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Thematic Course: Disposal of waste chromium. Part 1.

The structure and composition of precipitation during recovery of chromium(VI) iron shavings in sulfuric acid solutions

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Abstract

The range of CrO_3 and H_2SO_4 for sulfuric acid aqueous solutions of chromium anhydride, within which formation of soluble crystalline powder sediment complex composition occurred due to oxidation-reduction reactions with participation of metallic iron, was obtained. Held X-ray analysis of sediment has allowed to carry him on the structure of the phase of hydroniumjarosite $(H_3O)Fe_3(SO_4)_2(OH)_6$. Given the high chromium content in the sediments, concluded its phase composition as chromiferous hydroniumjarosite due to the inclusion of Cr^{3+} in the structure by ion-exchange replacement. According to the results of the microscopic studies and elemental analysis the heterogeneity of the microstructure and chemical composition of the sediment for iron, chromium, sulfur and oxygen was revealed. Thus by the end of the deposition process the concentration ratio of iron and chromium in microcrystalline formations is in rather narrow range of values 1.53-1.73.