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*Indicates key paper.
#Indicates presence of a phase diagram.

Ge-Sb evaluation contributed by **R.W. Olesinski** and **G.J. Abbaschian**, Department of Materials Science and Engineering, University of Florida, Gainesville, FL 32611. This program was supported by ASM, under Grant No. FG 101-1 to the University of Florida. Thermodynamic calculations were made by using the computer program developed by Drs. A.D. Pelton, W.T. Thompson, and C.W. Bale, McGill University, Montréal, Québec. Literature searched through 1983. Professor Abbaschian is the ASM/NBS Data Program Category Editor for binary germanium alloys.

The Ag-Cs (Silver-Cesium) System

107.8682 132.9054

By A.D. Pelton
Ecole Polytechnique de Montréal

According to [61Kie], no intermetallic phases are formed in the Ag-Cs system. From the atomic size parameters, the solubilities of Ag in (Cs) and of Cs in (Ag) are expected to be extremely small. In the Ag-Na system, the liquids are completely miscible, but the liquidus is very flat, indicating a strong tendency to demixing.

The tendency to demixing increases as one proceeds from Li to Cs. Ag-Li liquid alloys show no tendency to demix. This trend is also observed in Cu-alkali alloys. Therefore, liquid Cs and Ag are undoubtedly virtually completely immiscible.

Ag-Cs crystal structure and lattice parameter data are given in Table 1.

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Table 1 Ag-Cs Crystal Structure and Lattice Parameter Data at 25 °C

Phase	Composition, at.% Cs	Pearson symbol	Space group	Strukturbericht designation	Prototype	Lattice parameter, nm *a*	Reference
(Ag)	0	*cF4*	*Fm3m*	*A1*	Cu	0.40861	[King1]
(Cs)	100	*cI2*	*Im3m*	*A2*	W	0.6141	[King1]

Ag-Cs evaluation contributed by **A.D. Pelton,** Centre de Recherche en Calcul Thermochimique, Ecole Polytechnique, Campus de l'Universite de Montréal, P.O. Box 6079, Station A, Montreal, Quebec, Canada H3C 3A7. This work was partially supported by the United States Department of Energy funds through the Joint Program on Critical Compilation of Physical and Chemical Data coordinated through the Office of Standard Reference Data, National Bureau of Standards. Literature searched through 1984. Dr. Pelton is the ASM/NBS Data Program Co-Category Editor for binary alkali alloys.

The Ag-K (Silver-Potassium) System

107.8682 39.0983

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According to [61Kie], no intermetallic phases are formed in the Ag-K system. From the atomic size parameters, the solubilities of Ag in solid (K) and of K in solid (Ag) are expected to be extremely small. In the Ag-Na system, the liquids are completely miscible, but the liquidus is very flat, indicating a strong tendency to demixing. The tendency to demixing increases proceeding from Li to Cs. (Ag-Li liquid alloys show no tendency to demix. This trend is observed in Cu-alkali alloys). Therefore, liquid K and Ag undoubtedly exhibit a wide region of immiscibility. Mutual liquid solubilities on the order of 1 at.% near the melting point of Ag might be expected.

Table 1 lists crystal structure and lattice parameter data.

Cited Reference

***61Kie:** G. Kienast and J. Verma, "The Behavior of Alkali Metals Towards Cu, Ag, and Au," *Z. Anorg. Allg. Chem.*, *310*, 143-169 (1961) in German. (Equi Diagram; Experimental)

*Indicates key paper.

Table 1 Ag-K Crystal Structure and Lattice Parameter Data

Phase	Composition, at.% K	Pearson symbol	Space group	Strukturbericht designation	Prototype	Lattice parameter, nm *a*
(Ag)	0	*cF4*	*Fm3m*	*A1*	Cu	0.40861
(K)	100	*cI2*	*Im3m*	*A2*	W	0.5321

Source: [King1].

Ag-K evaluation contributed by **A.D. Pelton**, Centre de Recherche en Calcul Thermochimique, Ecole Polytechnique, Campus de l'Université de Montréal, P.O. Box 6079, Station A, Montréal, Québec, Canada H3C 3A7. This work was partially supported by the United States Department of Energy funds through the Joint Program on Critical Compilation of Physical and Chemical Data coordinated through the Office of Standard Reference Data, National Bureau of Standards. Literature searched through 1984. Dr. Pelton is the ASM/NBS Data Program Co-Category Editor for binary alkali systems.

The Ag-Li (Silver-Lithium) System

107.8682 6.941

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Equilibrium Diagram

The equilibrium diagram in Fig. 1 is taken directly from [54Fre], except the melting points of the elements, which are from [83Cha]. [54Fre] made a very careful investigation involving thermal analysis, metallography, and X-ray diffraction. High-purity materials were used, and mild steel crucibles were employed. All alloys examined in the solid state were chemically analyzed. All original experimental points are shown on Fig. 1, because these indicate clearly the reproducibility and error limits of the results. No tabulation of data was given. All points and curves in Fig. 1 were read from the diagram given by [54Fre].