Abstract

The aim of this present study to evaluate the print quality by the waterfastness properties of foil prints which are exposed to water or rain. Waterfastness is an important property for any kind of packaging products, specially for food and medicine packages for assessing their print stability. The fastness properties of prints can be described in terms of print durability and image stability. Moreover, the poor fastness properties of prints will affect the product sale adversely. Little work has been done to study the fastness properties of printed films and foils. This study has preferred to take the blister foils as samples which are printed by gravure process as the blister foil has extensive usage in food and medicine packaging. Water immersion method and water spray methods both are used to study the water fastness of magenta ink on foil and the results were found to be similar. The evaluation is carried out by the measured spectral curves and colorimetric values before and after exposure using the oceanographic spectroradiometer (DH2000BAL) device. A significant change in reflectance in the blue and red regions with time indicates the fading of magenta print with time. This article has proposed a newly approach based on artificial neural network (ANN) model to determine the waterfastness rate of foil prints.
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with variation of time. A comparative analysis is also made between the ANN model and regression model. However, the artificial neural network (ANN) has given a bit more excellent prediction than regression. In the context of prediction of waterfastness, the artificial neural network (ANN) model has given optimal results with the MSE -1.2409 and a correlation coefficient of 0.9990.

References

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Index Terms
Keywords

Waterfastness, Spectral data, ANN, CIE Lab, Gravure printing