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JAPANESE INDUSTRIAL STANDARD

Testing method for exposure to natural weathering of carbon fibre reinforced plastic

JIS K 7081—1993

Translated and Published

by

Japanese Standards Association

In the event of any doubt arising,
the original Standard in Japanese is to be final authority.

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Testing method for exposure to natural
weathering of carbon fibre reinforced plastic

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1. Scope This Japanese Industrial Standard specifies the testing method for exposure to natural weathering of carbon fibre reinforced plastics (hereafter referred to as "exposure test").

Remarks: The standards cited in this Standard are shown as follows:

- JIS K 6900 Glossary of terms used in plastic industry
- JIS K 7072 Preparation of carbon fibre reinforced plastic panels for test purpose
- JIS K 7073 Testing method for tensile properties of carbon fiber reinforced plastics
- JIS K 7074 Testing methods for flexural properties of carbon fiber reinforced plastics
- JIS K 7077 Testing method for Charpy impact strength of carbon fiber reinforced plastics
- JIS K 7078 Testing method for apparent interlaminar shear strength of carbon fiber reinforced plastics by three point loading method
- JIS K 7105 Testing methods for optical properties of plastics
- JIS K 7219 Recommended practice for outdoor exposure of plastics

2. Definitions For the main terms used in this Standard, the definition in JIS K 6900 and JIS K 7219 shall be applied, and the rest of the terms shall be as follows:

- (1) exposure test under load The test specimen under the fixed load or strain are exposed to natural weathering conditions and its stability to weathering shall be evaluated.
- (2) matrix Matrix means the material, usually polymer which binds the reinforcement fibre, filler or dispersed material.

3. Types of exposure tests The types of exposure tests shall be as follows:

- (1) Direct exposure test
- (2) Exposure test under load

4. Items of evaluation for exposure of natural weathering Items of evaluation for exposure of natural weathering consist of appearance, change in mass, optical performance, tensile properties, flexural properties, Charpy impact strength, interlaminar shear strength, etc. The other items of evaluation agreed upon between the parties concerned shall be in accordance with the related Japanese Industrial Standard.

5. Conditions of exposure place The conditions of the exposure place shall, as a rule, be as follows:

- (1) The exposure place shall be placed at a region where the yearly change of meteorological factors are statistically little and the environmental contamination substances are little.
- (2) In the exposure place, there shall be no tree, nor building and the like which cause remarkable effect on solar radiation, ventilation, precipitation, etc.
- (3) The ground surface or building surface where the exposure apparatus is to be fixed shall be provided with the countermeasures to prevent the reflection of sunshine, blowing up of dust, flooding, etc.

Informative reference: For the standard exposure place complying with the above mentioned, there are CHOSHI exposure test place of Juridical Foundation, Japanese Weathering Test Center, etc.

As one of the exposure test place which has semitropical/oceanic climate and high temperature/high humidity conditions, MIYAKOJIMA exposure test place of Juridical Foundation, Japanese Weathering Test Center is cited.

6. Test specimen

6.1 Test specimen by application Test specimen to be exposed shall be categorized as shown in Table 1 depending on the intended usage of the test materials.

Table 1. Category and application of laminate panel

Category	Application
No. 1	Sporting goods, leisure articles
No. 2	Marine, vehicles and other industrial
No. 3	Constructions and structural uses
No. 4	Aircraft

6.2 Preparation of test specimens Preparation of test specimens shall be depending on application in accordance with JIS K 7072.

6.3 Precautions to preparing test specimen The precautions to preparing the test specimen shall be in accordance with 5.2 (Precautions to preparing sample) of JIS K 7219 and otherwise shall be as follows:

- (1) In the case where the test specimen is cut, the surface of cut area shall be protected by coating the same series resin or the same series painting materials as test specimen.
- (2) It is necessary to expose the test specimen with the tab when the test is required to perform together with the tab. In this case, the tab shall be painted or covered by such as fluorocarbon resin film or sheet which can resist against natural weathering to exclude light exposure.