



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

GB/T 41791-2022

**Plastics - Film and sheeting - Non-oriented poly(ethylene
terephthalate) (PET) sheets**

Issued on: October 12, 2022

Implemented on: May 1, 2023

Issued by: SAMR; SAC

Table of Contents

Foreword	3
1 Scope	5
2 Normative references	5
3 Terms and definitions	6
4 Materials	6
5 Classification of sheets	7
6 Requirements	8
7 Dimensions	8
8 Test method	9
9 Packaging	11
10 Marking	11
References	13

1 Scope

This document specifies the requirements and test methods for non-oriented poly (ethylene terephthalate) (PET) sheets or copolymer sheets processed from PET resin, recycled PET material or a mixture of the two.

This document applies to sheets with a thickness of less than 2.0 mm, and does not apply to foamed sheets and shrinkable films.

2 Normative references

The following documents are normatively referenced in this document and are indispensable for its application. For dated references, only the version corresponding to that date is applicable to this document; for undated references, the latest version (including all amendments) is applicable to this document.

GB/T 1040.3, Plastics - Determination of tensile properties - Part 3: Test conditions for films and sheets (GB/T 1040.3-2006, ISO 527-3:1995, IDT)

GB/T 1632.5-2008, Plastics - Determination of the viscosity of polymers in dilute solution using capillary viscometers - Part 5: Thermoplastic polyester (TP)

homopolymers and copolymers (ISO 1628-5:1998, MOD)

GB/T 2035, Terms and definitions for plastics (GB/T 2035-2008, ISO 472:1999, IDT)

GB/T 2410, Determination of the luminous transmittance and haze of transparent plastics

GB/T 2918, Plastics - Standard atmospheres for conditioning and testing (GB/T 2918-2018, ISO 291:2008, MOD)

GB/T 30102, Plastics - Guidelines for the recovery and recycling of plastics waste (ISO 15270:2008, IDT)

GB/T 39827.1, Plastics - Post-consumer poly (ethylene terephthalate) (PET) bottle recyclates - Part 1: Designation system and basis for specifications (GB/T 39827.1-2021, ISO 12418-1:2012, IDT)

ISO 7792-1, Plastics - Polyalkylene terephthalates - Part 1: Designation

8.2.1 length and width Use a measuring tool or measuring tape to measure the length and width of the sheet, to the nearest 1 mm.

Lay the sheet flat, measure the length and width at two places along the longitudinal and transverse directions, and note that the connecting line between the two measuring points shall be parallel to the outer edge.

For sheets in rolls, measure the width and length at two transverse locations parallel to the outer edge.

8.2.2 Thickness Use a thickness gauge to measure the thickness, accurate to 0.01 mm.

8.3 Intrinsic viscosity The intrinsic viscosity shall be measured according to the method specified in GB/T 1632.5-2008, using a mixture of phenol and tetrachloroethane (volume ratio 3:2) as the solvent. Intrinsic viscosity can be converted from the measured MVR according to

GB/T 39827.2.

A suitable quantity of material to be measured shall be obtained by sampling 3 times laterally from the middle of the sheet.

In the test report, the average value of the three test specimens shall be rounded to two decimal places to obtain the test result.

8.4 Tensile yield stress The test shall be carried out in accordance with GB/T 1040.3. The test speed is (50+/-5)

mm/min, and the test specimen type is type 2 (rectangular). The test specimens shall be taken from the central part of the sheet in the transverse direction for length and width, and at least 5 test specimens shall be taken in each direction.

8.5 Heat shrinkage Perform the test in accordance with the regulations of ISO 11501. The temperature is 60 °C, and the time is 30 min. The test is carried out along the longitudinal direction of the sheet. Three test specimens shall be obtained from the central position of

the sheet in the transverse direction. The rate of dimensional change of the test specimen in the longitudinal direction (average value of 3 test specimens) shall be included in the report.

8.6 Gas transmission coefficient Carry out the test according to the provisions of ISO 15105-1 or ISO 15105-2. Three test specimens shall be obtained from the central position of the sheet in the transverse direction. The result shall be represented by the gas transmission coefficient. Take the average value of 3 test specimens, and keep three significant figures.

8.7 Haze Perform the test according to GB/T 2410. Three test specimens shall be obtained from the central position of the sheet in the transverse direction. Take the average value of three test specimens as the test result.

8.8 Food hygiene tests Food hygiene tests shall meet the requirements of relevant national food safety standards.

9 Packaging The packaging and size of the product shall be agreed between the supplier and the buyer based on the transportation and storage conditions.

10 Marking Each packaging unit shall have an obvious mark, which shall at least include the following:

- a) a reference to this document.
- b) name of the sheet or its abbreviation.
- c) designation of sheet.

The designation of the sheet consists of the following parts: reference to this document, APET, classification by food contact, classification by intrinsic viscosity (IV) and classification by sheet layers.

For example: The designation of the sheet for direct food contact (SF1), with intrinsic viscosity $IV=0.75$ (IV3) and three layers virgin PET material/mechanical recycling plus additional treatment recycled material/virgin PET material (V/MRP/V) is expressed as follow: