



Determination of Total Fluoride in Toothpaste (Draft for Comments) and Drafting Instructions

《牙膏中总氟的检验方法(征求意见稿)》
及起草说明

National Institutes for Food and Drug Control

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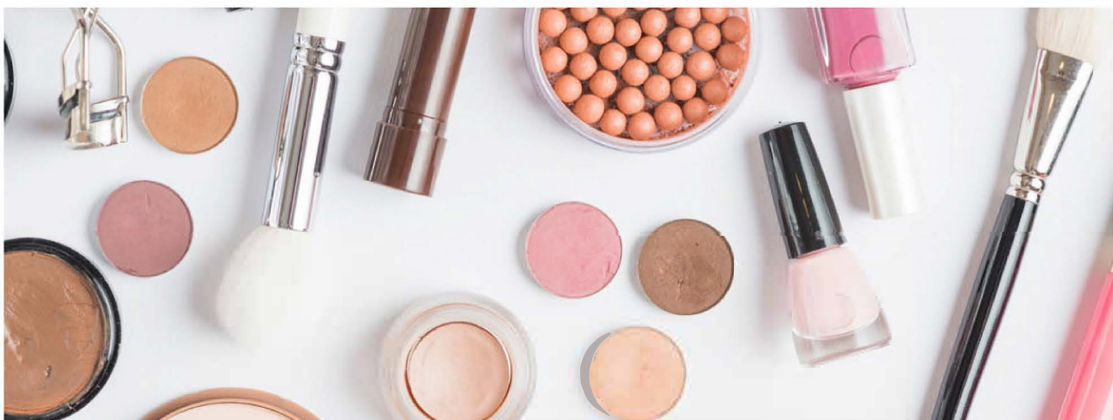
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Attachment 7

Determination of Total Fluoride in Toothpaste (Draft for Comments)

1 Scope

This method specifies the determination of total fluoride content in toothpaste by gas chromatography (GC).

This method applies to the determination of total fluoride content in toothpaste.

2 Method Summary

After derivatization extraction, the sample is separated by a gas chromatograph and detected by a hydrogen flame ionization detector. Qualitative analysis is performed based on the retention time, while quantitative analysis is conducted using the peak area ratio of the fluoride to the internal standard.

The limit of detection (LOD) of this method is 0.001 mg for total fluoride, and the lower limit of quantification (LOQ) is 0.002 mg. When the sampling amount is 0.2 g, the concentration of detection of this method is 5 mg/kg, and the minimum concentration of quantification is 10 mg/kg.

3 Reagents and Materials

Unless otherwise specified, the reagents used in this method shall be analytically pure or of a higher specification and the water shall be Grade 1 water specified in GB/T 6682.

3.1 High purity nitrogen (99.999%).

3.2 High purity hydrogen (99.999%).

3.3 Toluene.

3.4 Trimethylchlorosilane (TMCS).

3.5 Perchloric acid: 70%~72%.

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附件 7

牙膏中总氟的检验方法（征求意见稿）

Determination of Total Fluoride in Toothpaste (Draft for Comments)

1 范围

本方法规定了气相色谱法测定牙膏中总氟的含量。

本方法适用于牙膏中总氟含量的测定。

2 方法提要

样品经过衍生化提取后，采用气相色谱分离，氢火焰离子化检测器检测，根据保留时间定性，氟化物与内标峰面积比定量。

本方法对总氟的检出限为 0.001 mg，定量下限为 0.002 mg；取样量为 0.2 g 时，本方法检出浓度为 5 mg/kg，最低定量浓度为 10 mg/kg。

3 试剂和材料

除另有规定外，本方法所用试剂均为分析纯或以上规格，水为 GB/T 6682 规定的一级水。

3.1 高纯氮气 (99.999%) 。

3.2 高纯氢气 (99.999%) 。

3.3 甲苯。

3.4 三甲基氯硅烷 (TMCS) 。

3.5 高氯酸：70%~72%。

3.6 正戊烷：纯度≥99.5%。

3.7 氟化钠：基准氟化钠 (105 °C±2 °C，干燥 2 h) 。

3.8 氟离子标准溶液，浓度 1000 mg/L (有证标准溶液) 。

3.9 10%氯化钠溶液：称取 100 g 氯化钠于 1 L 玻璃容量瓶中，用一级水稀释至刻度，摇匀。



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