



Designation: C 1442 – 99

# Standard Practice for Conducting Tests on Sealants Using Artificial Weathering Apparatus<sup>1</sup>

This standard is issued under the fixed designation C 1442; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This practice covers three artificial weathering exposure procedures for evaluating the durability of sealants.

1.2 The three procedures are Practices G 152, G 154, and G 155.

1.3 The performance rankings of sealants provided by these procedures may not agree.

1.4 The values stated in SI units are to be regarded as the standard. The values given in parentheses are provided for information only.

1.5 A related ISO procedure is ISO 11431. The user should compare to determine how procedures differ.

1.6 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

## 2. Referenced Documents

### 2.1 ASTM Standards:

C 717 Terminology of Building Seals and Sealants<sup>2</sup>

G 113 Terminology Relating to Natural and Artificial Weathering Tests of Nonmetallic Materials<sup>3</sup>

G 151 Practice for Exposing Nonmetallic Materials in Accelerated Test Devices That Use Laboratory Light Sources<sup>3</sup>

G 152 Practice for Operating Open Flame Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials<sup>3</sup>

G 154 Practice for Operating Fluorescent Light Apparatus for UV Exposure of Nonmetallic Materials<sup>3</sup>

G 155 Practice for Operating Xenon Arc Light Apparatus for Exposure of Nonmetallic Materials<sup>3</sup>

### 2.2 ISO Standard:

ISO 11431 Building Construction—Sealants: Determina-

tion of Adhesion/Cohesion Properties After Exposure to Heat and Artificial Light Through Glass and to Moisture<sup>4</sup>

## 3. Terminology

3.1 *Definitions*—Definitions of the following terms are found in Terminology C 717: *compound, cure, sealant, substrate*. Definitions of the following terms are found in Terminology G 113: *actinic radiation, sample, file specimen, control material, fluorescent ultraviolet lamps, xenon arc, irradiance, radiant exposure, spectral power distribution, solar radiation-ultraviolet, solar radiation-visible*.

## 4. Summary of Practice

4.1 The test sealant is applied to a variety of substrates or as a free film or other configuration, depending upon the properties that are to be evaluated after the exposure is completed. At least four replicates of each sealant being tested are required. After curing, one replicate of each sealant being tested is retained as a file specimen and three replicates are exposed to actinic radiation, heat, and moisture. At the end of the exposure period, the test sealant is examined for change in comparison to the unexposed file specimen and to change in the control material, if used.

4.2 It is recommended that a similar material of known performance (a control) be exposed simultaneously with the test specimen to provide a basis for comparison.

## 5. Significance and Use

5.1 This test method is for determining the effects of actinic radiation, elevated temperature, and moisture on sealants and their constituents under controlled laboratory artificial weather test conditions.

5.2 When conducting exposures in devices, which use laboratory light sources, it is important to consider how well the artificial test conditions will reproduce property changes and failure modes associated with end-use environments for the sealant being tested.

<sup>1</sup> This practice is under the jurisdiction of ASTM Committee C-24 on Building Seals and Sealants and is the direct responsibility of Subcommittee C24.40 on Weathering.

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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 04.07.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 14.02.

<sup>4</sup> Available from American National Standards Institute, 11 W. 42nd St., 13th Floor. New York, NY 10036.