



Torch & Soldering Safety Checklist

By Charles Lewton-Brain

Using Gas Torches

- ✓ Make certain your torch holder is made of non-combustible materials and can hold your torch without bending.
- ✓ Make sure the torch tip is always at least 18 inches away from combustible materials.
- ✓ Ensure check valves have been properly installed to prevent flames from being pulled into gas lines.
- ✓ Use hoses, fittings, and connectors intended for torch systems. Never use an oxygen regulator for compressed air.
- ✓ Make sure you have the correct fittings. Fuel (acetylene, propane, natural gas, butane, MAPP, and hydrogen) fittings have a groove on the screw nut and tighten to the left. Oxygen fittings have a smooth surface on the screw nut and tighten to the right.
- ✓ Use soapy water to check hoses, valves, and connections religiously (rubber hoses do decay over time).
- ✓ Turn off torches when they are not in use or are unattended.

Safe Practices for Soldering (Brazing)

- ✓ Wear protective goggles: Metals that glow with heat emit damaging infrared radiation, and the vapors produced when soldering can be irritating.
- ✓ Use leather or Kevlar gloves when handling hot metals, or use tongs. Don't wear synthetics, which melt when heated. Also avoid loose clothing that can flop into the flame and catch fire, and tie back long hair.
- ✓ Keep ice water handy for treating burns.
- ✓ Don't have flammable materials on or near the soldering area. Most goldsmiths have seen some paper or other object go up in flames more than once. Your soldering area should have a fireproof surface, such as firebrick or steel—never asbestos.
- ✓ Ergonomic problems usually occur in production situations. Working surfaces and chairs should be adjustable and the work surfaces tilted toward jewelers to reduce reach and wrist-angle problems. Some goldsmiths who solder intermittently use a standing soldering station so they can vary their body positions. (These stations also keep soldering chemicals and fumes away from the main work area.)
- ✓ Many goldsmiths use a disposable cigarette lighter to light their torches. This can be incredi-

bly dangerous: A standard disposable lighter has the same explosive power as a grenade. Empty or near-empty lighters are particularly dangerous; I have heard of one that blew up on someone's car dash when left in the sun, as well as of one that blew up on a jeweler's bench when brushed accidentally with a torch flame.

- ✓ Have fire extinguishers near your soldering area, and make sure they are visible and easily accessible.
- ✓ Work sequences and soldering jobs need to be set up to avoid accidents, such as having a sealed, hollow piece of jewelry blow up because you didn't take the trapped, expanding air into account. Always drill air-release holes if in doubt. One jeweler I know writes, "My apprentice, Colin, started to melt down some scrap gold. I asked him to wait until I was free to supervise him, but he did not. A ball stud exploded from the bottom of the melt and molten metal shot everywhere—including

into Colin's eye. It went straight through his safety glasses. He was off work and now has to wear glasses to correct his sight. Let this be a warning to everyone."

- ✓ Use cadmium- and antimony-free solders. Cadmium can cause pulmonary edema ("fluid in the lungs"), and long-term exposure can contribute to lung and kidney damage, as well as an increased risk of lung and prostate cancer. Some cadmium-free solders may still contain antimony, which has its own ill effects; antimony poisoning is similar to arsenic poisoning.
- ✓ Use non-fluoride borax fluxes. Fluoride fluxes can affect the bones and teeth and irritate the respiratory tract. Obtain Safety Data Sheets (SDSs) for all metals and fluxes you use in the shop.
- ✓ Make sure your work area is sufficiently ventilated to remove the plumes of smoke or fumes from soldering.