Copper oxide anti-wax coating for petroleum pipelines

Abstract

Background/Objectives: This research aims to study the efficacy of copper oxide as an anti-wax coating for petroleum pipelines. Methods/Statistical Analysis: Stainless steel was dipped into copper chloride and methanol solution before heating at 300 ^{O}C. The performance of anti-wax deposition was determined using a self-fabricated wax deposition test. Reduction of wax deposition was determined by weight of wax deposited onto substrate. The surface morphology of the coating was studied to determine the factors of anti-wax deposition. Findings: The analyzed wax deposition reduction shows a maximum of 100% reduction of wax deposition, indicating that the copper oxide coating was able to act as an anti-wax coating. SEM analysis shows that the surface morphology of coating has a microstructure that plays an important role in improving the anti-wax performance of stainless steel surfaces. Application: Copper oxide coatings have shown potential for use in pipeline interiors in the petroleum industry to prevent wax deposition, which leads to pipeline blockage.