



ADVANCING STANDARDS
TRANSFORMING MARKETS

ASTM COMMITTEE G03

Durability and Weathering

2025 marked the 60th Anniversary of ASTM Committee G03 on Weathering and Durability, which has created standards that are referenced or incorporated by other standards writing organizations, code bodies, and the quality documentation of thousands of test laboratories throughout the world.

Brought to you
by the Executive
Committee of G03

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History

Standards for the weathering testing of different products have been around for over 120 years. But the efforts were scattered across many different ASTM committees. Natural weathering has been conducted using racks and test farms since at least 1911, and accelerated weathering devices were first introduced in about 1918. The first commercial test site began in 1928, and from there on the demand for development of ASTM methods took root as customers needed standardized methods and practices.

Committee G03 was formed in 1965 by members of Committee D01 on Paint, who were also members of several other materials committees such as D20 Plastics, C24 Sealants, and E06 Building Products. Originally G03 was named Committee on Durability of Non-Metallic Materials, which was to distinguish the activities of G03 to another recently formed Committee G01 on Corrosion. This title was changed in 1998 to Durability and Weathering which is considered more closely aligned with its activities.

The committee was formed with the purpose of bringing together under one umbrella, all the expertise for weathering that was spread across several other material specific committees. The primary impetus arose in the D01 Paint committee, as this was also the committee that had the most weathering tests



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An original rack photo from G7



at the time. The standards in these committees listed methods for testing, but there were no details on how to calibrate, maintain, and operate the equipment needed to run those tests. The new G03 committee would focus on Practices for running the outdoor and accelerated laboratory tests, leaving the specific instructions for setup, duration, and evaluations to the materials committees.

The original goal of Committee G03 was to consolidate the expertise in the area of weathering of materials. Test methods existed in each committee, but there was a need for operating practices specifically for outdoor weathering and for laboratory accelerated testing. The first new standard completed by G03 was the outdoor exposure standard G7 that was originally published in 1969. The next new standard was the carbon arc accelerated weathering practice G23 which was also published in 1969. Since then, other outdoor exposure practices have been added and a library of laboratory accelerated tests. This committee has also branched out into statistics, service life prediction, radiometry, and reference materials.

One of our original subcommittees is G03.04 on Biodeterioration, specializing in degradation due to biological attack from algae and mold. This group is still going strong and acts relatively independently of the rest of G03. Another one of our original Subcommittees G03.06 on Durability of Pipelines eventually joined Committee D01 as D01.48 on Pipeline Coatings.

One of the most significant developments in our history was the creation of our performance-based accelerated weathering practices. Subcommittee G03.03 revised our standards G23, G26, and G53 from equipment-specific standards into practices which are based on the conditions during the test. Standard Practices G152 to G155 cover Carbon Arc (Enclosed and Open Flame), Fluorescent UV, and Xenon Arc testing. A new general practice, ASTM G151, covering all common aspects of accelerated weathering was created to complement these new standards. Together these practices have become the templates for other standards-writing groups to copy and follow.

G03 Officers

We thank them for their service

CHAIR

1965 F.M. Gavan
1970 C.C. Yeager
1976 John Scott
1980 Don P. Van Court
1986 Richard Fischer
1987 Joseph Robbins Jr
1990 Warren Ketola
1996 John Evans
2002 Warren Ketola
2010 Lynn Pattison
2012 Joe Robbins III
2018 Oscar Cordo
2024 Michael Crewdson

ASSISTANT SECRETARY

1979 J.B. Condon

VICE CHAIR

1976 Don P. Van Court
1980 George Kish
1986 Warren Ketola
1990 Doug Grossman
2000 Warren Ketola
2002 John Evans
2004 Lynn Pattison
2010 Joe Robbins III
2012 Oscar Cordo
2018 Michael Crewdson
2024 Kady Gregersen

