

# Ce-Zn (Cerium-Zinc)

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The Ce-Zn phase diagram in [Massalski2] was adopted from [1965Chi] with slight changes from  $Ce_2Zn_9$  and  $Ce_4Zn_{21}$  to  $Ce_{13}Zn_{58}$  and  $Ce_3Zn_{22}$ , respectively, based on later reports on crystal structures. Table 1 shows Ce-Zn crystal structure data taken from [2007Vil]. The phase diagram shown in [Massalski2] was reproduced by thermodynamic modeling by [2008Spe]. The result is shown in Fig. 1.

## References

- 1965Chi:** P. Chiotti and J.T. Mason, Phase Relations and Thermodynamic Properties for the Cerium-Zinc System, *Trans. Metall. Soc. AIME*, 1965, **233**(4), p 286-795
- 2007Vil:** P. Villars and K. Cenzual, *Pearson's Crystal Data CD-ROM*, Release 2007/8, ASM International, Novelt
- 2008Spe:** P.J. Spencer, A.D. Pelton, Y.B. Kang, P. Chartrand, and C.D. Fuerst, Thermodynamic Assessment of the Ca-Zn, Sr-Zn, Y-Zn, and Ce-Zn Systems, *CALPHAD*, 2008, **32**, p 423-431

**Table 1** Ce-Zn crystal structure data

Phase	Composition, at.% Zn	Pearson symbol	Space group	Strukturbericht designation	Prototype
( $\delta$ Ce)	0	<i>cI2</i>	<i>Im<math>\bar{3}m</math></i>	<i>A2</i>	W
( $\gamma$ Ce)	0	<i>cF4</i>	<i>Fm<math>\bar{3}m</math></i>	<i>A1</i>	Cu
CeZn	50	<i>cP2</i>	<i>Pm<math>\bar{3}m</math></i>	<i>B2</i>	CsCl
CeZn <sub>2</sub>	66.7	<i>oI12</i>	<i>Imma</i>	...	KHg <sub>2</sub>
CeZn <sub>3</sub>	75	<i>oC16</i>	<i>Cmcm</i>	...	...
Ce <sub>3</sub> Zn <sub>11</sub>	78.6	<i>oI28</i>	<i>Immm</i>	...	La <sub>3</sub> Au <sub>11</sub>
Ce <sub>13</sub> Zn <sub>58</sub>	81.7	<i>hP142</i>	<i>P6<sub>3</sub>mc</i>	...	Zn <sub>18</sub> Gd <sub>13</sub>
CeZn <sub>5</sub>	83.3	<i>hP6</i>	<i>P6/mmm</i>	<i>D2<sub>d</sub></i>	CaCu <sub>5</sub>
Ce <sub>3</sub> Zn <sub>22</sub>	88	<i>tI100</i>	<i>I4<sub>1</sub>/amd</i>	...	...
Ce <sub>2</sub> Zn <sub>17</sub>	89.5	<i>hR57</i>	<i>R<math>\bar{3}m</math></i>	...	Zn <sub>17</sub> Th <sub>2</sub>
CeZn <sub>11</sub>	91.7	<i>tI48</i>	<i>I4<sub>1</sub>/amd</i>	...	BaCd <sub>11</sub>
(Zn)	100	<i>hP2</i>	<i>P6<sub>3</sub>/mmc</i>	<i>A3</i>	Mg

**Fig. 1** Ce-Zn phase diagram from [2008Spe]

