MARMARA
ÜNİVERSİTESİ

29.03.2024

This is the technical report of Assoc. Prof. Dr. Emine ARMAN KANDIRMAZ, assigned from Marmara University School of Technical Sciences, reporting her examination of Adoziosteam ink dated 29.03.2024.

As a result of the examination of Adoziosteam - (Adozione Steam Sterilization Ink) printed sample with ICP-Ms (according to TS EN ISO/IEC 17025 method), it was determined that the product does not contain lead and heavy metals with 95% reliability. In addition, a significant color change (from pink to dark green (black)) was determined in the test of samples printed with Adoziosteam ink in steam autoclave at l2l°C, 15 minutes, under 1 atm pressure. In addition, samples printed with Adoziosteam ink in a steam autoclave were tested at l34°C, 3.5 minutes, under 2 atm pressure and showed a significant color change (from pink to dark green (black)). If the label is exposed to steam at temperatures lower than the specified temperature and for shorter periods than specified, the color change is absent or slight. Other specifications of the relevant ink are shown in the annex. When the table is examined, it is determined that Adoziosteam ink is water-based, has high color intensity and printability values are appropriate.

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Annex. 1 Test results for Adoziosteam - (Adozione Steam Sterilization Ink) ink

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Applied Tests	**Adoziosteam-(Adozione Steam Sterilization Ink)**
Viscosity (DIN cap)	35-55 seconds
Volatile Organic Compound	450/650 g/L
Solid Amount	%"40-60
Specific Gravity	0.94
pH	8-9
Color	Pink
Solvent	Water
Odor	Characteristic
Print Type	Flexography
Recommended Anilox Tram	40-50-60 cm
Drying Temperature	40- 55 °C
Print Speed	55-110 m/min.
Substrate Material	Paper
Remedies Used to Adjust Viscosity	Water
Expiry Date	6 Weeks
Brightness	Medium
Friction Resistance	Medium /Good
Water Resistance	Low
Drying Speed	Good/Very Good
Color Intensity	High
Color Change in Steam Autoclave (121°C, 15 minutes, under 1 atm pressure or at 134°C, 3.5 minutes, under 2 ann pressure)	Pink-Dark Green (Black)
Disposal	According to Hazardous Waste Disposal Regulations
Storage Time and Temperature	+4 /*24 °C Range. 2 Weeks After Opening

ICP-Ms (performed according to TS EN IO/IEC 17025 method.

The test was performed under 920g load and 30 oscillation measurement conditions. The friction nibbled specimens were visually inspected at the relevant wavelength and under visible light.

In order to measure the drying time, after printing with the ink provided by the company, the paper was covered with another clean paper and passed between two cylinders with 350 N pressure.

The ink on the clean paper was visually checked under both daylight and light source at the relevant wavelength.

When determining the dry film weight of the printed ink, the uncoated paper was first weighed (T1). A ground tone of 100 cm2 (A) was printed on this paper and weighed (T2).

The dry ink weight was calculated by the formula below.

$$Dry\ Ink\ Film\ Weight = \frac{(T_2 - T_1)10000}{A} \qquad (1)$$

Odor test Tappi T483, Taste test ASTM E1870-11 (2019), Food contact test according to European Framework Regulation EC 1935/2004.

The colors of the prints were made by CIELab method using X-Rite eXact spectrophotometer according to ISO 12647-2:2013 standard.

Gloss measurements of the prints were performed with BYK-Gardner GmbH micro Tri-gloss 60° geometry according to ISO 2813:2014.

Viscosity measurements of flexo prints were performed according to ASTM D1200-10 (2018).