Effect of some sodium salts coatings on the high-temperature oxidation of Nimonic-80A alloy at 1173 K

Abstract

The effects of some sodium salts, namely Na₂Sₐ₄, NaCl, NaN₃ and Na₂C₀₃ coatings, on the high-temperature oxidation behaviour of Nimonic-80A (N-80A) alloy at 1173 K in a slow current of air are presented. The oxidation kinetics and effects of salt deposition on the N-80A alloy were investigated. The alloy is more severely attacked by NaCl than by Na₂Sₐ₄, due to the formation of volatile chlorides. NaN₃-and Na₂C₀₃-induced alloy seem to be more aggressive than Na₂Sₐ₄ and NaCl due to the evolution of nitrogenous and CO/C₀₂ gases respectively. The scale morphologies were determined on the basis of X-ray diffraction analysis and scanning electron microscopic techniques.