A BLACKSMITH'S GROCERY LIST

by: Tommy Ward

When grocery shopping with my wife I sometimes amuse myself by searching for common household substances that might be useful in metalworking. Here's what I have come up with. If you have a favorite blacksmith's "recipe" using materials found in a supermarket let use know and we'll publish it in a future issue.

Aluminum foil - Melts at about 1220 F. Thickness of household brands is around .0007" or less. In addition to its obvious insulating and reflective properties, aluminum foil can be used in mechanical work as a shim stock for adjusting the clearance of bearing or mating surfaces.

Ammonia - A general household cleaner that can also be mixed with various other materials to alter the color of copper and steel.

Baking soda - (sodium bicarbonate) Can be used to neutralize acids. Mix with water to form a paste, or add to water to make a dilute solution. Don't confuse with baking powder, which combines sodium bicarbonate with other additives.

Beer - Useful both in and outside the shop to improve or alter the disposition of the metalworker. Most any brand can be effective.

Beeswax - Used as a "finish" on ironwork. Usually rubbed on the metal while hot. Also makes a good dry lubricant for drill bits and saw blades.

Borax - "Twenty Mule Team" brand borax is widely used as a flux for forge welding.

Camphor - When placed in tool chests the vapors emitted by camphor blocks help to prevent rusting of fine tools. May not be available in grocery, but better pharmacies should have it.

Catsup - "Gentle" cleaner for brass. Mix 50/50 with water and immerse small items from two hours to overnight. Leaves a soft, matte finish. To avoid damage, don't leave items in the solution for long periods, as acid in the catsup will attack the zinc in the brass.

Cheesecloth - A lint free open weave fabric. Fold into a small pad, load with an appropriate solvent, and wipe surfaces for a lint free preparation to finishing. A small pad is ideal for the lint free application of stains to surfaces. Also use to strain paint or other liquids. Use to make a "tack rag" for wiping dust from surfaces prior to painting (dip a piece about 12" square into clean water and squeeze dry. Mix 3 tbsp. varnish with some paint thinner and sprinkle onto material. Knead the cloth until it's saturated with the mixture. Don't overdo it. A tack rag should be tacky enough to pick up dust but not stick to surfaces).

Citric acid - A mild acid present in many fruits, vegetables, and carbonated beverages (the highest concentration is in lemons and limes). May also be found in concentrated form in the baking or canning sections of the grocery. Can be used to remove rust from tools. Mix with a little alcohol (rubbing alcohol is fine) and a dab of detergent and apply to rusted surfaces. Heavy rust may require immersion overnight. Rinse and scrub off with a fine Scotch-Brite pad. Surfaces should be clean of oil before applying the solution.

Club soda - To improve their performance, substitute club soda for water when mixing soluble oil type cutting fluids used in drilling or machining.

Coco butter soap - Can be used as a lubricant in metal spinning.

Dishwashing liquid - ("Dawn Blue" preferred). An ingredient used in making Robb Gunter's "Super Quench" formula for hardening mild steel. For details go to: http://www.cvbg.org/tips/superquench.PDF

Eggs - Use to test a brine quench for proper salinity - toss a couple of uncooked eggs into the water as salt is added. Eggs will float when proper salt level is reached.
hand soap - A bar of soap makes a good lubricant. Dry rubbing some on sliding surfaces will improve the operation of threaded fasteners, nails, saw blades, drawer and window slides, etc.

Hydrogen peroxide - Commonly available in a diluted solution of about 2.5% to 3%. It is a weak acid and strong oxidizer. Primarily used as a disinfectant but also can be used to remove certain stains and to bleach certain materials. Used in metalworking to color some metals and to remove rust from iron. Several formulas for its use can be found on the Internet.

Kitty litter - Can be used in place of "oil dry" to absorb liquid spills.
lard - An effective cutting lubricant for drilling and machining - particularly with "tougher" metals. Use straight or mix with 30 wt. nondetergent motor oil.