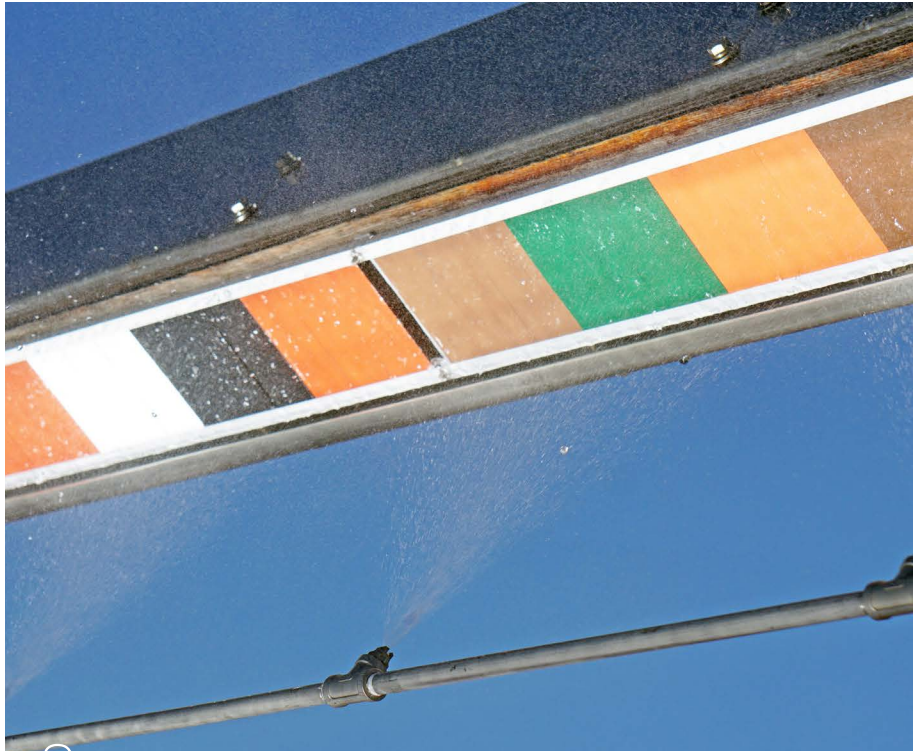
2ND VICE CHAIR

1979 Ray Kinmonth
1980 Joseph Robbins Jr
1986 George Kish
1990 Emil Zenkowski Jr

SECRETARY

1965 N.B. Gerlock
1966 Waldimero Coscarelli
1968 Virginia Kennedy
1970 R.P. Fellmann
1976 P.B. Adams
1980 J.S. Zannucci
1982 Terry Herlihy

1986 Don P. Van Court
1992 Michael Crewdson
1996 Lesley Jacques
1997 Lynn Pattison
1998 David Fagerburg
2000 Eric Everett
2004 Oscar Cordo
2012 Lesley Jacques
2018 Mark Alessandro
2022 Kady Gregersen
2024 Portia Boldin



Scope

The scope of the Committee shall be the promotion of knowledge, stimulation of research, and the development of standards related to the durability and performance of organic and inorganic materials, components, and combined assemblies that are subjected to various environments. This committee generally does not address the corrosion effects of bare metals, as the development of such standards is under the responsibility of relevant ASTM committee(s).

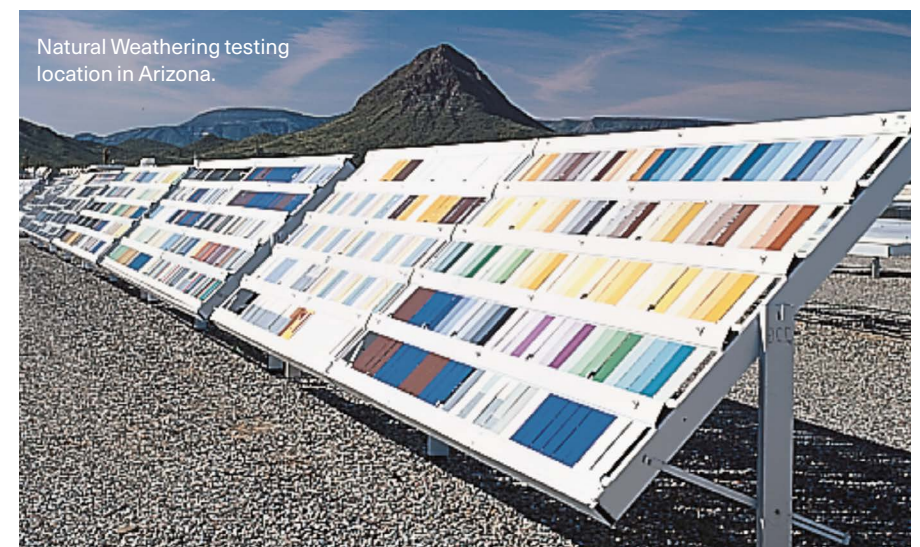


Everyone is welcome and anyone
can make a difference.

