

Ceramics: Using Pyrometric Cones for Firing a Kiln.

These instructions will help you use Pyrometric cones.

EQUIPMENT: What you will need

		
Safety goggles	Pyrometric cones	Electric or gas kiln
		
Kiln shelves and props Ceramics ready to fire	Coarse clay	Leather heat proof gloves

SAFETY: How to stay safe

Wear safety goggles to look through spy holes. They have green coloured glass.
Do not go near to the kiln – it gets very hot.
Use leather gloves to remove **kiln bungs**.
Keep children away from a kiln.
Do not stay in the room when a kiln is firing. It makes toxic fumes.

Glossary :Words you need to understand

Kiln bungs

Small ceramics plugs which fit into the holes in the door and on the roof of the kiln. You remove them as the kiln heats up to temperature, and also when you need to view the Poly Metric cone to measure temperature.

Pyrometric cones

Small cones made of ceramic material that give a very exact reading of heat that ceramic work has received inside a kiln. They have numbers on their side to show what temperatures they are to be used for.

Safety goggles

These should be worn at all times when looking inside a hot kiln. They should have green glass in them like welding glasses. Wearing them will prevent serious damage to your eyes.

Kiln shelves & props

Ceramic work is placed on shelves inside the kiln. Props higher than the work packed on the shelves make legs for the next shelf to be placed on top. Made of special ceramic material, these are also known as kiln furniture.

Using Pyrometric Cones For Firing a Kiln

Select correct cone

Choose the number cone for the work you are going to fire.

Hold the cone on a flat surface with the number facing towards you. It will be leaning to the left.

Wrap a small coil of clay around it so that it stands up by itself.



Poke holes in the clay with a sharp tool.

This will stop the clay blowing apart in the kiln.



Arrange cone to correct height

Stand the cone inside the kiln. Check you can see it through the spy hole.

Use props and little bits of broken shelf to get it to the right height.

It should stand up, leaning to the left.



Close the door

Close the kiln door and fire at 100 degrees an hour.



Check cone

When the temperature reads 1050 degrees Celsius, put on the safety gloves and goggles.

Be very careful of the bung. The end will be red hot!

Remove the bung and keep away from the kiln, Look through the spy hole at the cone.



Cone begins to touch its toes

1100 degrees Celsius is a temperature many earthenware glazes fire to. If you are firing to 1100, at about 1050 with safety glasses and gloves on, start checking the lean of the cone through the spy hole.

Even if the 1100 degrees is not reached on the temperature gauge, once the cone curls over and 'touches its toes', turn the kiln off.

Put the bung back in and let the kiln cool down. Wait until it is at least 100 degrees before the door is opened.

This may take up to 10 – 11 hours depending how big the kiln is and if it is made of brick or fibre on the inside.

TIPS: Using Pyrometric Cones to fire a kiln

Different number cones will read different heat work or temperatures. A chart on the box containing the cones explains which cones you will need for which temperatures.

The procedure is the same for all the different cone temperatures. If the kiln is rising in temperature at approx. 100 degrees an hour, start to check the lean of the cone about 50 degrees before the temperature you wish to reach.

If the kiln has been firing very slowly, less than 100 degrees rise in temperature an hour, check the cone at a lower temperature.

This difference is because the work will have received more heat over a longer time, even though it may not have been as hot. This is known as **heat work**, and it is why we use cones. It is this heat work we need to measure to get good results, particularly when using glazes.

Try to remember how much of the cone you can see through the spy hole, when you first set it up. Even do a little sketch of it.... this will help you to locate the cone when the kiln is very hot and it is hard to see inside.

It might be very tempting to take off the safety goggles if you are having trouble locating where the cone is. **This is very damaging to the eyes. Don not take off the goggles.**

Instead, with the bung removed, and being very careful not to get too close, blow gently into the spy hole. This will clear the hot air inside the kiln and help you see more clearly.
