

What School Administrators Need to Know About Venting a Kiln



answers to your questions about
ceramic firings and venting kiln fumes

**Orton**

®

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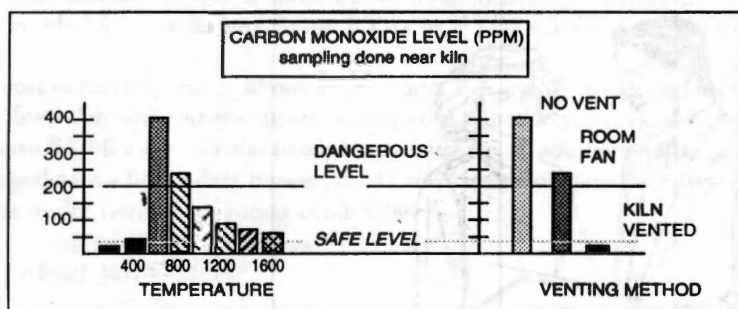
What happens when a kiln is used to fire ceramics?

Ceramics are made from clays and other materials which produce undesirable fumes during firing. The primary fume is carbon monoxide. Fumes can also contain sulfur oxides, hydrogen fluoride and volatilized metals. These fumes are unhealthy and should not be breathed.

Because gases expand when heated, the fumes will escape from the kiln unless it is vented with a downdraft system. From a health and safety standpoint, it is important to remove fumes from the work area.

What are the health issues associated with fumes and vapors?

OSHA has set standards for carbon monoxide exposure of 35 ppm for long term exposure and 200 ppm for short term exposure. Independent testing has shown that fumes can reach over 400 ppm near the kiln during firing.



Many art teachers and some students working in rooms with unvented kilns complain of headaches, fatigue, sore throats and nausea. These are classic symptoms of carbon monoxide poisoning.

The carbon monoxide level can be measured using a device called a dosimeter tube. This tube records the level of exposure. It is an inexpensive device (about \$25.00) that provides good information.

Are there any other regulations for venting?

Some states and localities have set venting requirements for classrooms and workrooms. The local and state health board should have this information. Even if your area doesn't have regulations, venting is still important.

The Uniform Mechanical Code lists accepted venting methods. The downdraft system made by Orton is listed in the 1992 approved Code.

What good does venting do?

Fume removal is the number one benefit of venting. The Orton system collects and contains the fumes so they can be removed from the classroom to the outside or exhausted through the school's vent or exhaust system.

An automatic vent also adds safety to firing. When manually venting, the teacher needs to prop and then close the lid of the kiln. The Orton vent eliminates this because the kiln stays closed. Or, the maintenance staff isn't burdened with opening and closing the kiln for venting.

The kiln also cools faster with an automatic system like the Orton vent. In some cases, up to four hours faster. This means the teacher can empty and refill the kiln in less time and complete the firing for students in a timely manner.

For ceramic pieces, venting with the Orton system means that colors turn out bright and students can fire red glazes without disappointment. Fewer firings may be needed because teachers can mix different colored pieces in one load.

Finally, venting extends the life of the metallic parts of the kiln. This means longer kiln life, better performance and reduced repair costs.

Why not just forget ceramics?

Ceramics is actually a very safe art form. Just like sports, home economics or shop, proper safety precautions need to be followed. A saw isn't operated without a blade guard. An oven isn't touched without hot pads. Athletes don't play football without protective gear like shoulder and kidney pads. Ceramics can be fired safely with proper precautions.

How about moving the kiln to another room, not a classroom?

The fumes still are there and need to be removed. In addition, a kiln away from the classroom is less convenient and less likely to be used.

What kinds of vents are there?

Two methods of venting are typically used. Either vent the room or vent the kiln.

Venting the Room

When venting the room, fumes are allowed to escape from the kiln into the classroom or workroom. Using an exhaust system, room air is exchanged with fresh make-up air. Considerable make-up air is needed to adequately remove fumes.

Venting the Kiln

Two methods can be used to vent a kiln. A hood can be placed over the kiln, or a downdraft vent system can be used to keep the kiln under negative pressure. Gases are exhausted outside the building.

The downdraft venting method is superior to hoods because it removes all of the fumes and requires less make-up air. Fumes are not released into the classroom or workroom and firing conditions inside the kiln are improved.

With a hood system, fumes are released into the classroom before they are collected. The effectiveness of the hood depends on how close it is to the kiln and the volume of air being removed. Rarely does a hood remove more than 85% of the fumes. Large amounts of make-up air are required.

The downdraft system made by Orton and other manufacturers allows the kiln to remain closed throughout the firing. It also keeps the kiln under a slight negative pressure. This means all the fumes are exhausted and the air needed to fire the ceramics is brought into the kiln. In the US today, the downdraft vent is the standard for kiln venting.

How much would it cost to buy the Orton vent and to run it?

We know budgets can be tight. That's one of the great things about the Orton vent. The cost for the vent is under \$300. That includes 8' of ducting and other parts needed for installation. Some PTAs or PTOs will fund the KilnVent.

The cost to run the vent is about 1¢ an hour. For an 8 hour firing, that's only 8¢ to fire safely and remove fumes. Compared to hood systems, the Orton vent can save \$1.00 a day for the needed make-up air. Made of stainless steel and equipped with a heavy duty blower, the Orton system will provide many years of service under normal operating conditions.

What about installation?

In many schools, the vent can be installed by the custodian or maintenance staff. Depending on the configuration of the classroom, the vent can be exhausted to an outside wall or window using standard dryer ducting, or hooked into an existing exhaust system.

Sometimes architects and industrial engineers may specify elaborate and costly exhausting systems. However, the patented Orton vent is simple and economical to install and meets Uniform Mechanical Code Requirements.

Our technical staff can assist you with specific installation concerns and many ceramic supplies and kiln repair companies can do installations.

How many of these vents are used in schools?

Hundreds of Orton vents are used in schools today. Some schools have installed them system wide and city wide. If you would feel more comfortable talking to someone who is using an Orton vent, we'd be glad to give you references.

How do I make a decision?

Read through our literature and specifications. Talk to your teachers. They can answer lots of your questions. If you need more information, give Orton a call.