The objectives in our scope will be implemented by the development and coordination of standards relating to nomenclature, standard conditions, methods and instrumentation associated with the aging, weathering, biodeterioration, exposure to specific environments and accelerated or service testing of such materials, components and combined assemblies with other materials.

The Committee shall establish liaisons with other ASTM technical committees with related interests. Where appropriate, the committee will also assure that its standards are harmonized with related international standards.

Committee G03 is the group that writes performance-based weathering standards that are referenced by other materials committees. Our standards are included in test methods from D01 Paint, C24 Sealants, D20 Plastics, D08 Roofing, and many others. Think of “G” in G03 as “General”. These general standards are written to cover how to run the tests, so that the other committees can reference our standards for the routine operations, and concentrate on specifics such as temperatures, duration, cycles, etc. Our members are from the test labs, equipment manufacturers, and materials producers. This committee works hard to make sure that older equipment is not left out, while our standards for the newer equipment are revised and continually modernized. To ensure a fair playing field, our practices are written as “performance-based” standards that are equally open to all companies.



Natural Weathering testing
location in Arizona.

G03 standards include items such as equipment design parameters. G03 standards include both natural outdoor and accelerated weathering tests, but does not cover the corrosion testing of bare metals. This is made clear in all the standards scopes, and the specific reference to non-metallic materials have been removed in all the standards' titles.

Currently, Committee G03 has about 160 members. There are also 39 active standards in G03 of which there is 1 specification, 7 Test Methods, 21 Practices, 5 Guides, 3 Tables, and 1 Terminology standard. All 7 Methods are from our G03.09 Radiometry subcommittee. Committee G03 has 9 technical, 2 administrative, and 1 executive subcommittee. There is more detail about each subcommittee later in this document.

Committee G03 is not one of the largest committees in ASTM, but it is certainly one that has a high number of standards that are referenced in the work of other committees. All the expertise for weathering in the laboratory or in the field are concentrated in this committee. Gathering all the instructions for running these tests in one place in a single set of procedures, reduces the redundancy of having multiple standards that need to be constantly harmonized. Only one revision is needed instead of hundreds across all the committees. This also saves on the work for those responsible for the upkeep of these standards as now that work can be done in one meeting. Lastly,



Examples of weathered products

but importantly, this means all the weathering standards can be found in one volume of the *ASTM Book of Standards*. G03 standards can be found in Volume 14.04.

Committee G03 is fulfilling the ASTM message of helping the world work better, by improving the testing processes to ensure that reliable results are achieved with both accelerated laboratory testing, and with outdoor natural testing. Our work is helping other committees to make products better, more resilient, with less waste and lower cost.

There are many advantages to joining G03, and new members are welcome and encouraged to actively participate in our meetings. The producers of accelerated laboratory weathering equipment, and the major commercial weathering test sites are well-represented. Our committee especially needs to have more users become involved. This includes anyone that uses weathering testing to derive durability information. This includes OEMs and non-OEM manufacturers that use the commercial test services, OEMs that have their own testing labs or test sites, materials manufacturers' laboratories that use the accelerated weathering equipment, and research labs. The list also includes researchers that analyze weathering data, or write specifications that include weathering durability. If you use one of our ASTM standards, please consider joining G03.

Subcommittees

Committee G03 currently has six technical committees and five administrative committees. For a full and complete scope of each subcommittee, please visit the G03 Committee Documents page on the ASTM.org website.

Technical Subcommittees

G03.01 JOINT WEATHERING PROJECTS

This subcommittee covers projects that are related equally to both outdoor natural weathering and to laboratory accelerated testing. This group oversees several important concepts such as Reference Materials, which includes the polystyrene (PS) chip used for accelerated weathering tests. The next Lot of PS chips (Lot 10) will be evaluated by members of this subcommittee and approved by SAE.



