

## Comments

### Additional Data on the Metastable Be-Cu System

"The additional references to the evaluation of the Be-Cu system presented in Vol. 1, No. 1 included Fig. 3 from Shiromizu and Mishima [9] on the metastable system. In this figure, solvi data for the GP zones and  $\gamma'$  phase on the Cu-rich side of the diagram are shown. Herein are submitted additional experimental data on these solvi, as well as on the solvus of the  $\gamma'$  phase."

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## Addenda

### The Be-Cu (Beryllium-Copper) System: Metastable Solvi

In Fig. 4, the previously unpublished metastable solvi data obtained by us from alloys of Cu 1.0, 1.3, 1.5, 1.7 and 2.1 wt. % Be are displayed along with the data of [9]. Our data were determined by reversion experiments in conjunction with TEM metallography.

The extent of the experimentally determined metastable solvi is therefore expanded.

Also included in the figure is the solvus of the metastable  $\gamma'$  phase. This solvus was also determined by reversion experiments. One datum point from [9] is included.

The following are the characteristic features of the electron diffraction patterns of the various metastable phases. (See [23] for a more detailed summary.)

- (1) GP zones give rise to long (100) streaks.
- (2)  $\gamma''$  gives rise to relative maxima in the intensity near the  $\frac{1}{2}$  {200} positions (the  $\frac{1}{2}$  {200} maxima are due to double diffraction).
- (3) The  $\gamma'$  phase has reflections near the  $\frac{1}{2}$  {200} position. The reflections are extended to directions that are either  $36^\circ$  or  $26^\circ$  from the [010] $^*$ , corresponding to habit planes of either  $\{112\}_{fcc}$  or  $\{113\}_{fcc}$  respectively.

It should be noted that metastable solvi like these are invariably determined by reversion experiments. Once a metastable phase has dissolved, it is very difficult for it to reform, because the vacancy supersaturation that often accompanies quenches from solutionizing temperatures has been relieved. Also, other more stable phases may begin to form making it thermodynamically unlikely that the less stable phase would reprecipitate.

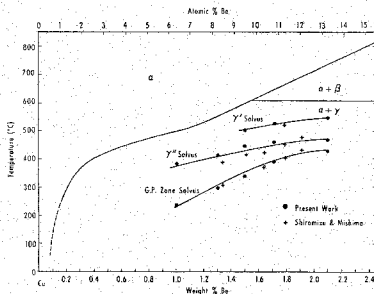
Furthermore, it should be remembered that a metastable phase can be replaced at a temperature beneath its solvus. Thus, care must be taken in the experimental determination of such solvi.

Additional data on metastable Be-Cu evaluation contributed by D. E. Laughlin, Department of Metallurgy & Materials Science, Carnegie-Mellon University, Pittsburgh, PA 15213; and L. E. Tanner, Lawrence Berkeley Laboratory, MMRD, Berkeley, CA 94720.

### Cited Reference

23. R. J. Rioja and D. E. Laughlin, *Acta Met.*, 28, p 1301 (1980).

Fig. 4 Metastable Solvi in the Be-Cu System



Previously unpublished work by Laughlin and Tanner.