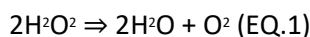


## Laser B – A Start for a Brilliant Finish

Cleaning, deoxidizing, and polishing copper, brass, and other copper alloys have plagued man since the Bronze Age. Throughout history, these metals have required chemical treatment or physical abrasion (buffing) to retain their rich luster.

All this work for short-term gains. Consider how quickly the image of Abraham Lincoln tarnishes on a penny, the bottom of a copper-plated pan turns brown, or decorative brass loses its golden color. While these finishes appeal to the eye, they are not easily obtained or retained. The active nature of copper is to blame. So, we seemed doomed to dipping and buffing, resigned to the nature of our fate.

That was then, this is now! Deoxidizing and polishing can now be accomplished in a process that leaves a brilliant finish without the labor. Contrary to popular belief, this new process is called Laser B. It does not require a laser to impart a high gloss to copper and brass parts. Further, this process also works without using chromic, nitric acid, bichromates, chelators, or phosphates. The Laser process uses hydrogen peroxide as the primary oxidant. Unlike the previously mentioned chemicals, hydrogen peroxide will not harm the environment. It breaks down cleanly to water oxygen by the following reaction:

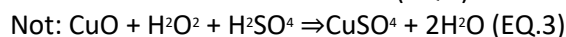


Since this reaction may be promoted by raising the pH to alkaline, waste disposal is simple and easy; an additional benefit is the precipitation of unchelated metal hydroxides, which may be separated from the liquid by various means.

While waste disposal is an ever-increasing positive in our environmentally conscious world, the finish and the promise of reduced post-treatment are the main attractions. Small parts that are virtually impossible to handle on a piece basis may be tumbled to produce a finish that may only require a lacquer to finish. The penetration into the threads and heads of screws, tiny electrical connectors, and the tubing is remarkable. Even the toughest alloys of copper, such as beryllium, tellurium, and leaded brass, can be produced to be super bright. The new process has been used with everything from a brass button, decorative hinges, circuit board components, small household appliances, and electrical coils. The only restriction is that the substrate be solid copper or brass - not plated over steel or some other metal.

While this has been mainly used as a final finish, it may also be used to treat parts prior to plating or some other post-treatment. Despite the luster, the subsequent plate's adhesion remains high.

Of course, no system is for everyone. While the Laser process saves labor later in processing, it must be kept in chemical balance as it is used. This is done using some simple titration procedures and temperature control. Also, the Laser requires three process steps. Unlike most copper processes, which would etch the metal, the first imparts a shine protected by a brown oxide film:



The next is a very thorough rinse. The final step is the removal of oxide to give the luster. If the bath gets out of balance, the luster will be lost temporarily, and the finish will be matte. A quick analysis will determine how balance can be restored. When the balance returns, so does the luster. As previously mentioned, there are numerous environmental advantages. Unlike conventional systems, there is no need for carcinogens (hexavalent chrome), poisons (oxides of nitrogen), or chelators, which may scavenge other metals in the waste treatment system. Typically treated effluents contain undetectable metal levels or may be discharged as they are. No exotic chemistries are required to destroy peroxide, the additives, or precipitate the metals. Neither is elaborate equipment needed. In short, waste management engineers will be as happy with the Laser B system as the production people are. But as with anything else, one must try it to see for oneself. The differences in how this is run compared to conventional systems will be quickly forgotten when the finish is imparted.

## Our People. Your Problem Solvers.

**For more information on this process,  
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