

Zorenko Oksana, Assistant Professor, PhD;
Zorenko Yaroslav, Assistant Professor, PhD;
(Igor Sikorsky Kyiv Polytechnic Institute, Kyiv, Ukraine)

INKJET PRINTING ON CORRUGATED CARDBOARD PACKAGING

The print production by using of digital printing continues to grow [1–3]. In addition to classic printing products such as books, magazines and promotional products, digital printing has also begun to be actively used for packaging. In particular, color printing on the surface of the corrugated cardboard packaging by means of inkjet digital printing is currently relevant.

The main problems that arise when printing on the surface of corrugated cardboard packaging means of digital inkjet printing are not high quality color reproduction caused by the decrease in the value of optical and printing properties. Moreover, by using of ISO 12647 standard [4] it can be proofed and determined of printing quality on the corrugated cardboard surface, and also it can be investigated by the color reproduction quality for different consumables.

In the course of the work, the color characteristics of various types of corrugated cardboard used for color printing by means of inkjet digital printing were investigated. The color characteristics of the printed surface for different types of corrugated cardboard [5] were measured: by type (three and five layers), corrugated layer profile (B, C, E and their combinations) and the presence of special surface coating (coated and non-coated). The color characteristics of the printed surface of the corrugated cardboard were compared with the requirements of ISO 12647.

According to the results of the researching, observed some deterioration of the color characteristics according to the CIE LAB system for the printed surface of corrugated cardboard: for the coated surface at the level $L = 80$ with a color distortion at the level $\Delta E = 8$ and for the non-coated surface at equal to $L = 45$ with color distortion at $\Delta E = 40$. This level of distortion is acceptable according to ISO 12647 [4], when used to estimate consumables for packaging. Also, it should be noted some change in the shade of white for the surface of the corrugated cardboard with non-coated layer, which is manifested in the dominance of warm shades.

According to the results of the investigation, it was reached the normal level of quality with using of inkjet digital printing on the surface of corrugated cardboard with a coated layer, characterized by a fairly acceptable quality of color characteristics according to ISO 12647. However, the use of corrugated cardboard with a non-coated layer, in contrast, leads to a

significant change in the shade of white at surface and as a result large distortions in color reproduction.

REFERENCES

1. Zolotukhina K. Researching the Interaction of Different Printed Materials Types with Liquids / K. Zolotukhina, S. Khadzhynova, O. Velychko, B. Kushlyk, O. Kushlyk-Dyvulska // Eastern-European Journal of Enterprise Technologies. – 2019. – Т. 3. – №. 1. – С. 99. DOI: <https://doi.org/10.15587/1729-4061.2019.165856>.

2. Савченко К. І. Відтворення кольору струминним друком / К. І. Савченко, О. В. Зоренко, О. М. Величко // Технологія і техніка друкарства – 2012. – № 1(35). – С. 12–17. DOI: [https://doi.org/10.20535/2077-7264.1\(35\).2012.36998](https://doi.org/10.20535/2077-7264.1(35).2012.36998).

3. Гурська І. В. Технологічні особливості друкування на гофрованому картоні флексографічним способом / І. В. Гурська, О. В. Зоренко, Т. В. Розум // Технологія і техніка друкарства. – 2018. – № 4 (62)– С. 60–70. DOI: [https://doi.org/10.20535/2077-7264.4\(62\).2018.173872](https://doi.org/10.20535/2077-7264.4(62).2018.173872)

4. ISO 12647-2: 2004. Graphic technology-Process control for the production of half-tone color separations, proof and production prints – part2: Offset lithographic processes[S]. Switzerland: ISO/TC130, (2004). DOI: <https://doi.org/10.3403/03181323>.

5. ГОСТ 7376-89. Картон гофрированный. Общие технические условия // Все ГОСТы [Электронный ресурс]. – 1992. – Режим доступа: <http://vsegost.com/Catalog/74/7439.shtml>. - Дата доступа: 23.12.2019.

УДК 667.5

В. В. Шибанов, проф., докт. хим. наук
В. Б. Репета, доц., канд. техн. наук
(Украинская академия печати, г. Львов)

КЛАССИФИКАЦИЯ ЧЕРНИЛ СТРУЙНОЙ ПЕЧАТИ

Согласно исследованиям аналитических компаний технологии цифровой струйной печати остаются наиболее развивающимися в сравнении с другими цифровыми технологиями. Для мирового рынка струйной печати в 2023 году прогнозируется увеличение до 109 млрд долларов, что в сравнении с объемом в 2018 году на 9,4% больше [1].

Известно, что чернила для струйных печатающих устройств в зависимости от использованного красящего вещества делятся на две большие группы: на основе красителей (Dye-based) и на основе пигментов (Pigment based). Предлагается классификация чернил в зависимости от способа пленкообразования на запечатываемом материале (рис. 1).