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

GB/T 38407-2019

**Leather and fur chemicals - Determination of chromium (VI) and
the reductive potential for chromium tanning agents**

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard uses the redrafting method to modify and adopt ISO 19071..2016
"Hexavalent chromium and its reducing

Determination ".

Compared with ISO 19071..2016, the following technical modifications have been made to this standard to adapt to China's actual situation.

--- Regarding the normative references, this standard has made adjustments with technical differences. The adjustments are reflected in Chapter 2

In the "general reference documents", the specific adjustments are as follows.

* ISO 3696 was replaced by GB/T 6682 which adopted the international standard;

--- Rewritten Chapter 3 principles, deleted specific test conditions involved in the principles;

--- Modified the storage temperature and storage time of 1,5-diphenylcarbazide solution in 4.6, and increased the discoloration and unusability

Description;

--- Increased the accuracy requirements of the analytical balance (see 5.1);

- Added specific specifications for volumetric flasks and pipettes (see 5.2 and 5.3);
- Refined the preparation method of tanning agent test solution in 7.2;
- Adjusted Chapter 10 test report.

The following editorial changes have been made to this standard.

- Modified the standard name to "Determination of Hexavalent Chromium and Reducibility in Chrome and Tanning Agents for Leather and Fur Chemicals", in line with China's leather standards

System adapted;

- Added description of the formula in the standard working curve example;
- Removed references.

This standard is proposed by the China Light Industry Federation.

This standard is under the jurisdiction of the National Leather Industry Standardization Technical Committee (SAC/TC252).

This standard was drafted. Chengdu Product Quality Inspection Research Institute Co., Ltd., Shaanxi University of Science and Technology, Huizhou City, Guangdong Province Supervision and Inspection Institute, China Leather Shoes Research Institute Co., Ltd., Jinjiang Anhui Hengtai Leather Co., Ltd., Zhujiang Leather Industry, Pengjiang District, Jiangmen City

Industry Co., Ltd., Guangdong Xinhuiwei Industrial Investment Co., Ltd.

1 Scope

This standard specifies the hexavalent chromium content in chrome tanning agents and a method for determining the reducibility of chrome tanning agents.

This standard applies to the determination of hexavalent chromium in various types of chrome tanning agents for leather and fur and their reducing properties.

2 Normative references

The following documents are essential for the application of this document. For dated references, only the dated version applies to this article

Pieces. For undated references, the latest version (including all amendments) applies to this document.

GB/T 6682 Analytical laboratory water specifications and test methods (GB/T 6682-2008, ISO 3696. 1987, MOD)

3 Principle

The chrome tanning agent is dissolved or diluted with water, and 1,5-diphenylcarbazide is reacted with the hexavalent chromium to form a purple-red complex.

After the alcohol extraction, the absorbance was measured at a prescribed wavelength.

Because the reducing agent may be present in the chrome tanning agent, which results in a negative value for the hexavalent chromium test result, the method of adding a standard substance should be used.

(By adding hexavalent chromium standard solutions of different concentrations to the initial chrome tanning agent solution) The reducibility of the chrome tanning agent was determined.

4 Reagents and materials

4.1 General requirements. Unless otherwise specified, the reagents used are analytical grade, and the test water should meet the requirements of Grade III water in GB/T 6682.

4.2 Phosphoric acid solution, 700mL ($\rho = 1.71\text{g/mL}$) phosphoric acid was diluted to 1000mL with distilled water.

4.3 Hexavalent chromium standard stock solution. $\text{K}_2\text{Cr}_2\text{O}_7$ reference material is dried at (102 ± 2) degrees C for (16 ± 2) h, and after cooling, accurately weighed with a balance 2.829g, then dissolved in water and transferred to a 1000mL volumetric flask, and the volume was adjusted to the mark. Each 1mL of this solution contained 1mg of hexavalent chromium.

4.4 Hexavalent chromium standard solution. Dilute 10mL of hexavalent chromium standard stock solution with distilled water to 1000mL. Each 1mL of this solution contains

10 μg of hexavalent chromium.

Note. A commercially available standard solution can be directly used to prepare a hexavalent chromium standard solution ($1 \mu\text{g/mL}$). At present, commercially available hexavalent chromium standard samples are GB W (E) 080257 in water

The reference material for the analysis of hexavalent chromium has a characteristic value of $100 \mu\text{g/mL}$ and a relative uncertainty of 0.8%.

4.5 Glacial acetic acid.

4.6 Diphenylcarbazide solution. Weigh 1.0g of 1,5-diphenylcarbazide, dissolve in 100mL of acetone, add 1 drop of glacial acetic acid to ensure acidity.

Note. Put the prepared 1,5-diphenylcarbazide solution in a brown bottle and store it in the light at 0 degrees C ~ 4 degrees C. The valid period is 14 days. Significant discoloration of the solution (particularly

Don't use pink).

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