

In-Pd (Indium-Palladium)

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The In-Pd phase diagram in [Massalski2] was adopted from [1992Oka]. The In_3Pd phase with unknown crystal structure was reported in this phase diagram. [2002Stu] disclosed by X-ray diffraction analysis that In_7Pd_3 exists instead of In_3Pd . [2002Fla] obtained the same result, but the composition of In_7Pd_3 was found to be 29 at.% Pd. The In-Pd phase diagram in Fig. 1 is primarily based on [2002Fla] for 0 to 45 at.% Pd and [1992Oka] for 45 to 100 at.% Pd. The peritectic decomposition temperatures of In_3Pd and In_3Pd_2 were 664 °C and 709 °C, respectively, in [1992Oka]. [2002Fla] reported the $\text{L} \rightarrow (\text{In}) + \text{In}_7\text{Pd}_3$ eutectic reaction at 154 °C. However, because the Pd concentration of the eutectic point is negligibly small, the eutectic

temperature must be very close to the melting point of In. Therefore, it is shown at 156 °C in Fig. 1 as in [1992Oka].

Table 1 is the In-Pd crystal structure data table given by [1992Oka] modified with the data for In_7Pd_3 reported by [2002Fla].

References

- 1992Oka:** H. Okamoto: *Phase Diagrams of Indium Alloys and Their Engineering Applications*, C.E.T. White and H. Okamoto, ed., ASM International, Materials Park, OH, 1992, pp. 207-10.
2002Fla: H. Flandorfer, *J. Alloys Compds.*, 2002, 336, pp. 176-80.
2002Stu: T. Studnitzky and R. Schmid-Fetzer: *Z. Metallkd.*, 2002, 93(9), pp. 885-93.

Table 1 In-Pd Crystal Structure Data

Phase	Composition, at.% Pd	Pearson Symbol	Space Group	Strukturbericht Designation	Prototype
(In)	0	<i>tI2</i>	<i>I4/mmm</i>	A6	In
In_7Pd_3	29	<i>cI40</i>	<i>Im\bar{3}m</i>	$D8_f$	Ge_7Ir_3
In_3Pd_2	39-40	<i>hP5</i>	$P\bar{3}m1$	$D5_{13}$	Al_3Ni_2
InPd	45-61.5	<i>cP2</i>	$Pm\bar{3}m$	B2	CsCl
In_3Pd_5	62.5	<i>oP16</i>	<i>Pbam</i>	...	Ge_3Rh_5
βInPd_2	63.5-67.2
αInPd_2	66-66.7	<i>oP12</i>	<i>Pnma</i>	C23	Co_2Si
βInPd_3	73-75
αInPd_3	74.5-75.5	<i>tI8</i>	<i>I4/mmm</i>	$D0_{22}$	Al_3Ti
(Pd)	81-100	<i>cF4</i>	$Fm\bar{3}m$	A1	Cu

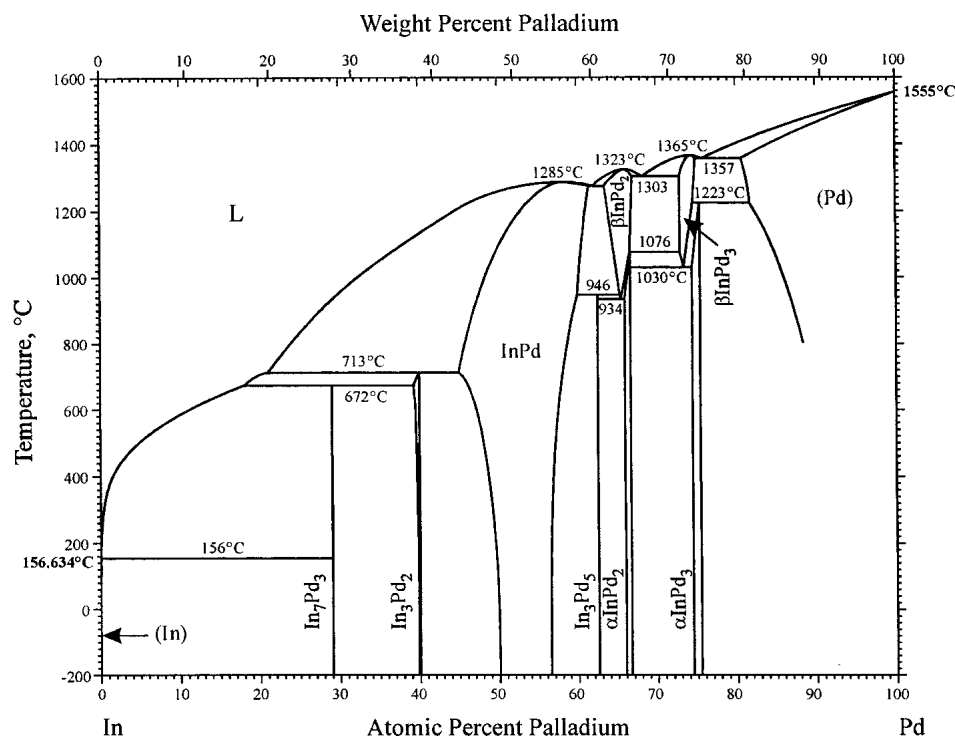


Fig. 1 In-Pd phase diagram