

Solubility of Copper Oxides in Water and Steam

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The solubilities of cupric and cuprous oxides were measured in water over the range 25 to 350 °C in the presence of various chemical agents (NaOH, NH₃, B(OH)₃, H₃PO₄, (OHCH₂)₃CNH₂, (OHCH₂)₃CN(OHCH₂CH₃)₂, HF₃CSO₃, HNO₃ and mixtures thereof) as a function of pH, and in steam to 400 °C as a function of pressure. Large discrepancies exist between the various experimental studies, especially at high temperatures for cuprous oxide, where the current solubilities are orders of magnitude lower. The solubilities of both oxides in water are highly pH dependent exhibiting unexpected changes in the speciation of dissolved copper with temperature, but are virtually pH independent in steam.