

September:  
rested, relaxed and  
ready to perform, our

# promise of quality has been renewed

once again



Pure metals and alloys.  
Standard and custom shapes.



**Belmont**  
M E T A L S I N C .

## The combination is always right from Belmont.

Now that the lazy days of summer have past, we're re-energized to do business during the brisk days ahead. As temperatures drop, take advantage of our low melting alloys suitable for a variety of applications available in any special combination you require, no matter what the season. Priced right, ready when you need it, Belmont offers a greater variety of low melting alloy compositions and shapes than any other U.S. manufacturer.

# LOW MELTING ALLOYS

**Low** melting (below 440°F) alloys are unique because many *expand* upon solidifying rather than shrink, unlike most metals. Also known as fusible alloys, these Belmont products are ideal for a range of tooling, production, and safety applications.

Low melting alloys are used to hold irregularly shaped objects such as Jet Engine Turbine Blades—so the bases can be machined.

The low melting alloy encapsulates the object so it can be chucked on the surface and the balance of the part machined. When this process is completed, the low melting alloy is removed by dipping the part in hot water or oil. The low melt material that is recovered can be reused numerous times.

Another useful application is in tube bending to prevent kinks or buckling. The tube is first filled with a low melting alloy and the formed as needed. The low melting alloy is removed using hot water or oil, leaving the reshaped tubing intact.

The expansion characteristic of low melting alloys makes it an ideal medium to accurately check the dimensions of complex, difficult to measure machined shapes and die cavities. The alloy is cast in the cavity, allowed to solidify, and then removed. The resulting "proof" is then measured.

Alloys with low melting temperatures are particularly useful as safety devices. A low melting alloy plug melts out when a set temperature is reached, setting off a sprinkler or alarm, or allowing compressed gas or fuel to vent from its tank rather than explode.

These alloys are also used for low temperature soldering. The problem with conventional soldering is that the application of a new solder can melt previous solders—but by using a series of continually lower melting alloy solders, any number of solders can be applied without risk.

Low melting alloys containing Indium will "wet" (adhere) to glass and ceramics, rendering it ideal for making holders for polishing eyeglass lenses and shaping ceramic parts. With melting points of 117° F to 136° F, immersion in hot tap water removes the holder.

Using our metallurgical experience, Belmont developed a line of low melting alloys that can be tailored into custom shields for radiation therapy patients. These customized shields provide better protection, are recyclable, and are easier to use than traditional lead shields.



Other low melting alloy applications include tempering baths and seals, cores to electroform metals such as copper, bushings in abrasive wheels, and various prosthetic and dental development work. Many of these could not be accomplished without the unique ability to expand upon solidification, as well as the low melting temperatures that characterize these alloys.

Answer: Bismuth, water, antimony. Bismuth, in fact, expands 3.3% by volume, exceeding the expansion of water.

### An "Expansive" Trivia Question

Can you name three substances that expand when they melt?

## Our tolerance level for anything less than the best is zero...

Belmont Metals operates an approximately 80,000 square foot state-of-the-art production and laboratory facility. We are continually upgrading our hardware and human resources to meet increasing demand while maintaining our high standards for product quality and customer service. Which is why the U.S. Government has continually selected and re-certified Belmont's quality. You can be confident of our commitment to provide you with creative, cost-efficient solutions for your most difficult requirements. We don't just meet the standards—we set them.

