

The Determination of Hexavalent Chromium in Leather Extracted by Acid Artificial Perspiration Solution

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Abstract: In some cases, when people wear leather articles, the skin contacts directly with leather products, hexavalent chromium in leather maybe extracted out by the body perspiration. Generally, people's perspiration is mild acid. Its usual pH is 5.5. In this paper, the hexavalent chromium in leather was extracted with 5.5 pH artificial perspiration and the extract solution was filtered and the content of extracted chromium (VI) in the liquid was determined by DPC spectrophotometry method. The extraction parameters, such as temperature ,time, pH value of artificial solution were studied and influence of mild acid artificial perspiration solution on the maximum absorption wavelength of Cr(VI) - DPC solution was studied. Then the method was evaluated by measurement for accuracy and recovery test. The results showed that the optimized extraction parameters are pH 5.5 artificial perspiration at 30°C for 3 hours. The results show that calibration curve of chromium(VI) revealed good linearity with the correlation coefficient of 0.9998, the RSD (n=8) and the recovery percentage are 0.44% and 96.0%-101.0%, which illustrate the feasibility and reliability of the method.

Key words: hexavalent chromium; artificial perspiration; DPC