, highlighted in pink. This can be done by aligning the label to the left with the same label on the top. By comparing them to the single dips, you can see how different each glaze can look depending on how thick the application is.

If this is your first time glazing, in general, or at KAC, we recommend that you start with the basics and only use one glaze on each piece. This will help you learn and understand how our glazes act individually. Once success with individual glazes has been achieved, you can begin to combine them - however, this point can often take multiple quarters to reach!

A deeper look:
Find a tile that catches your eye and read the numbers on the back. The first number is the first glaze dipped and the second is the second glaze dipped. Each tile dried overnight before the second glaze layer was added.

Reading Individual Test Tiles:

- What clay was used? On one of the tile's facets, you'll find the name of the clay the tile was made from stamped into it. This will give you a better understanding of how the glaze reacts to different clay bodies. White or porcelain clays will give you brighter glaze results while iron-rich clays may speckle or change the color of the glaze completely.
- How was this fired? All of our test tiles were fired in the Bailey kiln. However, the atmosphere in a gas kiln can vary widely and cause cold or hot spots, as well as atmospheric color shifts in the clay and glazes. Take a look at a few different test tiles with the same clay body. Do you notice any differences in the raw clay? Some B-Mix test tiles may look white while others look toasty orange, this shows you how much location and reduction can affect even just the raw clay.
- What will the glaze look like on texture? Check out the front facet with the squiggle design, how does this compare to the flat facets of the tile? Is there any breaking or pooling?
- Is it opaque or translucent? One panel of the tile includes a black and white stripe of underglaze, this is to display how opaque the glaze is. Keep this in mind if your work has any painting or underglaze work on it.
- What glaze qualities do you see? Check out the glaze vocabulary list in the *KAC Glaze Guide: The Basics* to see what qualities apply to this glaze and take these into account when choosing which piece to glaze.
- How were the tiles dipped? Each tile on our Cone 10 Reduction wall was dipped for 1 second (1 Mississippi) in each glaze. We mixed each glaze before dipping the tiles in and made sure to mix again after a few minutes. *Glazes can settle quickly, so it's important to mix again every few minutes to ensure even material distribution in the bucket!*

Tech Team Tip: The best way to learn about glazes is to use them often and take copious notes. Although there are many factors that go into Cone 10 Reduction firings, you can hone in on your skills and results with practice over time.

Want to learn more?

KAC frequently offers workshops and classes that are glazing-specific and range from surface design to glaze formulation. Check out our website to find more information on our current offerings and register today!

Suggested Reading:
The Complete Guide to High-Fire Glazes, John Britt
Kilns: Design, Construction & Operation, Daniel Rhodes
Selected High Fire Artists to Research:
Peter Volukos, Toshiko Takaezu, Shoji Hamada, Fong Choo

There is no glaze-specific information in this guide because the glazes we offer are ever-changing and evolving due to popularity, materials, and capacity. Please refer to the glaze tiles for the most accurate representation of our glaze offerings and refer to your instructor for specific questions.