

Ba-Pb (Barium-Lead)

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The Ba-Pb phase diagram in [Massalski2] was redrawn from [1938Gru].

[1977Bru] found new phases Ba_3Pb_5 and Ba_2Pb , and proposed a new phase diagram, as shown in Fig. 1.

Based on measurements of enthalpy of formation of Ba-Pb alloys, [2006Som] suggested that the liquidus temperature around Ba_2Pb and Ba_5Pb_3 may be $\sim 100^\circ\text{C}$ higher than that shown in Fig. 1. [2007Idb] attempted to

compromise the data of [1977Bru] and [2006Som] using two thermodynamic models. Because of inevitable inconsistency, [2007Idb] concluded that the Ba-Pb phase diagram needs further refinement.

Ba-Pb crystal structure data are given in Table 1.

Table 1 Ba-Pb crystal structure data

Phase	Composition, at.% Pb	Pearson symbol	Space group	Strukturbericht designation	Prototype
(Ba)	0	<i>cI2</i>	<i>Im</i> $\bar{3}m$	<i>A2</i>	W
Ba_2Pb	33.3	<i>oP12</i>	<i>Pnma</i>	<i>C23</i>	Co_2Si
Ba_5Pb_3	37.5	<i>tI32</i>	<i>I4/mcm</i>	<i>D8_I</i>	Cr_5B_3
BaPb	50	<i>oC8</i>	<i>Cmcm</i>	<i>B_F</i>	CrB
βBa_3Pb_5	62.5
αBa_3Pb_5	62.5	<i>oC32</i>	<i>Cmcm</i>	...	Pu_3Pd_5
$BaPb_3$	75	<i>hR12</i>	<i>R</i> $\bar{3}m$
(Pb)	100	<i>cF4</i>	<i>Fm</i> $\bar{3}m$	<i>A1</i>	Cu

References

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- 1977Bru:** G. Bruzzone and E. Franceschi, Equilibrium Phase Diagram and Crystal Structure of the Intermediate Phases of the Ba-Pb Binary System, *J. Less-Common Met.*, 1977, **52**(2), p 211-216
- 2006Som:** F. Sommer, G. Borzone, N. Parodi, and R. Ferro, Enthalpy of Formation of Ca-Pb and Ba-Pb Alloys, *Intermetallics*, 2006, **14**(3), p 287-296
- 2007Idb:** M. Idbenali, C. Servant, N. Selhaoui, and L. Bouirden, A Thermodynamic Modelling of the Ba-Pb System, *Calphad*, 2007, **31**, p 479-489

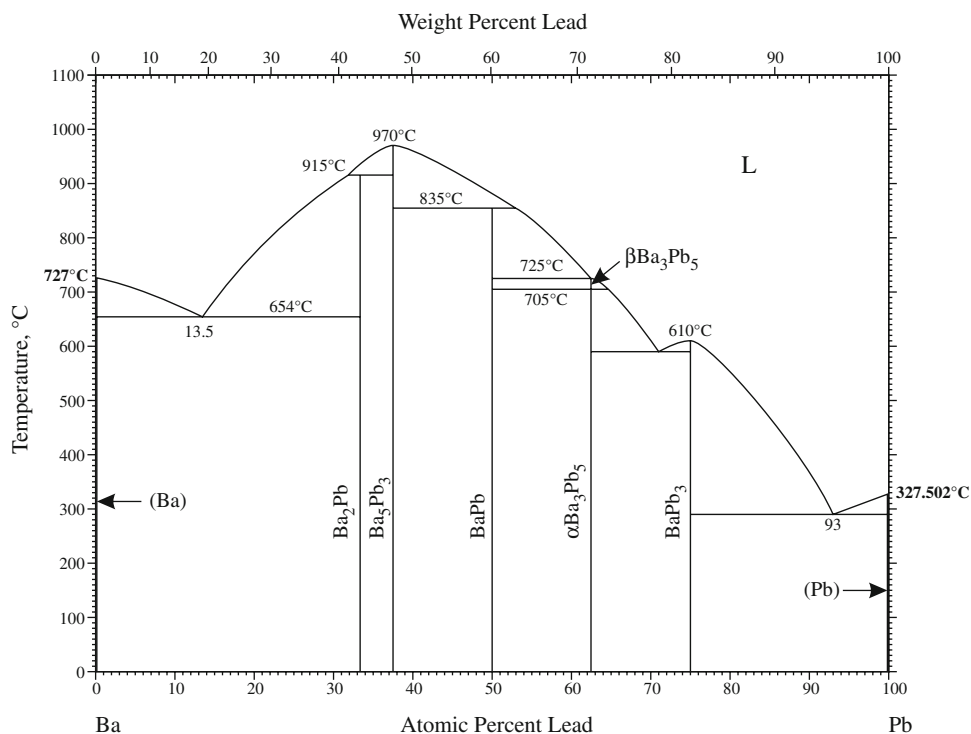


Fig. 1 Ba-Pb phase diagram