Washing Test Panels per G147

The subcommittee on Joint Weathering was created to hold several important standards that are equally valuable for both outdoor, and laboratory testing. Our standard on Conditioning and Handling is now widely referenced in many other documents and is the ideal example of a “value-added” practice.

Standards

- G147** — Conditioning and Handling
- G156** — Reference Materials
- G178** — Activation Spectra

G03.02 NATURAL ENVIRONMENTAL TESTING

This subcommittee covers weathering testing outdoors, including testing using the solar concentrator devices and high temperature tests for automotive interior materials. All the rules for correctly running an outdoor exposure site are under this group. A new standard under development will cover the measurement of time-of-wetness for an outdoor exposure site.



An Outdoor Exposure Rack per G7

“It could be said that watching paint dry is fun compared to watching paint weather. Those of us that do this for a living though find the process to be fascinating. The wide range of products, end-use applications, failure modes, and test methods ensure a unique and interesting diversity. Outdoor weathering is the benchmark for materials durability testing, and it's said that if there is any discrepancy between an outdoor test and a laboratory test, then the outdoor test is always right.” — **G03.02 Sub-Chair**

Standards

- G7** — Outdoor Weathering
- G24** — Under Glass Testing
- G90** — Solar Concentrator Testing
- G179** — Black Panel Specification
- G201** — High Temperature UG tests
- G229** — Estimating the Time of Wetness

G03.03 SIMULATED AND CONTROLLED TESTING

The development of standards related to the use of accelerated weathering protocols to estimate (predict) the functional life of a material in service.

Many members of ASTM run their own accelerated weathering lab, and follow these practices. The American Association for Laboratory Accreditation (A2LA) list hundreds of accredited laboratories with these standards on their ISO 17025 scope. This subcommittee is where these accelerated weathering standards are maintained and revised.



G154 — Accelerated Weathering Devices per G154 and G155

Standards

- G151** — General Guidance on Accelerated Weathering
- G152** — Open Flame Carbon Arc devices
- G153** — Enclosed Carbon Arc devices
- G154** — Fluorescent UV Condensation devices
- G155** — Xenon Arc devices
- G224** — UVC Testing device

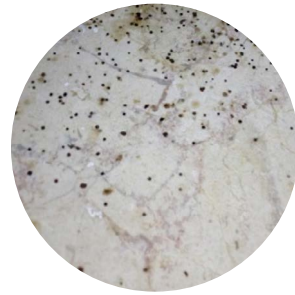
G03.04 BIOLOGICAL

To develop standard practices for determining the susceptibility of test materials to biodeterioration.

Biological deterioration of paints and plastics is a serious and expensive form of degradation. The health concerns for mold and algae growth also contribute to this being one of the more serious problems that G03 is involved in improving. G03.04 creates test methods and practices to determine whether formulation changes to the materials reduce or eliminate the growth of biologicals.

Standards

- G21** — Fungi Resistance of Synthetic Polymer Materials
- G29** — Cyanobacterial Resistance of Polymers
- G160** — Soil Burial susceptibility



Mold spores

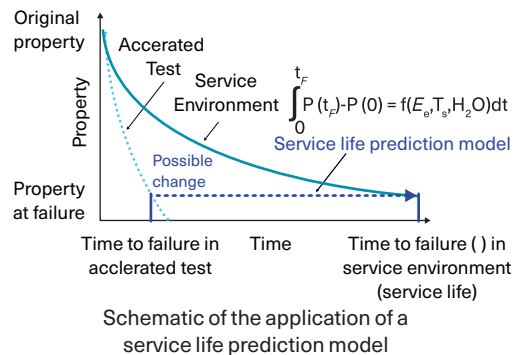
G03.08 SERVICE LIFE PREDICTION

The development of standards related the use of accelerated weathering protocols to estimate (predict) the functional life of a material in service.

“Service life prediction is often seen as the ‘holy grail’ of weathering science—everyone wants to know how long their product will last. But even for seasoned experts, it’s a tough nut to crack. This committee is all about helping navigate that challenge. It offers guidance on selecting the right data and models to better understand how polymers perform in real-world conditions. Another key focus is identifying or developing predictive test methods and making sense of the results they produce.” — **G03.08 Sub-Chair**

Standards

- G166** — Guide for Service Life Prediction Statistics
- G172** — Analysis of Accelerated Service Life Prediction Data



G03.09 RADIOMETRY

To develop & maintain standards associated with specification, calibration, measurement, & modeling of solar radiation (UV, visible, & infrared radiation) regardless of the source of the radiation.



