

## ***Torches and Heat Guns – Using Locally-Applied Heat to Stiffen the Clay***

Vince Pitelka, 2020 – [www.vincepitelka.com](http://www.vincepitelka.com)

In my daily studio work, I would be severely handicapped without my propane torches. I use them every day when building with slabs or coils. Keep in mind that these devices are appropriate for gentle localized application of heat to advance the stiffening of the clay in order to continue working on a piece or assembling component parts, but not for accelerating the overall drying of the work. Any attempt at the latter would result in uneven drying and a host of problems.

We try to avoid uneven drying of clay forms, because if excessive, it will cause differential shrinkage, cracking and warping. But when clay is still in the plastic or soft-leather-hard stage, it is often to our advantage to accelerate stiffening by warming the surface with a convenient heat source, increasing evaporation of moisture. When using either a heat gun or propane torch to stiffen clay, keep the tool in constant movement, heating gently overall. Don't overdo it, and never hold the heat in one spot. Excessively focusing heat in one area will cause the clay to crack or pop. The latter is caused by buildup of steam pressure, and can suddenly and completely destroy a piece. Clay changes color as it dries – we call this bleaching. As you get accustomed to using a torch or heat gun to stiffen clay, you'll become very sensitive to any indication of bleaching on outer edges and corners. Stop heating immediately when you see the slightest bleaching. Moisture will wick from the rest of the piece and the bleaching will disappear, and then you can continue gentle heating if necessary.

All the standard advice about different stages of leather-hard apply here. If unfamiliar with those stages, read about them in my book, *Clay: A Studio Handbook*, or in a PDF handout titled "The Stages of Clay," available on the "Documents and Handouts" page of my website. Have a very clear objective in mind whenever using a torch or heat gun on clay, and apply heat carefully to gently drive off moisture, moving the clay to a different stage of stiffness or leather hard.

### ***Studio Uses for Torches and Heat Guns***

- When coil-building vessels or sculpture, it is often helpful to accelerate the process by applying heat to stiffen a section just completed, in order to allow continuing construction. With this method it is possible to build multiple large coil forms in a single day, even in humid weather.
- Anyone who throws platters or bowls with wide rims knows the challenges of extending a rim horizontally. Gravity wants to take over, and we sometimes end up salvaging the piece as a smaller plate or bowl after trimming off a collapsed rim. Application of localized heat will quickly firm up the rim, even before final throwing.
- Impressing bisque stamps or other patterned or textured materials into thrown forms works best after the surface wetness has evaporated, but that can mean setting the pot aside and returning it to the wheel later for decorating. Gently applied heat can quickly evaporate surface moisture, allowing you to impress decoration right after throwing.
- When preparing to assemble multiple leather-hard components to create a finished piece, each component does not always stiffen uniformly. Before assembly it can be helpful to

apply gentle heat to allow a component to “catch up” with the others. This is the technique I use most often in slab construction, when I often have over a dozen component parts to be assembled at the leather-hard stage. Look at the slab-built teapots on my website and you will understand.

- In a method popularized in the 1970s, heat is directed over the surface a partially thrown form, stiffening the outer skin of the clay. If the potter then expands the pot with pressure from the inside, stretching of the stiffened surface creates interesting patterns that have a natural geological quality like the cracks on the surface of cooling lava.

### ***Hair Dryer, Heat Gun, or Propane Torch?***

The primary tools in common use for localized, focused heating of clay surfaces are electric hair dryers, electric heat guns, and propane torches. During my 50 years of serious professional involvement in clay, I have often found people attempting to stiffen clay with a hair-dryer. If you have all the time in the world and enjoy extended periods of Zen-like contemplation, then a hair-dryer might be for you. Otherwise, they produce little heat for our needs and are a waste of time. The only reasonable choices are heat guns and propane torches, and either can work very well. Personally, I prefer the torch because of the portability and the simplicity of use. There’s no cord attached, and with the right piezo-ignition torch, the flame appears instantly when the trigger is depressed. Also, depending on your choice of propane torches, it is possible to localize the applied heat with precision. That is not possible with a heat gun.



### ***Torches are Safer than Heat Guns***

Hair dryers and heat guns often look very similar, but there is a huge difference in heat output. What do people do to check the temperature of a hair dryer? They hold their hand in front of the nozzle. If you do that with a heat gun, the 1600° Fahrenheit output will give you a first-degree burn in the palm of your hand. That will really slow down your work. With a torch, the heat is visible, and no one is going to check the temperature with their hand. Anyone can use a heat gun safely as long as they understand that it can burn you or start a fire as easily as a propane torch. The main problem arises in community and institutional studios, and in that case, torches are always safer. It is a strange irony that in some institutional situations, torches are forbidden because of the open flame, while heat guns are allowed, despite the fact that they are more dangerous.

