

Crystal Structures and Thermal Behavior of Alkaline Earth Tricyanomethanides

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The alkaline earth tricyanomethanides $\text{Mg}(\text{tcm})_2 \cdot 2\text{H}_2\text{O}$, $\text{Ca}(\text{tcm})_2$, $\text{Sr}(\text{tcm})_2 \cdot \text{H}_2\text{O}$ and $\text{Ba}(\text{tcm})_2 \cdot 2\text{H}_2\text{O}$ were prepared from aqueous solutions of the respective chlorides and silver tricyanomethanide. Their IR spectra and thermal behavior are described. The crystal structures of $\text{Ca}(\text{tcm})_2$ and $\text{Ba}(\text{tcm})_2 \cdot 2\text{H}_2\text{O}$ were determined by single crystal X-ray diffraction. The structure of $\text{Ca}(\text{tcm})_2$ is of the type found for several transition metal tricyanomethanides [1], containing two independent interpenetrating networks. $\text{Ba}(\text{tcm})_2 \cdot 2\text{H}_2\text{O}$ has a unique crystal structure corresponding to a three-dimensional coordination polymer with nine fold coordinated Ba atoms connected by water molecules and tricyanomethanide anions.

Key words: Pseudohalides, Alkaline Earth Tricyanomethanides, X-Ray Crystal Structures, Thermoanalysis