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INDUSTRY STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

YC/T 253-2008

Cigarettes Determination of hydrogen cyanide in mainstream smoke Continuous flow method

(English Translation)

Issued on: January 1, 1970 **Implemented on: January 15, 2020**

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009 and GB/T.20001.4-2015.

This standard replaces YC/T 253-2008 "Continuous flow method for the determination of hydrogen cyanide in mainstream cigarette smoke". With YC/T 253-Compared with 2008, the main technical changes except for editorial changes are as follows.

---Modified reagents and materials (see Chapter 4, Chapter 4 of the 2008 edition);

---Modified the equipment (see Chapter 5, Chapter 5 of the 2008 edition);

---Added the pretreatment of the filter (see 6.1 and 6.2);

--- Increased the capture of hydrogen cyanide by the rotary smoking machine (see 6.4);

---Modified sample pre-processing and analysis (see 7.1, Chapter 7 of the 2008 edition);

---Revised the results and presentation (see Chapter 8);

---Modified the recovery rate and detection limit of the method (see Chapter 9, Chapter 9 of the 2008 edition);

--- Increased the precision of the method (see 9.3).

Please note that certain contents of this document may involve patents. The issuing agency of this document is not responsible for identifying these patents.

This standard was proposed by the State Tobacco Monopoly Administration.

This standard is under the jurisdiction of the National Tobacco Standardization Technical Committee Cigarette Sub-committee (SAC/TC144/SC1).

Drafting organizations of this standard. Shanghai Tobacco Group Co., Ltd., China Tobacco Hunan Industry Co., Ltd., National Tobacco Quality Supervision and Inspection Inspection

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Center, China National Tobacco Corporation Beijing Branch, Zhejiang China Tobacco Industry Co., Ltd., Guizhou China Tobacco Industry Co., Ltd., Anhui China Tobacco Industry Co., Ltd., Gansu Tobacco Industry Co., Ltd., Yunnan Tobacco Quality Supervision and Testing Station.

1 Scope

This standard specifies the continuous flow determination method of hydrogen cyanide release in mainstream cigarette smoke.

This standard applies to the determination of hydrogen cyanide in mainstream cigarette smoke.

2 Normative references

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

GB/T 5606.1 Cigarette Part 1: Sampling GB/T 6682 Analytical laboratory water specifications and test methods GB/T 19609 Smoking machine for routine analysis of cigarettes for determination of total particulate matter and tar

3 Principle

Filters pretreated with sodium hydroxide-ethanol/water solution are used to capture hydrogen cyanide in mainstream cigarette smoke. The captured filter, after Sodium hydroxide solution is leached to obtain a sample solution. Under slightly acidic conditions, the cyanide ion in the sample solution reacts with chloramine T to generate cyanogen chloride.

Cyanogen chloride reacts with isonicotinic acid to form pentenedial compounds through hydrolysis, and then reacts with 1,3-dimethylbarbituric acid to form blue compounds.

The absorbance was detected at 600nm.

4 Reagents and materials

The experimental water meets the requirements of Grade 1 water in GB/T 6682.

4.1
Sodium hydroxide, purity >=99.0%.

4.2
Standard material for cyanide component analysis in water [GB W(E)080115].

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4.3
Chloramine T (CAS number. 127-65-1), purity >=95.0%.

4.4
Potassium hydrogen phthalate (CAS number. 877-24-7), purity >=99.0%.

4.5
Isonicotinic acid (CAS number. 55-22-1), purity >=99.0%.

4.6 1,3-Dimethylbarbituric acid (CAS number. 769-42-6), purity >=98.0%.

4.7
Concentrated hydrochloric acid, 36%~38% (mass fraction).

4.8
Ethanol, purity >=99.0%.

4.9
Polyoxyethylene lauryl ether (CAS number. 9002-92-0), purity >=90%.

4.10 Polyoxyethylene lauryl ether solution

Add 25.0 g of polyoxyethylene lauryl ether (4.9) to 100 mL of water, heat and stir until completely dissolved.

4.11 1.0mol/L hydrochloric acid solution Add 84.0mL concentrated hydrochloric acid (4.7) slowly to 500mL water, transfer to a 1000mL volumetric flask, dilute to the mark with water, and mix well.

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