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**Limits of volatile organic compounds (VOCs) in
printing ink**

油墨中可挥发性有机化合物（VOCs）含量的限值

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Limits of volatile organic compounds (VOCs) in printing ink

1 Scope

This Standard specifies the limits of volatile organic compounds (VOCs) in printing ink; provides related ink terms and definitions, classification, requirements, test methods, packaging mark and list of prohibited solvents.

This Standard applies to all kinds of printing inks in the exit-factory state.

This Standard does not apply to additives, thinners, etc. used to adjust the performance of the ink during printing, nor does it apply to products such as car wash water used in printing.

2 Normative references

The following documents are indispensable for the application of this document. For the dated references, only the editions with the dates indicated are applicable to this document. For the undated references, the latest edition (including all the amendments) are applicable to this document.

GB/T 34675-2017 Determination of volatile organic compound (VOC) content in radiation curable coatings

GB/T 36421-2018 Restricted substances concerning printing inks for packaging materials

GB/T 38608-2020 Method for determination of the volatile organic compounds (VOCs) content in the ink

3 Terms and definitions

The following terms and definitions apply to this document.

3.1

Printing ink

A dispersion system composed of colorants, binders, auxiliary agents, etc., which is a colored substance that is transferred to the substrate during the

The ink which can be set and dried by polymerization reaction under the action of energy radiation.

[GB/T 15962-2018, definition 2.28]

3.14

Intaglio ink

Ink suitable for intaglio printing.

4 Classification

4.1 According to the difference in the main diluent used in the product composition, ink is classified into solvent-based ink, water-based ink, offset ink, energy curing ink, and intaglio ink. Water-based ink, offset ink, energy curing ink, and intaglio ink are ink products with low volatile organic compound content.

Note 1: Solvent-based ink uses organic volatile solvent as the main diluent.

Note 2: Water-based ink uses water as the main diluent.

Note 3: Offset ink uses vegetable oil or modified vegetable oil, and high-boiling-point mineral oil with a main distillation range above 250 °C as the main diluent. Energy curing offset ink is listed in the energy curing ink category.

Note 4: Energy curing ink uses energy curing reactive monomer as the main diluent.

Note 5: Intaglio ink uses vegetable oil, mineral oil whose main distillation range is 160 °C~300 °C, and other solvents as the main diluent.

4.2 According to printing methods, solvent-based ink is classified into gravure ink, flexographic ink, ink-jet ink, and screen ink.

4.3 According to printing methods, water-based ink is classified into gravure ink, flexographic ink, ink-jet ink, and screen ink.

4.4 According to the paper feeding and drying methods, offset ink is classified into sheet-fed offset ink, cold-set web-fed ink, and heat-set web-fed ink.

4.5 According to printing methods, energy curing ink is classified into offset ink, flexographic ink, screen ink, ink-jet ink, and gravure ink.

5 Requirements

The limits of the content of volatile organic compounds in printing ink shall meet

For energy curing ink-jet ink and energy curing gravure ink, it shall be carried out according to the method specified in GB/T 34675-2017. For other energy curing inks, it shall be carried out according to the method specified in GB/T 38608-2020.

6.5 Volatile organic compound (VOCs) content in intaglio ink

It shall be carried out in accordance with the method specified in GB/T 38608-2020.

7 Packaging mark

For ink products which pass the inspection according to this Standard, it shall clearly indicate their ink category on the packaging mark. Those which meet the requirements of low volatile organic compound content can be clearly indicated as ink products with low volatile organic compound content.

8 List of prohibited solvents

Due to the greater harm and influence of some organic solvents on the human body and the environment, during the production process, ink products shall not be artificially added with:

- Halogenated hydrocarbon;
- Solvents listed in Appendix A.

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