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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 24282-2021

Plastics - Determination of xylene-soluble matter fraction in polypropylene

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foreword

This document is in accordance with the provisions of GB/T 1:1-2020 "Guidelines for Standardization Work Part 1: Structure and Drafting Rules of Standardization Documents"

drafted:

This document replaces GB/T 24282-2009 "Determination of Xylene Soluble Content in Plastic Polypropylene", and GB/T 24282-

Compared with:2009, except for structural adjustment and editorial changes, the main technical changes are as follows:

a) Added "infrared spectroscopy" and "low-resolution pulsed nuclear magnetic resonance method" (see Chapter 1, Chapter 1 of the:2009 edition);

b) Removed the pipette with a specification of:200mL (see 4:6 of the:2009 edition);

c) Added specifications for funnels, vacuum drying ovens, controllable heating pans, dryers and ovens (see 4:2:10, 4:2:11, 4:2:13,

4:2:15 and 4:2:17, 4:11, 4:12, 4:14, 4:16 and 4:18 of the:2009 edition);

d) Change the content of "Note" to the text "If a heating plate is used for heating, the set temperature should be about 30°C higher than the boiling point of xylene" (see

4:4:3:7, 6:3:7 of the:2009 edition);

e) Added the normative reference document GB/T 8170 (see 4:5:3, 7:3 of the:2009 edition);

f) increased the precision of method A (see Chapter 8 of 4:6,:2009 edition);

g) Added Method B "Infrared Spectroscopy" (see Chapter 5);

h) Method C "Low Resolution Pulsed Nuclear Magnetic Resonance Method" was added (see Chapter 6):

This document is revised and adopted ISO 16152:2005 "Determination of Xylene-Soluble

Content in Plastic Polypropylene":

Compared with ISO 16152:2005, this document has many adjustments in structure: Appendix A lists this document and ISO 16152:2005:

The structure number comparison list of :

The technical differences between this document and ISO 16152:2005 and their reasons are as follows:

a) Deleted the content related to the test steps, and added the description of the main content of the document (see Chapter 1) to meet the requirements of GB/T 1:1

Require;

b) The principle of Method A (see 4:1) is added, and the contents of 1:2 and 1:3 of ISO 16152:2005 are improved to make the description of the principle

More complete to meet the requirements of GB/T 1:1;

c) Changed the volume of the flask from 400mL to 500mL (see 4:4:2) to conform to my country's national conditions;

d) The pipette with a specification of:200mL is deleted to meet the requirements of Chinese standards;

e) The brand and model of filter paper are deleted to meet the requirements of Chinese standards;

f) Added specifications for vacuum drying ovens, controllable heating pans, dryers and ovens (see 4:2:11, 4:2:13, 4:2:15 and

4:2:17), to facilitate the application of this document;

g) Changed the "Note" containing requirements or recommendations to the main text (see 4:4:3:1, 4:4:3:3, 4:4:3:7 and 4:4:3:11), in line with GB/T 1:1

requirements;

h) The unit of nitrogen flow rate was changed to "should be about 35mL/min" (see 4:4:3:6) to increase operability;

i) Added the normative reference document GB/T 8170 (see 4:5:3) to improve the operability of the method and eliminate ambiguity;

j) increased the precision of Method A (see 4:6) to improve the applicability of the standard;

k) Added Method B "Infrared Spectroscopy" (see Chapter 5) to better meet the testing needs;

l) Method C "low-resolution pulsed nuclear magnetic resonance method" (see Chapter 6)

was added to better meet the testing needs;

m) The method, apparatus and test conditions used, any circumstances that may affect the results are added to the test report [see Section 7

Chapter a), c), g)] to make the report more comprehensive:

Compared with ISO 16152:2005, this document has the following editorial changes:

--- Changed the symbols of three magnitudes from Ss, Sc and Sm to ws, wc and wm (see 3:1 and 4:5:2);

--- Delete the note (see the note to 5:3 of ISO 16152:2005);

--- Added Appendix A (informative) "Comparison of this document with the structure number of ISO 16152:2005";

--- Added Appendix B (informative) "Statistical Results of Precision Data":

Please note that some content of this document may be patented: The issuing agency of this document assumes no responsibility for identifying patents:

1 Scope

This document specifies three methods for determining the soluble content of polypropylene homopolymers or copolymers in xylene at 25°C:

--- Method A: chemical method;

--- Method B: Infrared Spectroscopy;

--- Method C: low-resolution pulsed nuclear magnetic resonance method:

Method A is the benchmark method used for the calibration of Method B and Method C:

This document applies to the determination of the soluble content of polypropylene homopolymers or copolymers in xylene at 25°C: Additives soluble in xylene

Additives and other materials can affect the determination of xylene soluble content:

2 Normative references

The contents of the following documents constitute essential provisions of this document through normative references in the text: Among them, dated citations

documents, only the version corresponding to that date applies to this document; for undated references, the latest edition (including all amendments) applies to

this document:

GB/T 8170 Numerical Rounding Rules and Representation and Judgment of Limit Values

3 Terms and Definitions

The following terms and definitions apply to this document:

3:1

xylene-solublefraction

ws

The polymer is dissolved in xylene at reflux temperature, and after the solution is cooled to 25 °C and kept for a certain period of time, the substances that are not precipitated in the solution

quality score:

4 Method A: Chemical Method

4:1 Principle

The polypropylene samples were weighed after drying and dissolved in xylene under reflux: The solution was then cooled to 25°C under specified conditions and kept constant

temperature to ensure adequate crystallization of polypropylene under these conditions: The mixed solution was then filtered to obtain a transparent filtrate: Evaporate off the filtrate

Toluene to obtain xylene solubles and calculate their content:

4:2 Instruments and equipment

4:2:1 Reflux condenser, the length is 400mm:

4:2:2 Flask with a volume of 500mL:

4:2:3 Insulation pad, made of ceramic fiber material:

4:2:4 Electromagnetic stirrer, with temperature-controlled heating plate, constant temperature oil bath or heating block, the temperature can be maintained at 140 degrees C ~ 150 degrees C: