

BRUSHWELLMAN

ENGINEERED MATERIALS

Avoid the risk of premature failure
 Use Brush Wellman's Patented **Omega Alloy 25** AMS 4533 and AMS 4535 for your high performance aircraft bearings and bushings

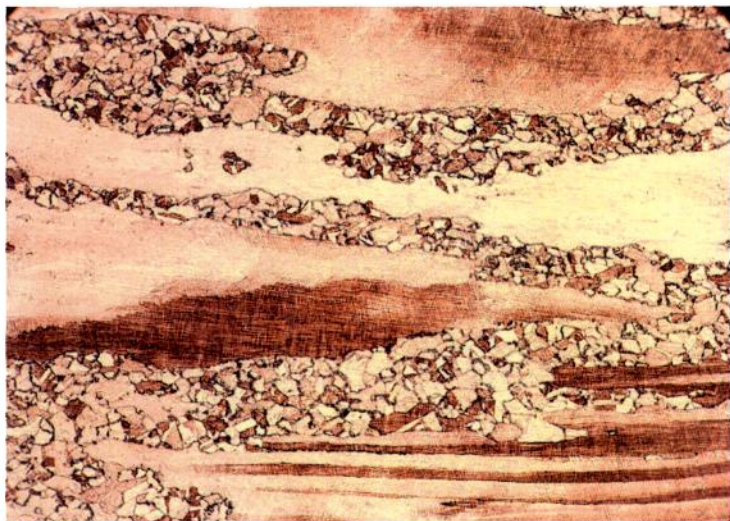


Figure 1: Duplex grain structure of standard hot-worked copper beryllium

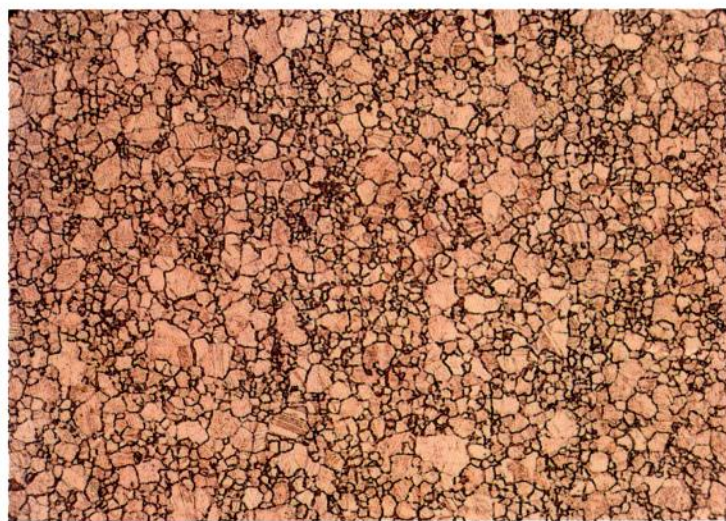


Figure 2: Uniform grain structure of Brush Wellman's Omega-Processed copper beryllium

Brush Wellman sells reliability with its **Omega-Processed** copper beryllium. The fine microstructure of **Omega-Processed** copper beryllium results from our patented thermo-mechanical processing of cast copper beryllium billets. Standard hot-working of copper beryllium usually leaves large regions of metal as unrecrystallized grains shown in Figure 1. These large grains serve to localize the stress in the material, resulting in lower fatigue and fracture resistance. The fully recrystallized, fine, uniform grains in **Omega-Processed** copper beryllium, shown in Figure 2, better distribute the stresses in the metal, resulting in improved ductility, fracture resistance and fatigue strength.

The benefits of **Omega Processing** are most clearly seen by looking at its affect on the elongation and average grain size. As shown in Figure 3, **Omega-Processed** copper beryllium has markedly improved elongation. This results from its finer and more uniform grain structure, as is shown in Figure 4. Repeatedly hot-working copper beryllium through conventional means can break the average grain size down to the level achieved by **Omega Processing**; however, one cannot be sure that the metal is right. It is still possible there are a few isolated large, unrecrystallized grains. **Omega Processing** converts the cast structure in the entire volume in one "violent" mechanical process. **Omega Processing** gets it right the first time.

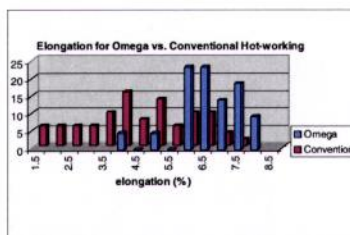


Figure 3: Elongation improvements in **Omega** copper beryllium

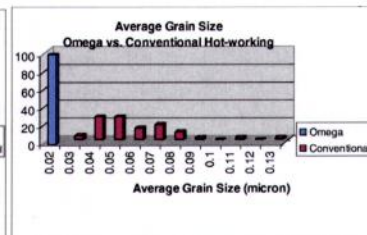


Figure 4: Grain size improvement in **Omega** material

Omega-Processed copper beryllium exceeds all the requirements of AMS 4533 and AMS 4535.

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Courtesy of Busby Metals
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