Device used to measure various types of irradiance, per E816, E824, G130, G207

Standards

- E816** — Calibration of Pyrheliometers
- E824** — Calibration of Field Radiometers
- G130** — Calibration of Narrow/Broad Band Radiometers
- G138** — Calibration of Spectroradiometers
- G167** — Calibrating Pyranometer from a Pyrheliometer
- G173** — Standard Reference Tables
- G177** — Standard UV Reference Tables
- G183** — Calibration of a Spectroradiometer Using a Standard Source
- G197** — Reference Solar Spectral Distributions on 20° Tilted and Vertical Surfaces
- G207** — Indoor Transfer of Calibration from Reference to Field Pyranometers
- G213** — Evaluating Uncertainty in Calibration & Field Measurements of Irradiance
- G214** — Integration of Digital Spectral Data
- G222** — Estimation of UV Irradiance based on Location

Administrative Subcommittees

G03.91 EDITORIAL

To evaluate standards under the jurisdiction of G03 for ASTM editorial compliance, and to propose revisions to current standards based on editorial changes. This subcommittee will advise the members of G03 on correct editorial procedures, and will review all drafts for editorial conformity.

Standards

- G228** — Conducting a 5-year Review of a Committee G03 Standard

“The lifeblood of ASTM subcommittees is their standards, the currency that must be kept up to date. Standards become stale over time and constant reapprovals don’t maintain the freshness. Revising a standard is not necessarily difficult, and G03.91 has developed a user guide on how to perform the 5 year review. Follow this Practice and the Checklist, and you will become an expert in revising and maintaining an ASTM standard.” — **G03.91 Sub-Chair**

G03.92 TERMINOLOGY

To establish definitions of terms and phrases that appear under the jurisdiction of Committee G03.

Standards

G113 — Terminology Relating to Natural and Artificial Tests

Other important work is to liaison with other organizations that write definitions, and harmonize definitions across all G03 standards.

“In Romeo and Juliet, Shakespeare wrote “A rose by any other name would smell as sweet.” The point he was trying to make was that an idea or object isn’t really defined by its name, but rather it’s an intrinsic identity inherent to the idea or object. That concept is all well and good in an artsy context but leads to a great deal of disorder in a technical context. If person A calls it a rose, and person B calls it a potato, everyone is going to get very confused pretty quickly.

That’s why in G03.92 on Terminology, we take great care to thoroughly and thoughtfully discuss & define the definitions for words & phrases relevant to weathering and durability. One might think that talking about definitions may be a bit dull, but the Terminology meetings tend to be among the most engaging and lively of all. Presently, this subcommittee’s lone standard (G113) has fallen out of conformity with some ASTM guidelines, so there are a lot of updates imminent. We would love it if you would join the conversation and help us shape the language we use to be clear and concise!” — **G03.92 Sub-Chair**

G03.93 STATISTICS

The development and application of standards relating to the use of statistics in the field of weathering and durability testing. The primary areas of interest are in variability, experimental design, data collection, and data analysis.

Standards

G141 — Guide to Addressing Variability in Exposure Tests

G169 — Guide for Application of Basic Statistics to Weathering Tests

Other important work is a new standard on using statistics to determine sample quantity for weathering tests

G03.94 EDUCATION

To promote the advancement, development and application of state-of-the-practice weathering methods and testing protocols through regularly sponsored educational events. The subcommittee shall sponsor re-occurring events (lectures, seminars, workshops, etc). The venue shall be open to industry, academic, government and independent laboratories and organizations. Topics may include evaluation of new technology, new applications for existing technology, advances in the analysis of weathering results, understanding of material degradation, and repeatability & reproducibility of weathering tests.

Standards

This subcommittee has no standards.

Other Important Work for this subcommittee is to organize a regular Workshop on G03 related durability topics with D01, and to suggest any potential outreach programs. G03.94 also meets concurrently with D01.15.

