

Thesis Title	Determination of Pentachlorophenol in Leather Products by Accelerated Solvent Extraction and High Performance Liquid Chromatography		
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Abstract

Two liquid chromatographic methods have been developed for the determination of pentachlorophenol (PCP) in leather products: high performance liquid chromatography (HPLC) and ion chromatography (IC). PCP in the samples was extracted using Soxhlet and accelerated solvent extraction (ASE) methods under optimum conditions. The optimum conditions for the isolation of PCP from the sample matrix were a mixture of methanol (80%) and 40 mM of ammonium hydroxide at a temperature of 80°C and pressure of 1500 psi. Optimum conditions for the determination of PCP in the sample extracts by reversed phase HPLC were investigated. PCP in the sample solutions could be separated and determined on a SYMMETRY[®] C₁₈ column using a mixture of acetonitrile and 0.04% phosphoric acid (80:20) as mobile phase at a flow rate of 1.0 ml/min with ultraviolet detection at 254 nm. The detection limit and the limit of determination were found to be 0.05 and 0.07 µg/g PCP respectively. With respect to the ion chromatography (IC) method, optimum conditions for the determination were again studied. A ten-port valve was used to allow matrix elimination. A 0.2 M sodium hydroxide solution was used to eliminate other anions except pentachlorophenolate ions from the enrichment column using a mixture of

25 mM sodium hydroxide and 55% acetonitrile as mobile phase at a flow rate of 1.0 ml/min with ultraviolet detection at 254 nm. The detection limit and the limit of determination were 0.01 and 0.04 µg/g PCP respectively. Both methods were applied to the determination of PCP in leather product samples after extraction using Soxhlet and ASE methods. The results obtained were in agreement.