### **Which Torch to Get?**

For studio use, stick with propane torches that accept the standard screw-on 14-ounce disposable propane cannisters, and the larger “weed burner” torches that connect to a refillable 20-pound portable propane tank. In my experience, the most practical propane torch for general studio use is the BernzOmatic TS4000, available from amazon for \$40. That price has not changed in fifteen years. This piezo-ignition torch has a cast aluminum body and brass torch tip, and is built for many years of rugged use. The disposable propane cannisters are available at any hardware store.



At the Appalachian Center for Craft, we had four of these torches hanging on a rack in the kiln room, and all of my students learned to use them both for accelerating stiffening of clay and for lighting gas kilns. Don't be tempted by less-expensive torches with plastic-bodies, especially the ones that require you to turn a knob and then press a button or trigger to light the torch. The TS4000 is far sturdier, and is instantly on as soon as you press the trigger button. On this torch the flame is not adjustable, but I have never found that to be a problem. Just hold the torch closer or farther away to regulate the application of heat to the clay. If you want an adjustable flame with a little more power, get the TS8000. Turned up full-blast, it is much noisier than the TS4000, but that is to be expected. Turn it down a bit and it's quieter.

For broader heating, especially when building big coil forms quickly, you need a larger torch. Go to amazon or Harbor Freight and search “propane weed-burner torch” and you will find many options ranging from \$25 up. Note the length of shaft between the torch handle and the burner tip. For weed-burners, that shaft is often quite long, which is inconvenient in studio use. If you search, you will find roofing torches and other options with a shorter torch shaft. Some of these units have a piezo igniter, but they generally require that you turn on the gas flow and then press a separate button to ignite the flame.



Harbor Freight “Greenwood” Propane Torch With Push Button Igniter

Many of the weed-burner torches, like the one above, feature an adjustment knob to set the minimum flame level, plus a quick-action lever valve that delivers full pressure when you need a large, aggressive flame. When using the torch repeatedly, such as for stiffening coil forms in stages as you build, you can set the adjustable valve very low to act as a pilot light, but that will require a secure metal stand to support the torch with the burner directed away from combustible surfaces. When you need the torch, pick it up and pull the lever to produce a large intense flame.

### ***Sievert – The Cadillac of Propane Torches***

All of the above weed-burner-type torches are connected via high-pressure hose to a standard 20-pound propane tank. If you want a far better torch with more portability, and are willing to spend the money, the Cadillac of larger torches is made by the Swedish company Sievert Industries, which has been making gasoline and then propane torches since 1882. Stay away from the Sievert Pro-86 and Pro-88 series torches. They are just weed-burner-type torches, and for the price offer no advantages over the inexpensive models available from amazon or Harbor Freight. Search online for “Sievert Torch Kit,” or “Sievert Promatic Torch Kit.” If you want the most portable unit, specifically look for the kit with the manufacturer’s part number HSK1-04. If you buy this Sievert torch kit brand new, expect to pay at least \$300.

Why is this such a great torch?

First, the “Promatic” series is made with uncompromising Sievert quality. The piezo ignition generator is in the torch handle, and it is instant-on when you squeeze the trigger, which runs the full length of the handle. The flame stays on as long as you keep squeezing the trigger. To shut it off, just release the trigger. Of course, that will also happen immediately if you let go of the



torch for any reason, which is a good safety feature. An adjustment knob at the base of the handle allows you to set the torch from a very gentle flame to a full-on blast.

This kit comes with the ideal torch tip for broad, gentle heating when accelerating coil-construction or other high-output heating. Sievert makes a wide variety of interchangeable tips that will fit this handle, and at some point, you may have a need for a different tip. You can occasionally find the tips on eBay for bargain prices.

The torch comes with a short connector hose, a compact regulator that fits a standard disposable propane cannister, and a hook on the regulator to hang the cylinder from the edge of your

workbench, or if you are moving around, from a belt loop. That's where I hang it when I am demoing large-scale coil construction.

This torch is pricey, and if you really want it but are on a budget, start an ongoing eBay search for "Sievert propane torch" and "Sievert Promatic torch." You will have to put up with frequent listings of lovely antique Sievert gasoline blowtorches, as well as the many other torch models offered by Sievert. If you really want one, persevere. Familiarize yourself with the appearance of the Sievert Promatic HSK1-04 torch kit, and you will eventually find one for a lower price. Beware of current and older models of Sievert torches that do not have the piezo ignition. Make sure you are getting the Promatic series with the black or gray-and-black handle and the orange or red "trigger" running the full length of the handle. These are the instant-on piezo-ignition Promatic models that accept all the interchangeable tips, and are the most desirable for studio use. If don't find one on eBay and really want and need this torch, go ahead and pay the full price. You'll never regret it.