

SENSORY EVALUATION OF DETERGENCY. Ahn M.Y., Han E.K*, Kim E.A.
Department of Clothing and Textiles, Yonsei University, Seoul 120-749, Korea.

The major purpose of this study was to develop a evaluation method of detergency based on the human sensation of cleanness. It was attempted to evaluate the detergency by the method of the human sensibility test and compared with the surface reflectance or the values calculated by the Kubelka-Munk function. A new scale was developed based on the concept of the gray scale. As the initial reflectance values were different for the different artificially soiled fabrics, proper ranges of grayness were selected and the each scale has been divided by ten levels with the equal distance of the grayness. As the artificially soiled fabrics, six different types such as EMPA116, EMPA 101, AS3, AS9, WFK10D and Japanese wet type was selected. In order to prepare them to have different levels of detergency, the soiled fabrics were washed by the commercially available wash machine and detergent at various levels of washing conditions such as temperature, time, hardness of water, amount of detergent. For the sensory evaluation, ten expert panels were selected by the statistical test of the consistency and trained for three weeks.

The result showed that the detergency determined by the surface reflectance was in better agreement with the sensory evaluation than that of the Kubelka-Munk function. For the six soiled fabrics, it was easier for the panels when the detergency was either higher than 70% or lower than 30%. When the detergency was in between these values, the standard deviation was very high which implies the difficulty in evaluation of detergency in this range. This result strongly suggests that when the wash machine is developed, it is not necessary to increase the mechanical force to increase relatively small amount of detergency with the great loss of the fabric strength. EMPA 116 whose initial reflectance was the lowest of the six soiled fabrics, showed the strong linear relationship with $r=0.988$. EMPA 101, whose initial reflectance was relatively low, unexpectedly showed low r value which is probably due to the uneven detergency of the soiled fabrics. WFK 10D showed good linear relationship even though the soiled fabric has very high initial reflectance. AS3, AS9 and Japanese wet soiled type which have brown tones did not show good relationship between the reflectance and the sensory evaluation irrespective of the initial reflectance, which suggests that for the soiled fabrics with color, different scale is required.