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**NATIONAL STANDARD OF THE  
PEOPLE'S REPUBLIC OF CHINA**

**GB/T 23973-2018**

Replacing GB/T 23973-2009

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**Determination of formaldehyde in dye products**

染料产品中甲醛的测定

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### Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009. This standard replaces GB/T 23973-2009 "Determination of formaldehyde in dye products". Compared with GB/T 23973-2009, except editing The main technical changes outside the sexual modification are as follows:

--- Added a method for the determination of formaldehyde in dye products by high performance liquid chromatography (see 3.2). This standard was proposed by the China Petroleum and Chemical Industry Federation. This standard is under the jurisdiction of the National Dyestuff Standardization Technical Committee (SAC/TC134). This standard was drafted. Zhejiang Dibang Chemical Co., Ltd., Taizhou Qianjin Chemical Co., Ltd., China Chemical Economic and Technological Development Center, Shenyang Chemical Research Institute Co., Ltd., National Dyestuff Quality Supervision and Inspection Center. The main drafters of this standard. Pu Aijun, Xu Wanfu, Chen Guangshun, Xue Yan, Fu Weisong, Chen Rigang, Yang Zhenmei, Chen Sujuan. The previous versions of the standards replaced by this standard are.

---GB/T 23973-2009. Determination of formaldehyde in dye products Caution - Personnel using this standard should have practical experience in laboratory work. This standard does not address all security issues. use It is the responsibility of the person to take appropriate safety and health measures and to ensure compliance with the conditions set by the relevant national regulations.

### 1 Scope

GB/T 23973-2018 gives the methods for determining formaldehyde in dye products, the residue that decides whether a dye can be used on textiles that touch the skin. Two methods are laid down. The spectrophotometric method, which is the arbitration method, distills the free formaldehyde out of the sample into an aqueous solution, develops the colour with acetylacetone and reads it on a spectrophotometer; the standard fixes the reagents down to the preparation and the shelf life of the acetylacetone solution, which is

stored at 0 °C to 5 °C in the dark, is used only after twelve hours and remains valid for six to eight weeks. The second method, added in this edition, is high performance liquid chromatography. Reagents are analytical grade and the water is grade three of GB/T 6682-2008; standard titration solutions are prepared to GB/T 601 and the results are judged by the rounding value comparison method of GB/T 8170-2008. This edition replaces GB/T 23973-2009, from which it differs by the addition of the chromatographic method.

This standard specifies the method for determining formaldehyde in dye products. This standard applies to the determination of formaldehyde in dye products.

## 2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article. Pieces. For undated references, the latest edition (including all amendments) applies to this document. Preparation of

GB/T 601 chemical reagent standard titration solution

GB/T 6682-2008 Analytical laboratory water specifications and test methods ( ISO 3696.1987, MOD)

GB/T 8170-2008 Numerical rounding rules and the representation and determination of limit values

### 3.1 Spectrophotometry (Arbitration Law)

3.1.1 Principle The free formaldehyde in the sample was prepared into an aqueous solution by distillation, developed with acetylacetone, and measured by a spectrophotometer colorimetric method.

#### 3.1.2 Determination method

3.1.2.1 General provisions Unless otherwise specified, only analytically pure reagents and tertiary water as specified in GB/T 6682-2008 are used. Standard used in the test Quasi-titration solution is prepared and calibrated according to GB/T 601 when no other requirements are specified. Judgment of test results The

4.3.3 repair value comparison method in GB/T 8170-2008 is carried out.

3.1.2.2 Reagents and solutions 3.1.2.2.1 Ammonium acetate. 3.1.2.2.2 Acetic acid (glacial acetic acid). 3.1.2.2.3 Acetylacetone. 3.1.2.2.4 Formaldehyde. The concentration is about 37% (mass fraction). 3.1.2.2.5 Acetylacetone solution. Weigh 150g of ammonium acetate, dissolve it in 800mL of water, transfer it to 1000mL brown volumetric flask, and then Add 3 mL of acetic acid and 2 mL of acetylacetone, dilute to the mark with water, and store at 0 °C ~ 5 °C in the dark. The color gradually changes after 12 hours of storage Deep, for this purpose, should be stored for 12h before use, the solution is effective for 6 weeks to 8

weeks. The sensitivity will change slightly after long-term storage, and should be checked weekly. Calibration curve. Or use water as a reference solution to measure the absorbance at a wavelength of 412 nm, the value should be less than 0.015, otherwise it needs to be reconstituted.

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