G03.95 LONG RANGE PLANNING

The scope of this subcommittee is to plan for and provide a forum to address the future needs or concerns of all G03 committees and activities. These concerns include but are not limited to consideration of individual participation, industry growth or viability, format of meetings, and changes to the G03 Bylaws.

Standards

This subcommittee has no standards.

Other Important Work is look for ways to promote G03 to increase active participation, discuss the format of future meetings, and review the Bylaws for needed updates.

G03 Standards

See the information on individual G03 Subcommittees to determine which group will meet on these items.

Photo: Natural sunlight concentrator testing per G90.



E816

Standard Test Method for Calibration of Pyrheliometers by Comparison to Reference Pyrheliometers

E824

Standard Test Method for Transfer of Calibration from Reference to Field Radiometers

G7/G7M

Standard Practice for Natural Weathering of Materials

G21

Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi

G22

Standard Practice for Determining Resistance of Plastics to Bacteria

G24

Standard Practice for Conducting Exposures to Daylight Filtered Through Glass

G29

Standard Practice for Determining Cyanobacterial Resistance of Polymeric Films

G90

Standard Practice for Performing Accelerated Outdoor Weathering of Materials Using Concentrated Natural Sunlight

G113

Standard Terminology Relating to Natural and Artificial Weathering Tests of Nonmetallic Materials

G130

Standard Test Method for Calibration of Narrow- and Broad-Band Ultraviolet Radiometers Using a Spectroradiometer

G138

Standard Test Method for Calibration of a Spectroradiometer Using a Standard Source of Irradiance

G141

Standard Guide for Addressing Variability in Exposure Testing of Nonmetallic Materials

G147

Standard Practice for Conditioning and Handling of Materials for Natural and Artificial

G151

Standard Practice for Exposing Nonmetallic Materials in Accelerated Test Devices that Use Laboratory Light Sources

G152

Standard Practice for Operating Open Flame Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials

G153

Standard Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials

G154

Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Materials

G155

Standard Practice for Operating Xenon Arc Lamp Apparatus for Exposure of Materials

G156

Standard Practice for Selecting and Characterizing Weathering Reference Materials

G160

Standard Practice for Evaluating Microbial Susceptibility of Nonmetallic Materials by Laboratory Soil Burial

G166

Standard Guide for Statistical Analysis of Service Life Data

G167

Standard Test Method for Calibration of a Pyranometer Using a Pyrhelimeter

G169

Standard Guide for Application of Basic Statistical Methods to Weathering Tests

G172

Standard Guide for Statistical Analysis of Accelerated Service Life Data

G173

Standard Tables for Reference Solar Spectral Irradiances: Direct Normal and Hemispherical on 37° Tilted Surface

G177

Standard Tables for Reference Solar Ultraviolet Spectral Distributions: Hemispherical on 37° Tilted Surface

G178

Standard Practice for Determining the Activation Spectrum of a Material (Wavelength Sensitivity to an Exposure Source) Using the Sharp Cut-On Filter or Spectrographic Technique

G179

Standard Specification for Metal Black Panel and White Panel Temperature Devices for Natural Weathering Tests

G183

Standard Practice for Field Use of Pyranometers, Pyrhemimeters and UV Radiometers

G197

Standard Table for Reference Solar Spectral Distributions: Direct and Diffuse on 20° Tilted and Vertical Surfaces

G201

Standard Practice for Conducting Exposures in Outdoor Glass-Covered Exposure Apparatus with Air Circulation

G207

Standard Test Method for Indoor Transfer of Calibration from Reference to Field Pyranometers

G213

Standard Guide for Evaluating Uncertainty in Calibration and Field Measurements of Broadband Irradiance with Pyranometers and Pyrhemimeters

G214

Standard Test Method for Integration of Digital Spectral Data for Weathering and Durability Applications

G222

Standard Practice for Estimation of UV Irradiance Received by Field-Exposed Products as a Function of Location

G224

Standard Practice for Operating UVC Lamp Apparatus for Exposure of Materials

G228

Standard Practice for Conducting a 5-year Review of a Committee G03 Standard

G229

Standard Practice for Estimating the Time of Wetness Potential at an Outdoor Weathering Site using a Cotton Wick Sensor

Awards

Award of Appreciation

This award was established in 1998 to recognize significant contributions to Committee G03, one of its subcommittees or one of its activities. The contribution may be for a significant specific effort or for consistent contributions of a sustained nature over a period of time.