Lye - Also known as sodium hydroxide or caustic soda. Makes a very effective paint and "grunge" remover when restoring machinery. Lye is getting hard to find due to concerns over its use in making illegal drugs. However it can sometimes be found in stores packaged as "Roebuck Heavy Duty Crystal Drain Opener" which is 100% lye, or "Drano Kitchen Crystals" which contains about 54% lye. Mix one can of Drano Crystals with 3-5 gallons of water and immerse parts in the solution. The Roebic product may require less due to its higher concentration of lye. Rinse parts thoroughly immediately after removal from the solution. For ferrous metals only - don't use on aluminum or brass. Lye is reactive and dangerous, so appropriate caution is advised.

Mothballs - Can be used in a toolbox to prevent rust - see camphor. oil soap - Can be used as a lubricant in metal spinning.

Paraffin - Use to make a lubricant for metal spinning. Heat (carefully - use a double boiler) and mix together 3 parts beeswax, 1 part paraffin, and one part toilet bowl sealing wax. When cooled, a paste is formed that can be applied to the work face of objects in the metal spinning process. Also can be used as an "indoor" finish on iron. Apply alone or mix with other substances to create a finish. Makes a decent lubricant for drill bits. Use melted paraffin to coat fine tools and prevent rust during long-term storage,

Peanut oil - Has the highest flash point of the commonly available vegetable oils. Sometimes used as a quench for oil hardening steels. Also useful as a "gentler" method of heating parts when shrink fits are called for in mechanical work. Be advised that vegetable oils will eventually become rancid, while mineral oils will not.

Petroleum jelly - A highly refined light weight lubricant. Insoluble in water, but can be dissolved by some solvents. Commonly used as a topical dressing for scrapes, burns, and chapped or dry skin. Rubbing some into the hands before beginning dirty tasks will make cleanup easier upon completion of the work. Coat fine tools with petroleum jelly to prevent rusting.

Pine sol - "Friendly" and effective grease remover and cleanser for machinery and other surfaces.

Potato - Use to test a brine quench for proper salinity. Toss a few uncooked potato chunks into the mix as salt is added and the potatoes will float when proper salt level is reached.

Rubbing alcohol - Rubbing alcohol contains a concentration of 70% - 90% isopropyl alcohol mixed with water (some brands may use ethyl alcohol). Primary use is for first aid (alcohol should not be used on open wounds, but to clean areas around the wound - use hydrogen peroxide on the open wound). Also effective as a cleanser or degreaser for metal. Good for a painting prep since it evaporates quickly and leaves no film on treated surfaces.

Salt - Mix with water to improve its quenching ability. The backyard rule of thumb is between 5% and 12% salt in water. Also can be added to vinegar to make a brass, copper, or iron cleaner.

Swimming pool pH balancer - (sodium bisulfate) Use to make a dip for cleaning copper after working, soldering, or brazing. Usually available in stores in 5 lb. containers labeled "pH reducer or pH negative". Mix one to two pounds of chemical with eight gallons of water in a plastic container such as a trashcan. Submerge items in the solution for thirty minutes to an hour then rinse thoroughly with water. The solution can also be used to clean steel, but use a separate container - don't contaminate the copper bath with other materials.

Toothpaste - Use an old style paste type for a very fine polishing compound. Thin with water if needed.

Vinegar - Common vinegar is about 5% acid and can be used to remove rust from steel and to clean oxidation from copper and brass. Adding some salt improves its effectiveness. Will attack the zinc in brass, so to avoid damage don't leave brass items in vinegar too long. A number of formulas for its use in metalworking can be found on the Internet.

Washing soda - (sodium carbonate) Available in some stores as "Arm & Hammer Super Washing Soda". Mildly caustic. Used to prepare the electrolyte for an electrolysis rust removal process. See following the link for details on the electrolysis technique:
http://www.rowand.net/Shop/Tools/Electrolysis.htm

Note: As concerns for liability increase and consumers demand "easier to use" products, some of the listed substances may no longer be available in your grocery. However they should be stocked in better pharmacies and home improvement stores. Some of these materials can be toxic, cause skin damage, or create toxic fumes; particularly when mixed with other ingredients. The author and the MFC claim no expertise in the use of chemicals and strongly encourage users to familiarize themselves with proper handling techniques and the potential hazards that may be associated with these materials. Always provide adequate ventilation and wear appropriate safety gear when handling chemicals.