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

GB/T 44571-2024

**Test method of leatherette - Determination of free isocyanates
content**

人造革合成革试验方法 游离异氰酸酯含量的测定

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part

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1 Scope

GB/T 44571-2024 gives the methods for determining free isocyanate content in artificial and synthetic leather. Polyurethane synthetic leather is made by reacting isocyanates with polyols, and any monomer that has not reacted stays in the material; the diisocyanates are respiratory sensitizers, so residual free isocyanate matters both for the workers in the plant and for the user of a car seat or a shoe lining, and it is restricted in several export markets. The standard gives three methods for it: liquid chromatography, gas chromatography-mass spectrometry, and gas chromatography, each with its principle, reagents and materials, instruments and equipment and test procedure, together with the calculation of the result, the precision and the test report. It takes effect on 1 April 2025.

This document describes the liquid chromatography (LC) method, gas chromatography-mass spectrometry (GC-MS) method for the determination of free isocyanate content in artificial and synthetic leather. There are three experimental methods. GCMS method and gas chromatography (GC method). This document applies to free isocyanates (1,4phenylene isocyanate, toluene diisocyanate, Hexamethylene diisocyanate, trimethyl hexamethylene diisocyanate, isophorone diisocyanate, diphenylmethane

diisocyanate) content Other isocyanates (such as dicyclohexylmethane diisocyanate) are also applicable to this document.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies. in this document.

GB/T 6682 Specifications and test methods for water used in analytical laboratories

GB/T 8170 Rules for rounding off values and expression and determination of limit values

GB/T 34443 Terminology of artificial leather and synthetic leather

HG/T 6064-2022 4,4'-Dicyclohexylmethane diisocyanate

3 Terms and definitions

The terms and definitions defined in GB/T 34443 apply to this document.

4 Liquid chromatography (LC method)

4.1 Principle The sample was extracted with dichloromethane by ultrasonic and then derivatized with 9N-methylaminomethylanthracene. The derivatized product was determined by liquid chromatography. Legal amount.

4.2 Reagents and materials

4.2.1 Unless otherwise specified, the following reagents are of analytical grade or above. Water (H₂O). Grade 1 water as specified in GB/T 6682;

a) Dichloromethane (CH₂Cl₂). Dry over 5A molecular sieve overnight and set aside;

b) Ether (C₂H₆O); c)