



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

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**Plastics - Methods of exposure to laboratory light sources -
Part 4: Open-flame carbon-arc lamps**

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Foreword

This Document was drafted as per the rules specified in GB/T 1.1-2020 Directives for Standardization - Part 1: Rules for the Structure and Drafting of Standardizing Documents.

This Document is Part 4 of GB/T 16422 Plastics - Methods of Exposure to Laboratory Light Source. GB/T 16422 has published the following parts:

- Part 1: General Guidance;
- Part 2: Xenon-Arc Lamps;
- Part 3: Fluorescent UV Lamps;
- Part 4: Open Flame Carbon Arc Lamp.

This Document replaced GB/T 16422.4-2014 Plastics - Methods of Exposure to Laboratory Light Sources - Part 4: Open-Flame Carbon-Arc Lamps. Compared with GB/T 16422.4-2014,

the major technical changes of this Document are as follows besides the structural adjustment

and editorial modifications:

- a) Delete ASTM G152 in the Clause "Normative References" (see Clause 2 of 2014 Edition);
- b) Add the Clause "Terms and Definitions" (see Clause 3 of this Edition);
- c) Change the content of the Clause "Apparatus", improve the relevant requirements and instructions; and change the wavelength range in Table 2 (see Clause 5 of this Edition, Clause 4 of 2014 Edition);
- d) Change the requirements for "relative air humidity" from (50+/-5) % to (50+/-10) % in the Clause "Test Conditions" (see 7.2 of this Edition; 6.2 of 2014 Edition).

This Document equivalently adopts ISO 4892-4-2013 Plastics - Methods of Exposure to Laboratory Light Sources - Part 4: Open-Flame Carbon-Arc Lamps.

This Document add the Clause "Terms and Definitions".

Please note some contents of this Document may involve patents. The issuing agency of this

Document shall not assume the responsibility to identify these patents.

This Document was proposed by China Petroleum and Chemical Industry Federation.

This Document shall be under the jurisdiction of National Technical Committee on Plastics of

Standardization Administration of China (SAC/TC 15).

Drafting organizations of this Document: Guangzhou Synthetic Materials Research Institute Co., Ltd.; Wanhua Chemical Group Co., Ltd.; Shandong Dawn Polymer Co., Ltd.; Shaanxi Plastics - Methods of Exposure to Laboratory Light Sources
- Part 4: Open-Flame Carbon-Arc Lamps

1 Scope

This Document specifies methods for exposing specimens to open-flame carbon-arc lamps in

the presence of moisture to reproduce the weathering effects that occur when materials are exposed in actual end-use environments in daylight or daylight filtered through window glass.

This Document is applicable to the weather resistance evaluation of plastics and the comparison

test of weather resistance among plastics under the condition of light source exposure of carbon-arc lamp.

The specimens are exposed to filtered open-flame carbon-arc light under controlled environmental conditions (temperature, moisture). Various filters are described.

Specimen preparation and evaluation of the results are covered in other national standards for

specific materials.

General guidance is given in ISO 4892-1.

2 Normative References

The provisions in following documents become the essential provisions of this Document through reference in this Document. For the dated documents, only the versions with the dates

indicated are applicable to this Document; for the undated documents, only the latest version

(including all the amendments) is applicable to this Document.

ISO 4582 Plastics - Determination of Changes in Color and Variations in Properties after Exposure to Glass-Filtered Solar Radiation, Natural Weathering or Laboratory Radiation

Sources

NOTE: GB/T 15596-2021 Plastics - Determination of Changes in Color and Variations in Properties after Exposure to Glass-Filtered Solar Radiation, Natural Weathering or Laboratory

Radiation Sources (ISO 4582:2017, IDT)

ISO 4892-1 Plastics - Methods of Exposure to Laboratory Light Sources - Part 1: General Guidance

NOTE: GB/T 16422.1-2019 Plastics - Methods of Exposure to Laboratory Light Sources - Part 1:

test specimens are not subjected to any applied stress. Identify each test specimen by suitable

indelible marking, avoiding areas to be used for subsequent testing. As a check, a plan of the

test specimen positions may be made.

If desired, in the case of specimens used to determine change in color and appearance, a portion

of each test specimen may be shielded by an opaque cover throughout the test. This gives a

masked area adjacent to the exposed area for comparison. This is useful for checking the progress of the exposure, but the data reported shall always be based on a comparison with

unexposed specimens stored separately in the dark.

8.2.1 Before placing the specimens in the test chamber, ensure the apparatus is operating under

the specified conditions (see Clause 7). Maintain these conditions throughout the exposure.

8.2.2 Mount the specimens on the specimen frame both above and below the horizontal

centerline of the source of radiation. To ensure uniform irradiation over the whole of the specimen surface, specimens shall be repositioned vertically in a sequence which ensures that

each specimen has equivalent exposure periods in each location. When the exposure