



BRASS ALLOYS

By Craig Nissen - Marketing Manager

Over the last year, we have watched the costs of the brass alloys we typically use in the manufacturing of bronze water meters more than double. The reason for this dramatic change in cost levels is almost entirely related to the price index of copper. Whether it is 81 metal waterworks bronze, or one of the low lead alloys, EnviroBrass II (EB2) or BiAlloy (BIA), their major component is copper. This recent rise of the copper price index has been enormous. In mid-2003, copper was at \$.80 per pound. In mid-May of this year, it reached over \$4.00 per pound (See Figure 1 for Copper Index over the last year.)

The major reason for these price increases is the time-proven law of supply and demand. China and India are experiencing tremendous growth, significantly contributing to the growing demand for copper. Copper is required for new infrastructure development as well as sanitary and electrical installations in new buildings.

In our second graphic, (See Figure 2) the details of composition are included for the three most commonly used brass alloys in the water meter industry. Again, note the high copper content in all three of these alloys. Specifically looking at the EnviroBrass II (EB2) composition detail, another factor further driving up the cost of this alloy is the fact that it contains selenium. Over recent years, the availability of selenium has become increasingly difficult with rising demands. China can again take credit for a major portion of this demand. Two of China's main uses of selenium are in the refining of manganese and in a process used to pull the green color out of glass material. This increased selenium consumption drives challenges with meeting production demands for the EB2 ingot material. The result, of course, furthers the upward trend of pricing of this alloy.

Badger Meter and the industry have researched and evaluated alternate low lead alloys in an effort to identify a suitable replacement alloy for EnviroBrass II (EB2). The result is Badger's selection of BiAlloy (BIA) as a low lead alloy alternative, which is included in the detail composition chart. NSF International has already reviewed BiAlloy with positive results, including application to Badger's flow meter housings. Badger's meters have been certified with BiAlloy as an acceptable alternative to EB2, for meters which were previously NSF-61 certified. ■

Reference: NSF web site: www.nsf.org

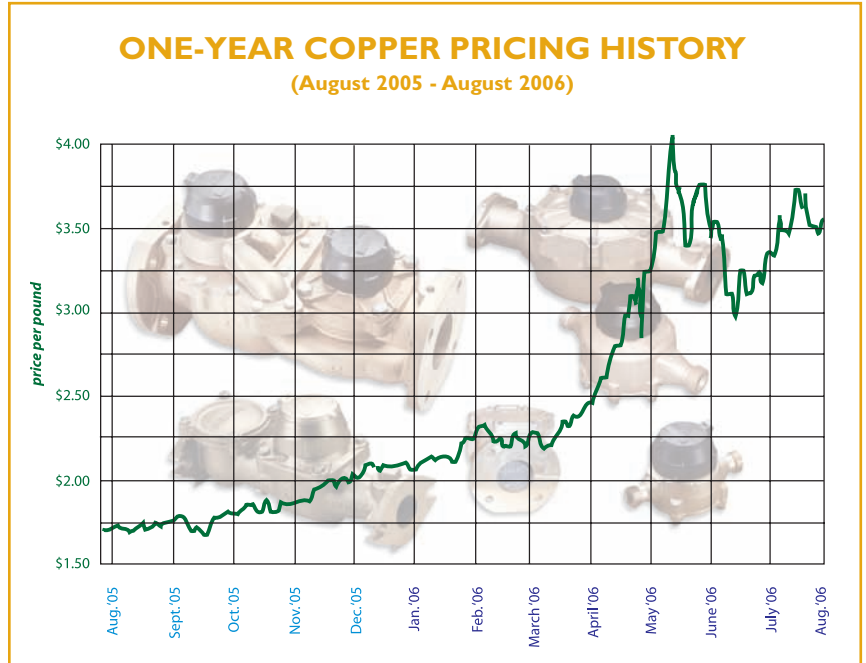


Figure 1.

COMPOSITION COMPARISONS			
	B81 (UNS 84400)	EB2 (UNS 89520)	BIA (UNS 89836)
Copper	78 – 82 %	85 – 87 %	87 – 91 %
Tin	2.3 – 3.5 %	5 – 6 %	4 – 7 %
Zinc	7 – 10 %	4 – 6 %	2 – 4 %
Lead	6 – 8 %	0.25 % Max.	0.25 % Max.
Nickel (incl. Cobalt)	1 % Max.	1 % Max.	0.9 % Max.
Bismuth	-----	1.6 – 2.2 %	1.5 – 3.5 %
Selenium	-----	0.8 – 1.1 %	-----
Iron	0.4 % Max.	0.2 % Max.	0.35 % Max.
Antimony	0.25 % Max.	0.25 % Max.	0.25 % Max.
Sulfur	0.08 % Max.	0.08 % Max.	0.08 % Max.
Phosphorous	0.02 % Max.	0.05 % Max.	0.06 % Max.

Aluminum & Silicon – 0.005% of each in all three Alloys

Figure 2.

