

UNDERSTANDING FIRING CONES: WHY THEY STILL MATTER IN YOUR STUDIO



Firing ceramics isn't just about hitting a number on a digital controller—it's about achieving the right amount of heat work. That's where pyrometric cones come in, and why they continue to be essential tools for consistent, quality firings in your studio.

🔥 What Are Pyrometric Cones?

Pyrometric cones are small ceramic devices designed to melt or bend at specific rates of heat absorption, not just temperature. Developed in the late 1800s by Edward Orton Jr., cones have been the gold standard for measuring the combined effect of temperature and time, known as heat work.

Think of them like a turkey thermometer: setting your oven to 350°F doesn't guarantee the bird's cooked—only the internal thermometer can confirm that. Similarly, a kiln controller can tell you the temperature at the thermocouple, but only cones show what actually happened to your ware inside the kiln.

Why Are Cones Still Relevant in the Digital Age?

Even though modern kilns use electronic controllers and thermocouples, these tools measure only one point in the kiln, typically near the wall. They can't assess heat distribution across shelves or deep within a fully loaded kiln. Cones do. They offer a visual, physical confirmation that your firing reached the right maturity. Orton's self-supporting cones (introduced in the 1970s) make this even easier. Built to stand at the perfect angle and height, they eliminate setup errors and improve consistency.

How to Use Witness Cones Effectively

To ensure your kiln is firing evenly and your glazes are maturing correctly:

1. **Use a series of three self-supporting cones** on each shelf: one cone lower than your target (e.g., Cone 07), your target cone (Cone 06), and one higher (Cone 05).
2. **Place one set on the perimeter and one set in the center** of each shelf to check for heat distribution.
3. **After firing, check the bend:**
 - Cone 06 should be bent with the tip level with the base. Success!
 - If only Cone 07 is bent, your firing was under.
 - If Cone 05 is also bent, it may be overfired.

Pro Tip: Take pictures of your cones for future reference and documentation.

Adjusting for Inconsistent Firings

If your witness cones reveal uneven heat work:

- Slow down the firing speed (switch to a slower speed like #3 on your controller).
- Add a soak/hold time at the end of your firing cycle.
- Consider both adjustments if your kiln is heavily loaded.

Your kiln or controller manufacturer can offer guidance—just be ready to share what your witness cones showed.

What Cones Tell You About Glaze Success

Your glaze jars likely say something like “Fire to Cone 06.” That’s not just a temperature—it’s a call for a specific amount of heat work. Cones help confirm that your glaze has matured correctly, ensuring:

- Proper color development
- Food-safe surfaces
- Durability and fit with the clay body

Under-firing or over-firing without visible defects can still result in glazes that fail over time, so trust your cones!

Final Thoughts: A Blend of Tradition & Technology

While digital controllers and thermocouples make firing easier, cones remain the only true confirmation that your ceramic pieces are properly matured. Regular use of cones can alert you to issues like thermocouple drift or worn elements long before your ware shows signs of trouble.