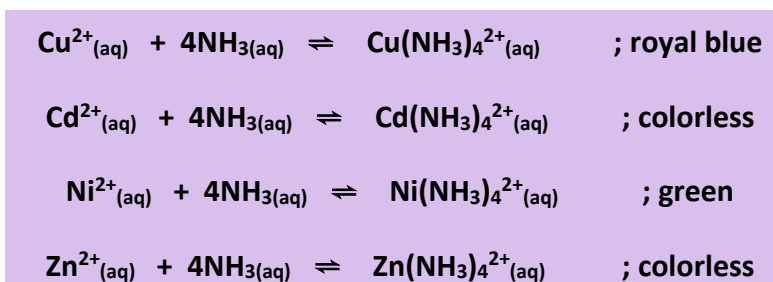


## GROUP D CATIONS

Cu <sup>2+</sup>	Mg <sup>2+</sup>	Ni <sup>2+</sup>	Zn <sup>2+</sup>	Cd <sup>2+</sup>
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Group D cations readily form ammonia complexes when (NH<sub>4</sub>)<sub>2</sub>C<sub>2</sub>O<sub>4</sub> is added:



Compared to the other cations of Group D, Mg<sup>2+</sup> does not form complexes with NH<sub>3</sub> but both its hydroxide and oxalate are more soluble thus, it won't precipitate out. All Group D cations remains in the supernatant.

<b>Ni<sup>2+</sup></b>	<ul style="list-style-type: none"> <li>➤ <b>Confirmatory reagent:</b> 1% dimethylglyoxime (deprotonated by 6 M NH<sub>3</sub>)                             <ul style="list-style-type: none"> <li>- Production of <b>cherry red</b> precipitate</li> <li>- The solution needs to be basic for precipitation to occur</li> </ul> </li> </ul>
<b>Cu<sup>2+</sup></b>	<ul style="list-style-type: none"> <li>➤ <b>Confirmatory reagent:</b> 0.1 M K<sub>4</sub>Fe(CN)<sub>6</sub> <ul style="list-style-type: none"> <li>- Production of <b>maroon</b> precipitate</li> <li>- The solution needs to be slightly acidic for precipitation to occur and to prevent formation of toxic HCN gas</li> </ul> </li> </ul>
<b>Mg<sup>2+</sup></b>	<ul style="list-style-type: none"> <li>➤ <b>Confirmatory reagent:</b> 0.1 M Na<sub>2</sub>HPO<sub>4</sub> <ul style="list-style-type: none"> <li>- Production of <b>white</b> precipitate</li> <li>- The supernatant is blue due to the presence of unreacted Cd<sup>2+</sup>, Zn<sup>2+</sup>, Ni<sup>2+</sup>, and Cu<sup>2+</sup> forming a complex with NH<sub>3</sub></li> </ul> </li> </ul>
<b>Zn<sup>2+</sup></b>	<ul style="list-style-type: none"> <li>➤ <b>Confirmatory reagent:</b> 0.1 M K<sub>4</sub>Fe(CN)<sub>6</sub> <ul style="list-style-type: none"> <li>- Production of <b>white</b> precipitate</li> <li>- The acid that was added reacts with the hydroxide ligands liberating the Zn<sup>2+</sup> ions</li> </ul> </li> </ul>
<b>Cd<sup>2+</sup></b>	<ul style="list-style-type: none"> <li>➤ <b>Two confirmatory reagents:</b> <ul style="list-style-type: none"> <li>- 0.2 M Na<sub>2</sub>S: produces <b>yellow</b> CdS precipitates</li> <li>- 0.1 M K<sub>4</sub>Fe(CN)<sub>6</sub>: produces <b>white</b> Cd<sub>2</sub>Fe(CN)<sub>6</sub> precipitates</li> </ul> </li> </ul>