

Kiln Corner Electrical Complications

by Arnold Howard

Photos Courtesy of Arnold Howard

I'm starting to realize that the most confusing thing about kilns is voltage and phase. Recently I helped a customer in Mexico whose 240 volt studio kiln would not get hot enough. "What is your voltage?" I asked. "Our electrician checked and told us it's 240." Through video chat, we tested their voltage, and their meter read 220.

"That's why your kiln won't reach temperature," I said. "Your voltage is only 220, and your kiln has 240 volt elements." "No, the customer assured me. "The electrician said there was no difference between 240 and 220." The customer still doesn't believe me.

Problems When Kiln and Circuit Volts Don't Match

A few weeks ago I was at a private school, which had a 240 volt 2350°F crucible kiln that couldn't get hotter than 2000°F. I measured the circuit voltage, which was only 208. The school electrician came to the classroom. "The entire school is 208 volts," he said. "I didn't think it mattered if the kiln was 240 or 208."

A 240 volt kiln fires slowly on a 208 volt circuit. If a 208 volt kiln is plugged into a 240 volt circuit, however, the opposite will happen. The 208 volt kiln will receive more power than it was designed for, which can damage the elements and wiring.

The voltage rating of your kiln is listed on the electrical data plate on the side of the kiln. If you buy a used kiln, don't trust the data plate unless the kiln owner knows the complete history of the kiln. Kilns are often modified for the voltage requirements of a studio, and the new voltage is rarely added to the data plate. When converting a kiln to a different voltage/phase, write the new specs and date on the kiln's data plate with a black permanent felt-tip marker. *Don't forget that the phases of the circuit are as important as the voltage.*

When you know the voltage of your building, never assume that it is the same in every room. I visited a ceramic studio in a strip mall that had two kilns side by side. One circuit was 240 volts, and the other was 208 even though the receptacles looked the same.

Precautions to Take When Testing Circuits

Do not test a circuit with a multimeter unless you are experienced. Always wear shockproof gloves. I know of someone who was badly shocked when testing a circuit.

One last reminder—pull out the kiln plug and check it plus the receptacle for heat damage every few weeks. One out of every seven kilns I work on has a damaged plug.

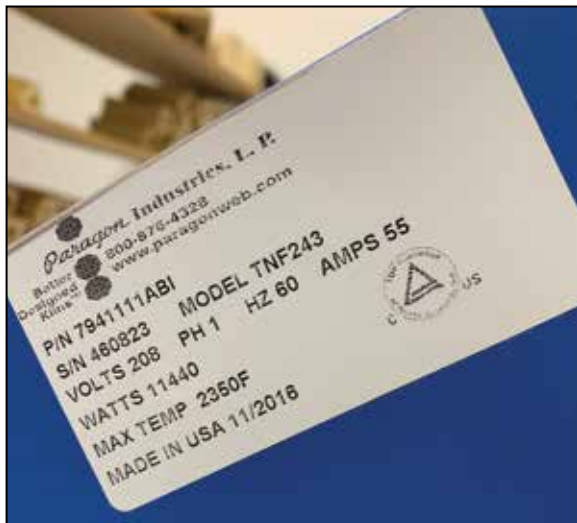
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Every few weeks, pull out the kiln plug and check it and the receptacle (socket) for heat damage. These photos taken during a recent visit to a high school show an example of extreme heat damage.



This 240 volt crucible kiln was rated to 2350°F, but it couldn't fire hotter than 2000°F because it was plugged into a 208 volt circuit.



The electrical data plates on new kilns are accurate. You cannot always trust them, however, when you buy a used kiln, because many kilns have been modified.

While Arnold Howard worked at Paragon Industries, he saw kiln controls evolve from switches to touch screen displays, tested early glass kilns, and wrote owner instruction manuals. He now owns Howard Kilns, LLC, a kiln repair and sales business and works on all brands of electric kilns. Feel free to contact him at arnoldhoward@gmail.com or call/text 972-333-1437.



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