Crystal Structures and Thermal Behavior of Alkaline Earth Tricyanomethanides

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The alkaline earth tricyanomethanides Mg(tcm)\textsubscript{2} \cdot 2H\textsubscript{2}O, Ca(tcm)\textsubscript{2}, Sr(tcm)\textsubscript{2} \cdot H\textsubscript{2}O and Ba(tcm)\textsubscript{2} \cdot 2H\textsubscript{2}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 Ca(tcm)\textsubscript{2} and Ba(tcm)\textsubscript{2} \cdot 2H\textsubscript{2}O were determined by single crystal X-ray diffraction. The structure of Ca(tcm)\textsubscript{2} is of the type found for several transition metal tricyanomethanides [1], containing two independent interpenetrating networks. Ba(tcm)\textsubscript{2} \cdot 2H\textsubscript{2}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