

# Acetylene Torch & Silver Soldering Safety

This document identifies basic safety precautions for using the acetylene tank and torch at the jewelry bench to avoid personal injury, death, or property damage. It doesn't describe how to use the torch for silver soldering in jewelry making. It's not a substitute for tool safety documents provided by the tool manufacturers nor does it assure compliance with all federal, state and local regulations.

This torch uses extremely flammable acetylene fuel that instantly produces a flame temperature of over 2,000 degrees. The flame or heat produced by this equipment can instantly ignite combustible material and can damage most other materials. Combustible materials include, but are not limited to: sawdust, cloth, dry grass, gasoline, paints, natural gas, plastic, insulation, wood and similar products. Combustibles, when ignited, can cause severe fires or explosions.

## Awareness

The open flame and heat from this torch is difficult to see and can extend over 5 feet. Torch use can cause molten material, heat and embers to travel 25 feet or more under certain conditions. Heat can be conducted or radiated to adjoining surfaces that may become pressurized or ignitable without direct flame contact. This device emits hazardous carbon monoxide fumes.

- Look around you in corners, voids and gaps on the bench to identify potential fire hazards such as paper towels or open containers of flux, to make sure no materials will be exposed unintentionally to heat or flame. This includes gas cylinders, hoses and regulators.
- Be aware that acetylene is lighter than air and rises, while propane sinks. Look for confined spaces where pockets of gas might accumulate. Look up and down for accidental, potential ignition sources.
- Remove or completely protect anything combustible from your work station before turning on the gas.
- Identify pipes and vents where suction may be present, in which case use caution when lighting and using torch.
- Know your escape route.
- Always have both water and fire extinguisher easily accessible.
- Ensure that the acetylene tank is fastened securely so it will not fall or be pulled over accidentally. Inspect equipment for wear, tear, and loose connections each time before lighting.
- Be aware the tip-end of the torch stays dangerously hot for a time even after it is extinguished. Don't touch it or place it down on something combustible.
- Wear safety glasses. A full enclosed design that fits snugly is best and will best protect your eyes from debris coming in from the side.
- Wear an apron or flame-resistant clothing free from oils.
- If pickle or flux gets on your skin or in your eyes, wash the area with lots of running water.
- Shut off the torch and move immediately to a source of fresh air if you feel light-headed, dizzy or nauseous.
- The torch burns whatever it is close to. Be conscious of where it points even if you take your eyes off of it momentarily.
- Do not use the torch for steel welding or cutting.

## Ventilation

Hazardous gases and fumes caused by igniting and using a torch, if inhaled, can cause asphyxiation, nausea, fainting, or death.

- Avoid breathing fumes; stand back from the work, not over it.

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- Ventilate combustible gases from your work area and surrounding areas thoroughly and replenish with clean, fresh air to resupply oxygen to the area.
- Do not light a torch if the atmosphere in or around your work area contains combustible gases. Impurities are added to Acetylene and produce a foul smell to alert you to its presence.

## Operation

### PARTS OF THE SYSTEM:

- Gas tank and tank pressure gauge
- Pressure regulator gauge and control screw
- Hose
- Torch hand piece, control valve knob, and tip

### How it works

The tank is opened to allow the pressurized gas to enter the regulator where a diaphragm controls the pressure to useful levels. Those levels are adjusted using the regulator adjustment screw. Once regulated, and when the torch hand piece control valve is opened, the gas will flow through the hose and to the torch tip where it combines with atmospheric air and can be ignited.

### PRESSURIZING THE SYSTEM AND LIGHTING THE TORCH

1. Ensure the acetylene tank is secure and has an attached regulator.
2. Inspect equipment for wear, tear, and loose connections.
3. Ensure the control valve on the torch hand piece is closed.
4. Slowly open the acetylene cylinder valve 1/2 turn counter-clockwise. This opens the cylinder valve enough for the tank gauge to indicate its pressure and to supply gas to the regulator system. Check the regulator pressure gauge. It should be reading well below 15psi. 6-8 psi is about right.
5. If it reads at or near zero, slowly turn the REGULATOR pressure adjusting screw clockwise to desired operating pressure - between 6-8 psi as indicated on the REGULATOR pressure gauge. This pressurizes the regulator and hose system. Never adjust acetylene regulators to more than 15psi. If it reads too high, turn the tank gas valve off (right - clockwise) and bleed the line. Then turn the REGULATOR pressure adjusting screw counter-clockwise until you feel no resistance. Start the pressurizing process over.
6. Point the torch hand piece away from yourself and any flammable materials, open its control valve one quarter turn and use a spark lighter to ignite the gas at the tip. Use only a flint or electronic lighter to light the torch. The flame will be almost invisible in bright light.
7. Use the hand piece control valve and regulator adjustment screw to control the size and heat output of the flame.

### USING THE TORCH

- DON'T point flame into unseen areas such as holes, voids or corners.
- DON'T heat an object that contains or has contained flammable liquids or vapors. These can explode.
- DON'T place work piece on concrete or other rock-like material. These materials may explode. Use a "fire brick" or charcoal block rated to withstand torch temperatures.
- DON'T look directly into the end of the tip or put it near your face.
- DON'T leave an operating torch unattended.
- Shut off the flame between soldering operations. (This does not shut down the system.)
  - Turn off the flow of gas by closing the control valve on the hand piece.
  - Make sure that the flame at the torch tip extinguishes completely before setting down.

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## SHUTTING DOWN THE SYSTEM

1. Ensure the flame at the torch tip is extinguished completely.
2. Shut the cylinder valve tightly. (Turn clock-wise)
3. In a well ventilated area and away from flames and heat, open the torch hand piece control valve which will clear the regulator, hose and hand piece of residual gas. Both the tank pressure and regulator pressure gauges will fall to zero.
4. Close the torch hand piece control valve.
5. Do not leave work area until you make certain there are no smoldering or hot materials that could ignite.

## Using Common Sense

More than any device, more than any instruction, more than any expensive system, the best tool for long and safe studio work is already within you - your common sense. Here are a few things you probably already know, but may need to be reminded of:

- If you are unfamiliar with a tool, ask.
- Listen to your body. If you feel dizzy, congested, overheated or drowsy, it might be the result of a chemical reaction. Stop what you're doing until you know what's happening.
- Anticipate the results of every action. Accidents happen and because you can't see them coming, you always have to be prepared. Pay attention. Plan ahead to prevent problems before they occur.
- Metal parts get hot and stay hot. Handle hot pieces of metal with tongs at all times.
- Do not repair any equipment unless you are qualified to perform such work. DON'T modify any equipment.