

ICS 19.040

CCS A21



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

GB/T 14522-2008

Replacing GB/T 14522-1993

**Artificial weathering test method for plastics,coating and
rubber materials used for machinery industrial products -
Fluorescent UV lamps**

机械工业产品用塑料、涂料、橡胶材料人工气候老化试验方法 荧光紫外灯

Issued on: June 16, 2008

Implemented on: March 1, 2009

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine of the People's Republic of China;
Standardization Administration of China**

Table of Contents

1	Scope
2	Normative references
3	Terms and definitions
4	Principles
5	Equipment
5.1	Light source
5.2	Test chamber
5.5	Moisture
6	Specimen
6.2	Coatings
7	Test conditions and test time
8	Procedures
9	Accuracy and deviation
9.1	Accuracy
20	References...

1 Scope

GB/T 14522-2008 is the Chinese national standard on artificial weathering test method for plastics, coating and rubber materials used for machinery industrial products - fluorescent uv lamps, in the field of testing. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 16 June 2008 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 March 2009. Classification: ICS 19.040, CCS A21. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This standard specifies one of the artificial weathering test methods for plastics, coating and rubber materials used for machinery industrial products - fluorescent UV lamps exposure test method. This standard applies to the weathering resistance comparison and screening test of plastics, coating and rubber materials.

2 Normative references

The provisions in following documents become the provisions of this standard through reference in this standard. For the dated references, the subsequent amendments (excluding corrections) or revisions do not apply to this standard; however, parties who reach an agreement based on this standard are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of the referenced document applies.

GB/T 16422.1 Plastics - Methods of the exposure to laboratory light sources - Part

3 Terms and definitions

The following terms and definitions apply to this standard.

3.1 File specimen Some of the test materials which are stored in a stable condition to compare the changes in performance before and after exposure.

3.2 Control A material which has a similar composition and structure to the test material, for comparing the performance of the test material after simultaneous exposure.

3.3 Control specimen A portion of the control which is used for exposure.

3.4 Irradiance The radiant energy in a band of a certain wavelength or a certain wavelength passband as illuminated per unit time and unit area, in W/m².

3.5 Radiant exposure The time integral of the irradiance, in J/m².

3.6 Spectral power distribution The absolute or relative radiant energy which is emitted by a light source or received by an object, which is a function of wavelength.

4 Principles

4.1 The radiation from a fluorescent UV lamp is used to simulate the ultraviolet radiation in sunlight.

4.2 The specimen is exposed to a regularly repeated light and humid environment or a continuous light environment, meanwhile the light and humidity are under controlled conditions, the specimen is exposed to the specified test time.

4.3 There are two common ways to provide moisture.

4.4 Exposure conditions can be varied by selecting the different options below or by setting different values (if applicable).

4.5 Use the following methods to obtain the results of the exposure test.

4.6 Unless the reproducibility of the test results of the test materials between different

equipment has been determined, the results of the exposure tests on the different machines of same model are not suitable for comparison.

5.1 Light source

5.1.1 This standard shall use fluorescent UV lamps. The radiation of fluorescent UV lamps is mainly ultraviolet rays, wherein the radiation below 400 nm accounts for more than 80% of the total radiation. This standard can use three types of fluorescent UV lamps.

5.1.2 In the test, it generally uses the same type of fluorescent UV lamp. It is recommended not to mix using different types of fluorescent UV lamps.

5.2 Test chamber

5.2.1 The test chamber may have a different design; but it shall be made of a corrosion resistant material.

5.3 Radiometer It is recommended to use a radiometer to monitor the irradiance of the surface of the specimen. If a radiometer is used, it shall comply with the requirements of GB/T 16422.1.

5.4 Black panel thermometer The temperature monitoring of the specimen generally adopts a black panel thermometer, which shall meet the requirements of GB/T 16422.1. The black panel thermometer shall be mounted on a specimen's location so that it is exposed to the same conditions as the specimen.

5.5 Moisture

5.5.1 Means of exposure to moisture Specimens may be exposed to two forms of moisture. condensation or water- spray.

5.5.2 Condensation The test chamber may provide a means of forming condensation on the exposed surface of the specimen.

5.5.3 Water-spray The test chamber may be equipped with a water-spray device to intermittently and uniformly spray water to the specimen.

5.6 Specimen holder The specimen holder shall be made of corrosion-resistant materials that do not affect the test results. When the equipment provides a means of condensation, the design of the specimen holder shall ensure that, after the specimen is installed, there is sufficient free air to cool the backside of the specimen, thereby producing condensation on the exposed surface of the specimen.

6 Specimen

6.1 Plastics See GB/T 16422.1.

6.2 Coatings

6.3 Rubber The requirements for specimens in GB/T 16422.1 are applicable to rubber. For tests under stress conditions, prepare the specimen according to the requirements of GB/T 7762. Condition the specimen according to the requirements of GB/T 2941.

6.4 Use of control specimen It is recommended that a control specimen and the specimen be exposed simultaneously, to provide comparative criteria.

7 Test conditions and test time

7.1 Test conditions Within the capabilities of the equipment, it may use any test conditions. The test conditions are usually for one exposure cycle, including the number of exposure interval, the order of exposure interval, the duration of each exposure interval, the conditions of each exposure interval that make up the exposure cycle.

7.2 Test time The test time is usually determined by the following methods.

8 Procedures

8.1 It shall identify each specimen. The identifier shall be located in the non- detection area of the specimen, it shall not easily disappear or fade.

8.2 Determine which properties of the specimen need to be tested, for example, color, gloss, chalking, cracking and other appearance properties, tensile strength, elongation at break, bending strength and other mechanical properties, which shall be tested according to relevant standards or specifications, before exposing the specimen. If required, for example, a destructive test, use a file specimen for performance testing.

8.3 Install the specimen on the specimen holder of the equipment. The specimen shall not be subjected to additional stress.

8.4 According to the selected setting procedure for test conditions, perform the test until reaching to the required test time.

8.5 Change of specimen's position.

8.6 If intermediate testing is required, it should be carried out at the end of the dry exposure period. When handling the specimen, be careful not to touch or damage the tested surface of the specimen.

8.7 Test equipment requires regular maintenance to maintain consistency of test conditions.

8.8 After the exposure is over, conduct the performance tests according to relevant standards or specifications.