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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB 38507-2020

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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Foreword

All technical content of this Standard is mandatory. This Standard is drafted in accordance with the rules given in GB/T 1.1-2009. This Standard was proposed by and shall be under the jurisdiction of Ministry of Industry and Information Technology of the PRC. Drafting organizations of this Standard. Bauhinia Variegata Ink & Chemicals (Zhongshan) Limited, National Printing and Office Automation Consumable Materials Quality Supervision and Inspection Center, Shanxi Jinghuake Trade Co., Ltd., Chengdu Tuozhan New Material Co., Ltd., Zhengzhou Hongsam Digital Science and Technology Co., Ltd., Xi'an Xizheng Printing Co., Ltd., Guangzhou Saiwei Technology Co., Ltd., Hangzhou Toka Ink Co., Ltd., Zhejiang Yongzai Printing Ink Co., Ltd., Guangdong Sky Dragon Printing Ink Co., Ltd., China Banknote Ink Co., Ltd., Shanghai Ink Silian Chemical Co., Ltd., Shanghai Modern Environment Engineering Technique Co., Ltd., Shanghai Peony Printing Ink Co., Ltd., Shenyang Golden-Sun Digital Sci. & Tec. Co., Ltd., Environmental Protection Research Institute of Light Industry, China Environmental United Certification Center Co., Ltd., China Daily Chemical Industry Association, China National Light Industry Council, Chinese Academy of Environmental Planning, Beijing Technology and Business University, Sun Yat-sen University, Xi'an Banknote Printing Co., Ltd., Shenzhen Bright Ink & Coating Co., Ltd., Beijing Institute of Graphic Communication, Liaoning Wenlei Technology Co., Ltd., Shenzhen Academy of Metrology & Quality Inspection. Main drafters of this Standard. Tan Zhengjian, Jiang Liqin, Wang Chongsheng, Wang Qiang, Yuan Fushun, Gong Hongmin, Jin Rong, Ma Zhiqiang, Wu Min, Deng Guozhong, Li Qing, Wang Qing, Jiang Chao, Chen

Aijun, Qian Wei, Sun Xiaofeng, Cao Lei, Feng Jing, Zhang Xin, Ning Miao, Wang Ning, Xin Xiulan, Wang Xiaomei, Feng Wen, Zhang Fengnian, Wei Xianfu, Zhang Wenlei, Zhou Jie, Li Peifen, Wang Ping, Wei Lixia, Huang Beiqing, Xu Dongyu, Cao Jing. Limits of volatile organic compounds (VOCs) in printing ink

1 Scope

GB 38507-2020 is the Chinese national standard on limits of volatile organic compounds (vocs) in printing ink, in the field of paint and colour industries. It carries no /T suffix, which in the Chinese system means compliance is mandatory: a product or a practice within its scope has to meet it to be lawfully made, sold or carried out in China. It was issued on 4 March 2020 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 April 2021. Classification: ICS 87.080, CCS Y44. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

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 printing process. [GB/T 15962-2018, definition 2.1]

3.2 Volatile organic compounds; VOCs Any organic compound with an initial boiling point lower than or equal to 250 °C under a standard pressure of 101.3 kPa. [HJ 2542-2016, definition 3.2]

3.3 Solvent-based ink Ink with organic solvent as the main solvent or dispersion medium.

Note. Rewrite GB/T 15962-2018, definition 2.32.

3.4 Gravure ink A general term for various inks suitable for printing using intaglio with graphic part recessed and blank part raised. [GB/T 15962-2018, definition 2.14]

3.5 Flexographic ink Ink suitable for flexographic printing. [GB/T 15962-2018, definition 2.3]

3.6 Ink-jet ink Ink suitable for ink-jet printing.

3.7 Screen ink A general term for various inks suitable for printing using a screen printing plate consisting of holes in the graphic part. [GB/T 15962-2018, definition 2.21]

3.8 Water-based ink Ink with water as the main solvent or dispersion medium.

3.9 Offset ink A general term for various inks suitable for printing using a lithographic plate where the graphic part and the blank part are almost on the same plane, and the ink is transferred through the blanket.

3.10 Sheet-fed offset ink Ink suitable for sheet-fed substrate offset press. [GB/T 15962-2018, definition 2.8]

3.11 Cold-set web-fed ink The web-fed offset ink which is set and dry at room temperature. [GB/T 15962-2018, definition 2.11]

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,

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 the requirements of Table 1.

6 Test methods

6.1 Volatile organic compound (VOCs) content in solvent-based ink It shall be carried out in accordance with the method specified in GB/T 38608- 2020.

6.2 Volatile organic compound (VOCs) content in water-based 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.

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.

Appendix A

Note 1. 2. **Search (Optional).** Enter the keyword '**GB 38507-2020**' in the search bar, if it is not already shown. 3.

Note 2. 9.

Note 3. 10. **Verification (USD

Notes and Explanations

Note 1:**[GB 38507-2020](https://

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