Frequently Asked Questions about Liver of Sulfur

1: What is Liver of Sulfur?
A: Liver of sulfur (LOS) is a toxic sulfur product that is a mixture of potassium sulfides. It is commonly used to patina copper and silver. It comes in the form of nuggets and gel. It is extremely smelly so we recommend working with it outside.

2: What is the different between Liver of sulfur nuggets and Liver of sulfur gel?
A: They are a dried form of liver of sulfur which will decompose when exposed to light and air. Liver of sulfur nuggets need to be diluted in hot water in order to patina silver. Please refer to the FusionBeads.com Using Liver of Sulfur to Oxidize Sterling Silver technique. The gel form of liver of sulfur is stabilized so will not decompose in light and air. However you use it in the exact same manner as the liver of sulfur nuggets. Apply a pea sized drop of the gel to hot water to create a liver of sulfur solution in which to patina your silver.

3: What is patina?
A: Patina is a film that develops on the surface of metal over a period of time. Due to exposure to open air and the natural process of oxidation, an aged metal such as copper and silver tends to develop a patina. Because it can take from days to years for patina to occur naturally, we can speed up the process for jewelry-making purposes and create the patina ourselves. One of the more commonly used patinas is liver of sulfur (LOS).

4: Is LOS available in a liquid form?
A: Yes, we sell the LOS in nugget form but LOS is also available in a liquid form.

5: Which form of LOS is preferred - the nugget or the liquid?
A: The nugget form lasts longer and is much more cost-effective.

6: Will LOS give patina to gold-filled metals?
A: No, gold alloys will not react to most sulfur solutions.

7: Will LOS give patina to fine silver?
A: Yes, the copper content in silver reacts with the LOS to result in a patina. Even though fine silver is 99 percent silver, it has sufficient copper to result in a beautiful patina.

8: Will LOS give patina to brass?
A: No, Brass will not react to most sulfur solutions.

9: Will LOS give patina to copper?
A: Yes, LOS will patina copper but you would use cold water.

10: Will LOS affect gemstones?
A: Cubic zurconia, glass and manmade gemstones will be unharmed by LOS. Most natural gemstones will be unaffected with some exceptions. Turquoise, Lapis, shell, pearls and
other soft stones should not come into contact with LOS as they are porous and could be damaged.

11: Is LOS toxic?
A: Yes, you should always use gloves when handling LOS and work in a well-ventilated area. See recommendations below on proper disposal. See the poison information at the end of this FAQ.

12: How do I properly dispose of LOS?
A: The safest way to dispose of LOS solution is to let it evaporate. Place the opened container outside, out of reach of children or animals, and the sun and air will neutralize it within a couple of days. Once the yellow solution has turned clear, it is neutralized, and the LOS can be diluted and poured down the drain. But it is much better to use a plant fertilizer. You can pour directly onto the plant or the lawn; there is no need to dilute.

13: How should I store LOS nuggets?
A: Keep it sealed in an airtight glass or plastic container away from all light exposure. Both light and air will decompose LOS.

14: Is there a natural alternative to LOS?
A: Yes, you can use the yolk of very fresh eggs. The process will not be as fast as LOS, but eggs will produce a patina as long as they are the extremely fresh. Hard boil three eggs. Shell and mash up the eggs so the yolk is exposed. Place the eggs and the silver pieces into a zip-top bag. Seal the bag, and leave the eggs to work their magic. It can take between 20 minutes and two hours, depending on the strength of the sulfur in the eggs.

15: How do I store LOS once it is open?
A: Store the LOS in its original container, preferably placed in a brown bag. Seal the bag in a zip-top bag. This will prevent the LOS from coming into contact with air. It will also prevent odors from escaping.

16: Does LOS expire?
A: Yes, the nuggets expire. When exposed to light and air, LOS will disintegrate, so it is important to store it in a well-sealed container. If sealed properly and kept away from sunlight, LOS will last at least two years.

17: What are the ventilation requirements?
A: Work outdoors when using LOS – it is extremely smelly and toxic. Avoid inhaling large quantities of LOS.

18: Will the LOS solution work if it is mixed with cold water?
A: LOS solution works optimally on silver when the solution is hot. It works on copper when the solution is cold.
19: How do I polish the metal pieces after I have used LOS?
A: You can either use a polishing cloth or pad, or you can use a tumbler and stainless steel shot. Refer to the Rock Tumbler technique.

20: How do I tumble the oxidized silver pieces?
A: Place the silver pieces in a rock tumbler with stainless steel shot and one drop of Dawn dishwashing liquid. Rinse the pieces thoroughly so that they are completely free of LOS solution. Do not place any non-oxidized silver pieces into the tumbler at the same time. The remaining LOS solution will turn that silver yellow. Tumble the oxidized silver for 20 minutes. The tumbling will clean, shine and seal the finish.

21: Will LOS give patina to my stainless steel shot?
A: No, stainless steel shot does not contain copper; therefore, it will not be oxidized by LOS.

22: Can I remove the LOS patina once I have applied it?
A: Yes, the sterling silver article can be dipped in a liquid tarnish remover or soaked in a jewelers pickling solution or polished with a polish cloth. A fine silver article can be heated with a torch or a kiln and that will remove the patina and return the piece its original state. (Do not use this method unless you have experience using the torch or kiln). Another way to remove patina is to use a solution of baking soda, water and aluminum foil.
Assemble the following:
• Plastic or heat-resistant glass bowl
• Aluminum foil
• Boiling water
• Baking soda

Line the bowl with foil. Add the jewelry or silver pieces, cover with boiling water, and sprinkle with baking soda. The baking soda should start to bubble, and the tarnish will settle on the aluminum. When the water cools and the bubbling stops, the piece should be shiny. If your pieces have deep crevices where tarnish remains, repeat this process. When finished, rinse the pieces thoroughly.

Poison Information

Inhalation: Inhalation of LOS dust can irritate the respiratory tract. Production of hydrogen sulfide from reaction with acids or high temperature hydrolysis is a significant secondary hazard.

Ingestion: LOS is mildly corrosive to mucous membrane due to hydrolysis of potassium sulfide. However, a greater danger is formation of hydrogen sulfide in the stomach and its absorption. Nausea, vomiting and diarrhea can occur.

Skin contact: LOS is a skin irritant, especially if hydrolysis occurs on moist skin.

Eye contact: LOS is an irritant and is possibly corrosive or abrasive in acute cases. Conjunctivitis, photophobia, pain and blurred vision are symptoms.
First Aid Measures

Inhalation: Take victim to fresh air. If victim is not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
Ingestion: Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.
Skin contact: Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.
Eye contact: Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.