Award of Excellence

This award is to recognize for outstanding contributions and demonstrated leadership in the development of standards.

Award of Recognition

This award can be given to recognize any member's significant contributions to the work of the committee.

Lifetime Achievement Award

The Lifetime Achievement Award is to recognize lasting and significant contributions and exceptional service over many years to Committee G03, its subcommittees and/or activities. It is the highest award presented by Committee G03. The award may be granted posthumously.

Outgoing Chair Award

A member who has completed their term as Chair.

Subcommittee Chair Award

This award is to recognize sub-chair leadership in the development of standards for the benefit of the greater community, over and above the interests of any individual, company or organization. The sub-chair upholds the consensus process through openness, transparency, balance, and inclusiveness.

Task Group Chair Award

This award is to recognize a member in their outstanding leadership skills in developing and revising a standard within a task group.

Society Recognized Committee Awards

WARREN D. KETOLA AWARD

This Society-recognized Technical Committee Award was established in 2012 by ASTM committee G03 on Weathering and Durability in honor of Warren D. Ketola.

Warren joined ASTM 1982 and was active in numerous ASTM committees and subcommittees. He served on Committees C24, D01, D04, D08, D20, D35, E06 and especially G03 where he presided for many terms as chairman. Warren's contributions to ASTM over the years lead to his being recognized with a variety of awards and honors, including the ASTM Award of Merit for work in G03, D01 and D20 as well as election to the ASTM Board of Directors. His dedication and commitment to the establishment of high-quality technical standards written so as to be both understandable and practically useful to the ordinary industrial user serves as a model to the entire ASTM organization. Warren brought a career worth of expertise plus a healthy dash of humor to every committee and every meeting in which he participated. He was always ready to share his broad knowledge and expertise on technical matters and opinions. Warren was known for sharing credit with his associates. Warren was filing an ASTM ballot Negative only a few days before his death – much too soon - in December 2009. This award has been established to recognize members who have provided sustained personal contributions to the goals of Committee G03 in the development and/or use of consensus standards in the field of weathering technology and its industrial applications.

Award Criteria

Any member of Committee G03 is eligible to receive the Warren D. Ketola Award. A nominee will be judged upon the member's sustained and exceptional contribution to the development and use of consensus standards in the field of weathering and durability and its applications. The award recognizes outstanding personal performance in service to Committee G03 or to one of its technical subcommittees. Though not a prerequisite, a long and productive service within G03 will be considered on its own as a significant item in the evaluation process.

Award Recipients

AWARD OF APPRECIATION

- 2000 Richard Fischer
- 2004 John Evans
- 2004 Eric Everett
- 2007 William Murray
- 2007 Norma Searle
- 2015 Daryl Myers
- 2015 Gene Zerlaut
- 2021 Chris Gueymard
- 2022 Brad Reis
- 2023 Lynn Pattison
- 2023 Olivier Rosseler

AWARD OF EXCELLENCE

- 2022 Judy LaZonby

AWARD OF MERIT

- 1974 Joseph Norton
- 1986 George Kish
- 1989 Raymond Kinmonth
- 1997 Warren Ketola
- 2012 Joe Robbins
- 2020 Michael Crewdson

AWARD OF RECOGNITION

- 2013 Donald Smith

FRANK W. REINHART AWARD

- 1999 Michael Crewdson

LIFETIME ACHIEVEMENT

AWARD

- 2024 Joe Robbins
- 2025 Gary Cornell

OUTGOING CHAIR AWARD

- 2004 William Murray
- 2009 Warren Ketola
- 2011 Lynn Pattison
- 2024 Oscar Cordo

POSTHUMOUS AWARD

OF APPRECIATION

- 2004 John Evans

SUBCOMMITTEE CHAIR

AWARD

- 2025 Aron Habte

TASK GROUP CHAIR OF THE

YEAR AWARD

- 2001 Patrick Brennan
- 2001 Warren Ketola

WARREN D. KETOLA AWARD

- 2015 Norma Searle
- 2016 Douglas Grossman



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