

RESEARCH ON ADHESION OF PASTEURIZED ADHESIVE LABELS

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In food packaging production are various problems. For marking of pasteurized packaging often is used adhesive labels. So the adhesion of the adhesive labels to the surface is very important. This is important because the growth in consumption, food products are produced ahead of time, packed in film, frozen and pasteurized when needed, not only with the package but also with an informative label. Insufficient adhesion of the layers may impair the performance of the product. The adhesion strength may vary due to the properties of the raw material used, the adhesion strength of the raw materials, the technological processes as well as the operating parameters (temperature, fat, etc.). Because digital printing is currently used for printing smaller quantities of adhesive labels, it is important to investigate how the pasteurization process influenced the quality of the labels. There is not much research about labels resistance pasteurization printed in flexography, investigate the influence of pasteurization on adhesive labels printed with flexographic and digital printing [1-2].

He study uses two polymer films:

- PP GW TC60/UNIV RP37 – is a white, glossy, biaxially oriented, activated, top-coated polypropylene film. Multipurpose white, pearlescent film for adhesive labels, where good water, chemical, and oil resistance is needed. The grammar is 61 g / m², the thickness –133 µm. Suitable for flexography, screen and offset printing method.
- RAFLACOAT PLUS PEFC/ SPEC S2045 - is a white woodfree machine coated mid-gloss paper. Suitable for flexography, offset, rotogravure, screen, and hot foil. The grammar is 80 g / m², the thickness –69 µm. SPEC S2045 a rubber-based, permanent adhesive.

For the study, the labels were printed on a flexographic printing press Gallus EM 280 and a digital printing press HP Indigo WS6800. 20 specimens were used for testing, 10 printing flexographic printing and 10 printing digital printing (electrographically). Digital printing uses Indigo inks, which consist of electrically charged particles, a true ink suspended in a non-conductive carrier fluid (ElectroInk). Digital printed labels have been varnished to withstand temperatures of 100 ° C according to the supplier's specifications. Flexographic printing labels were printed using UV ink and UV protective varnish (YL-7G100-K058).

The classic pasteurization (heat treatment) method is based on heating the products to a temperature above 60 ° C but not exceeding 100 ° C. The samples were heated at 90 ° C for 60 minutes in a closed container. For thermal simulation was used equipment BINDER BD 56.

The peel force test is intended to measure the material's strength. Labels have adhered to polymeric packaging (pet+pe/evoh/pe) for food contact. The Thwing-Albert FP-2255 was used for experiments. The specimen is placed between the two grippers of the device. The grippers are pulled apart at a constant speed. The force required to break the barrier is equal to the adhesion strength. When the device is switched on, the force required to peel 1.5 cm wide by 1.0 cm long pull at a constant speed of 15 cm/min is recorded. [3]

[1] D.Kazlauskas, J. Sidaravičius, Investigation into the Quality of Thermally Treated Package Lamination. Mechanics, material science, industrial engineering and management, Vol. 2. No. 4, 5-9 (2010)

[2] S. Grigaliūnienė, D. Abazoriūtė, M.Kulišauskaitė, A. Ziminskaitė, J. Sidaravičius, J. Turla, V. Mechanical properties of flexographic prints. Science – Future of Lithuania, 5(6), 583-586(2013). <https://doi.org/10.3846/mla.2013.92>

[3] FINAT method. A. Jack, FINAT Technical Handbook 6th edition, Barry, UK, 2001.