01 Dec 1986

# The Mg-Sb System

A. A. Nayeb-Hashemi

J. Beverley Clark
*Missouri University of Science and Technology*



## Recommended Citation

A. A. Nayeb-Hashemi and J. B. Clark, "The Mg-Sb System," *Bulletin of Alloy Phase Diagrams*, vol. 7, no. 6, p. 522, Springer, Dec 1986.
The definitive version is available at https://doi.org/10.1007/BF02869853

# Comments and Addenda

# Addenda

## The Al-Sb System

In Vol. 5, No. 5, page 462, Table 1, the space group for AlSb should be $F\bar{4}3m$, and the space group for (Sb) should be $R\bar{3}$m. In Table 2, the second entry in the fourth column and the first entry in the fifth column should be 50.0.

## The Au-Ba System

Please add the following information to the evaluation in Vol. 7, No. 5, pages 336 and 337.

Bruzzone [70Bru] studied $Au_2Ba$ by X-ray analysis. The compound was prepared from Au 99.99% and Ba 99.6% by fusion in an argon atmosphere at 1200 °C followed by slow cooling (6 days) to the temperature 600 °C. $Au_2Ba$ has a hexagonal structure of the $AlB_2$ type with parameters $a$ = 0.4804 and $c$ = 0.4119 nm.

### Cited Reference

**70Bru:** G. Bruzzone, "Some Intermetallic $MX_2$ Compounds Formed by Ca,Sr and Ba," *Atti. Acad. Naz. Lincei, Cl. Sci. Fis. Mat. Natur., 48* 235-241 (1970) in Italian. (Crys Structure; Experimental)

## The Au-Fe System

In Vol. 5, No. 6, page 592, Table 1, the approximate composition range for ($\alpha$Fe) is 98.6 to 100 at.% Fe.

## The Au-Sn System

In Vol. 5, No. 5, page 492, Table 1, the space group for ($\alpha$Sn) should be $Fd3m$. The following Table 3 replaces Table 3 on page 494.

## The Cu-Pb System

In Vol. 5, No. 5, page 506, Table 2, the composition at the eutectic is given in at.% Cu.

## The Mg-Sb System

In Vol. 5, No. 6, page 580, Table 1, the space group for $\beta Mg_3Sb_2$ should be $Ia3$, and the space group for $\alpha Mg_3Sb_2$ should be $P3m1$.

## The Mg-Si System

In Vol. 5, No. 6, page 589, Eq 7, for the free energy of fusion of $Mg_2Si$, the coefficient of the $T \ln T$ term should have been multiplied by 3 for conversion from J/g · atom to J/mol (where the mol was defined as the formula unit, $Mg_2Si$). The correct coefficient is 194.61.

Equation 7 was not used in subsequent calculations.

**Table 3 Special Points of the Assessed Au-Sn System**

| Reaction | Compositions of the respective phases, at.% Sn | | | Temperature, °C | Reaction type |
|---|---|---|---|---|---|
| L $\rightleftarrows$ (Au) | | 0 | | 1064.43(a) | Freezing point |
| L + (Au) $\rightleftarrows$ $\zeta$ | ~23 | 6.8 | ? | 483 | Peritectic |
| (Au) + $\zeta$ $\rightleftarrows$ $\beta$ | ? | ? | 9.1 | ? | Peritectoid |
| $\beta$ $\rightleftarrows$ (Au) + $\zeta$ | 9.1 | ? | ? | ~250 | Eutectoid |
| $\zeta$ $\rightleftarrows$ (Au) + $\zeta'$ | ? | ? | 16.7 | ? | Eutectoid |
| L $\rightleftarrows$ $\zeta$ + $\delta$ | 29.5 | 17.5 | 50 | 278 | Eutectic |
| $\zeta$ $\rightleftarrows$ $\zeta'$ | 16.7 | 16.7 | ... | 195 | Congruent |
| $\zeta$ $\rightleftarrows$ $\zeta'$ + $\delta$ | 18.5 | 16.7 | 50 | 190 | Eutectoid |
| L $\rightleftarrows$ $\delta$ | 50 | 50 | ... | 419.3 | Congruent |
| L + $\delta$ $\rightleftarrows$ $\varepsilon$ | 72 | 50.5 | 66.7 | 309 | Peritectic |
| L + $\varepsilon$ $\rightleftarrows$ $\eta$ | 88.5 | 66.7 | 80 | 252 | Peritectic |
| L $\rightleftarrows$ $\eta$ + ($\beta$Sn) | 93.7 | 80 | 99.8 | 217 | Eutectic |
| $\eta$ $\rightleftarrows$ $\varepsilon$ + ($\beta$Sn) | 80 | 66.7 | ~100 | ? | Eutectoid |
| $\varepsilon$, ($\beta$Sn), ($\alpha$Sn) | 66.7 | ~100 | ~100 | ~13.05 | ? |
| L $\rightleftarrows$ ($\beta$Sn) | | 100 | | 231.9681(a) | Freezing point |
| ($\beta$Sn) $\rightleftarrows$ ($\alpha$Sn) | | 100 | | 13.05 | Allotropic |

(a) From [Melt].