

# Determination of Formaldehyde in Fur Extracted by Artificial Perspiration Solution

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**Abstract:** Formaldehyde has been widely applied in tannery industry because of its low price and good property. But it is a material which leads to cancer and deformity, so the determination of formaldehyde is very important. The classical method to determinate the content of formaldehyde in leather and fur is based on extraction with water and detection by acetylacetone spectrophotometry. But while people use leather and fur products, it is the perspiration which dissolves the formaldehyde rather than water. In order to make the determination more close to the condition of formaldehyde being extracted during the process people use leather or fur goods, the determination of free formaldehyde in fur extracted by artificial perspiration was studied and results are reported in this paper. The absorption wavelength of acetylacetone spectrophotometry in artificial solution system was determined. pH, temperature, reaction time and expiring date of acetylacetone spectrophotometry color developing system were studied. The established method was applied to determine the formaldehyde in fur samples and the accuracy was evaluated. The results show that the maximal absorbance wavelength of formaldehyde- acetylacetone spectrophotometry with artificial perspiration and without artificial perspiration solution is 412nm respectively. The optimum parameters for formaldehyde -acetylacetone spectrophotometry color developing system were as following: pH was 6.91, temperature was  $(40\pm 2)$  °C, the reaction time was 60 min, and the colour developing agent was valid within 2 weeks. The results also showed that the relative standard deviation (R.S.D. %) of this method was 2.03% and the recovery percentage of the sample determination was 96% ~ 107%, so the determination of free formaldehyde in fur extracted by artificial perspiration solution by acetylacetone spectrophotometric method is feasible.

**Key words:** acetylacetone; artificial perspiration; formaldehyde; fur