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

GB/T 39691-2020

Plastics - Determination of refractive index

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1:1-2009:

This standard uses the redrafting method to modify and adopt ISO 489:1999 "Determination of Plastic Refractive Index":

Compared with ISO 489:1999, this standard has more structural adjustments: Appendix A lists the chapters of this standard and ISO 489:1999:

Article number comparison list:

The technical differences between this standard and ISO 489:1999 and the reasons are as follows:

--- Regarding normative reference documents, this standard has made adjustments with technical differences to adapt to my country's technical conditions and adjustments:

The situation is collectively reflected in Chapter 2 "Normative Reference Documents", and the specific adjustments are as follows:

* Replace ISO 291:2008 with GB/T 2918-2018 which is modified to adopt international standards:

This standard was proposed by the China Petroleum and Chemical Industry Federation:

This standard is under the jurisdiction of the National Plastics Standardization Technical Committee (SAC/TC15):

The main drafting units of this standard: China Blue Chenguang Chengdu Testing Technology Co., Ltd., Guangzhou Quality Supervision and Testing Research Institute, Anhui Huaiyuan Kanghua

Plastic Products Co., Ltd., Shenzhen Zhongan Testing Standard Technology Co., Ltd., Qingdao Product Quality Supervision and Inspection Institute, People's Republic of China

Qingdao Dagang Customs, Lianxing New Material Technology (Guangzhou) Co., Ltd:

1 Scope

This standard specifies two test methods for determining the refractive index of plastics:

Method A: Refractometer method: The refractometer is used to measure the refractive index of molded parts, die-cast or extruded plates or films: Apply to each

Isotropic, transparent, translucent, colored or opaque materials are also suitable for anisotropic materials: When high precision test is required, it is recommended to use this method: This method is not suitable for powder or granular samples:

Method B: Microscopic immersion method (using the Baker line phenomenon): This method can be used to determine the refractive index of powdery or granular transparent materials:

Generally speaking, monochromatic light should be used to avoid dispersion effects: This method is suitable for isotropic translucent materials and colored materials, but not

Transparent materials and anisotropic materials:

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 2918-2018 Standard environment for condition adjustment and testing of plastic specimens (ISO 291:2008, MOD)

3 Significance and use

3:1 The refractive index is a basic attribute that can be used to check the purity and composition of materials, and can be used to identify materials and design optical components: fold

The change of light rate with temperature can indicate the transition point of the material:

3:2 When method B is used cautiously by experienced operators, the precision of method B is roughly the same as that of method A (see section

Chapter 8):

4 Apparatus and materials

4:1 Method A

4:1:1 Abbe refractometer or any other refractometer that can give the same result, accurate

to 0:001, and the measurement range of refractive index is from 1:300

To 1:700: Temperature control devices (4:1:3) shall be provided for the samples and prisms:

4:1:2 White light or sodium lamp as light source:

4:1:3 The temperature control of the water bath can keep the temperature of the main prism, sub-prism and sample at $(23:0 \pm 0:5)$ degrees C: The circulating water should be distilled water:

4:1:4 Contact liquid:

Warning---In the process of handling, storage and disposal, contact with liquid may harm the environment: Should comply with national and local safety management and disposal

Regulations:

The refractive index of the contact liquid should be higher than the refractive index of the tested material, and the plastic material must not be softened, corroded or dissolved:

Liquids listed in Table 1

It can be used for corresponding plastic materials, but other liquids that meet these requirements can also be used: