



Transitioning to Unleaded Brass: Impacts on the Precision Machined Products Industry

By Miles Free – Director of Technology and Industry Research

The precision machining industry, NAICS 332721, is composed of 3,682 shops in the United States. Our shops are also called “job shops” or “contract manufacturers.” The industry employs 99,412 people and generates sales of \$18.8 billion annually, according to U.S. Census Data.

In many precision machining shops, brass materials account for probably 20 to 25 percent of the base material machined.

The markets most heavily served by our contract job shops include automotive, aerospace, medical, heavy truck, off-highway. However, plumbing and appliances account for 6 percent of industry shipments, according to PMPA market research for 2013. Six percent of industry shipments to plumbing and appliance applications are likely worth an estimated \$1.08 billion.

For our industry, in general, and for the shops that specialize in plumbing and appliance parts manufacture, the financial exposure and impact of the transition to unleaded brass is real and significant.

“Anything that reduces or eliminates our recovery of brass scrap dollars is a serious threat to our businesses.”

Our shops’ primary processes create the geometries needed on parts by taking machining stock removal from solid barstock. Turning, drilling and milling are the operations employed by our shops to create the features needed to turn barstock into functional parts. The barstock identity is known and well documented on mark, ship, pack and load documentation provided by our suppliers. Our production systems have capable means to maintain that identity and traceability.

Shop Impacts

- Scrap recovery and resale is an important aspect of our business model. Anything that reduces or eliminates our recovery of brass scrap dollars is an existential threat to our businesses.



- The need to maintain separate streams of scrap by grade can add substantial fixed costs if a firm is producing parts largely from brass. Small quantity users can get by with inefficient but effective manual small batch processes. As the applications transition to larger and larger proportions of various unleaded brasses, the scale of the problem of segregated scrap processing streams mandates additional capital processes for separate chip and bar end processing, handling and storage.
- The need to make a part’s material class or identity apparent on the parts that we manufacture will create an additional process step or cost for our shops. On parts made from barstock rather than castings (on castings that information can be cast permanently into the part surface), our shops will likely have to add a step in their production process.

To make such a permanent identification on the part would require an engraving, character marking, stamping, roll marking, peening or laser etching process. Several of these can be added to current production machines. Character marking and roll stamping are two examples. However, in the case of laser etching or engraving, these processes would be secondary operations and an additional cost to the per piece price.

Future Impacts

- Currently, materials brought in to scrap dealers from salvage and demolition operations are almost exclusively leaded brass.
- As the amount of unleaded brass valve fittings and plumbing parts increase in our nation’s housing supply,

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eventually those unleaded brass items will be salvaged and recycled as scrap.

- The mixing of unleaded brass scrap with traditional leaded brass scrap in the post-consumer (salvage) scrap markets could poison the supply of recycled feedstock for the mills that produce our brass barstocks.
- PMPA is working with a coalition of suppliers and other interested parties to help draft a standard practice for marking brass items to assure ease of sorting during salvage and scrapping operations to prevent the contamination of the various recycling streams that feed our sources of supply.

What You Can Do

Maintaining material identity and maintaining strict segregation of the various types of brass scrap—chips, bar ends, and so on—is essential to assure that your scrap recovery is problem free. Cross contamination could result in suppliers refusing your scrap, leaving you with an expensive waste disposal problem and loss on your operations.

For more information, contact Miles Free, director of industry research and technology, at PMPA. mfree@pmpa.org