This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.



Standard Terminology of Building Constructions¹

This standard is issued under the fixed designation E631; 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 (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This Terminology consists of terms and definitions pertaining to the subject field of buildings and building construction, and in particular, terms related to the standards generated by ASTM Committee E06 on Performance of Buildings.

1.2 The purpose of this Terminology is to provide preferred and admitted designations along with the meanings and explanations of technical concepts applied in the subject field of buildings and construction, written for both the non-expert and the expert user.

1.3 This comprehensive Terminology standard contains all ASTM standardized definitions generated in ASTM Committee E06 that are considered general in nature. Beyond this comprehensive terminology, there are also separate terminology standards that have been developed within Committee E06 by a number of technical subcommittees.

1.3.1 These separate general terminologies are created relative to specific subject fields and the terminological entries have been grouped for convenient use (see Section 2 and Appendix X1). Some terminology data contained in those other subsidiary terminology standards also appear in this comprehensive standard.

1.3.2 The following standards are separate terminologies that have been developed within specific E06 Subcommittees whose term entry lists are provided in Appendix X1:

E1480 Terminology of Facility Management (Building-Related)

- E1605 Terminology Relating to Lead in Buildings
- E1749 Terminology Relating to Rigid Wall Relocatable Shelters
- E2110 Terminology for Exterior Insulation and Finish Systems (EIFS) E2151 Terminology of Guides for Specifying and Evaluating Performance of Single Family Attached and Detached Dwellings
- E2265 Terminology for Anchors and Fasteners in Concrete and Masonry

1.4 Terms are listed in alphabetical sequence. Compound terms appear in the natural spoken order. To show the relation-

ships in certain families of concepts, groups of narrower terms and their definitions are grouped under the definition of the broader term. Each such sub-entry is listed also (*in italics*) with a cross-reference to the special class.

1.5 Certain standard definitions herein are adopted from other sources. Each is an exact copy. The source is identified at the right margin following the definition, and is listed in Section 2.

2. Referenced Documents

- 2.1 ASTM Standards:²
- C168 Terminology Relating to Thermal Insulation
- C755 Practice for Selection of Water Vapor Retarders for Thermal Insulation
- E73 Practice for Static Load Testing of Truss Assemblies
- E96/E96M Test Methods for Water Vapor Transmission of Materials
- E456 Terminology Relating to Quality and Statistics
- E546 Test Method for Frost/Dew Point of Sealed Insulating Glass Units
- E564 Practice for Static Load Test for Shear Resistance of Framed Walls for Buildings
- E621 Practice for Use of Metric (SI) Units in Building Design and Construction(Committee E06 Supplement to E380) (Withdrawn 2008)³
- E774 Specification for the Classification of the Durability of Sealed Insulating Glass Units (Withdrawn 2006)³
- E779 Test Method for Determining Air Leakage Rate by Fan Pressurization
- E859 Test Method for Air Erosion of Sprayed Fire-Resistive Materials (SFRMs) Applied to Structural Members
- E997 Test Method for Evaluating Glass Breakage Probability Under the Influence of Uniform Static Loads by Proof Load Testing
- E998 Test Method for Structural Performance of Glass in Windows, Curtain Walls, and Doors Under the Influence of Uniform Static Loads by Nondestructive Method

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E833 Terminology of Building Economics

E1481 Terminology of Railing Systems and Rails for Buildings

¹This terminology is under the jurisdiction of ASTM Committee E06 on Performance of Buildings and is the direct responsibility of Subcommittee E06.94 on Terminology and Editorial.

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Those terms formerly contained in Definitions E540 - 77 are now contained in this terminology.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ The last approved version of this historical standard is referenced on www.astm.org.

- E1186 Practices for Air Leakage Site Detection in Building Envelopes and Air Barrier Systems
- E1334 Practice for Rating the Serviceability of a Building or Building-Related Facility (Withdrawn 2013)³
- E1423 Practice for Determining Steady State Thermal Transmittance of Fenestration Systems
- E1480 Terminology of Facility Management (Building-Related)
- E1553 Practice for Collection of Airborne Particulate Lead During Abatement and Construction Activities (Withdrawn 2002)³
- E1554/E1554M Test Methods for Determining Air Leakage of Air Distribution Systems by Fan Pressurization
- E1613 Test Method for Determination of Lead by Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES), Flame Atomic Absorption Spectrometry (FAAS), or Graphite Furnace Atomic Absorption Spectrometry (GFAAS) Techniques
- E1644 Practice for Hot Plate Digestion of Dust Wipe Samples for the Determination of Lead
- E1645 Practice for Preparation of Dried Paint Samples by Hotplate or Microwave Digestion for Subsequent Lead Analysis
- E1677 Specification for Air Barrier (AB) Material or System for Low-Rise Framed Building Walls
- E1679 Practice for Setting the Requirements for the Serviceability of a Building or Building-Related Facility, and for Determining What Serviceability is Provided or Proposed
- E1726 Practice for Preparation of Soil Samples by Hotplate Digestion for Subsequent Lead Analysis
- E1727 Practice for Field Collection of Soil Samples for Subsequent Lead Determination (Withdrawn 2014)³
- E1728 Practice for Collection of Settled Dust Samples Using Wipe Sampling Methods for Subsequent Lead Determination
- E1729 Practice for Field Collection of Dried Paint Samples for Subsequent Lead Determination (Withdrawn 2014)³
- E1753 Practice for Use of Qualitative Chemical Spot Test Kits for Detection of Lead in Dry Paint Films
- E1775 Guide for Evaluating Performance of On-Site Extraction and Field-Portable Electrochemical or Spectrophotometric Analysis for Lead
- E1783/E1783M Specification for Preformed Architectural Strip Seals for Buildings and Parking Structures
- E1792 Specification for Wipe Sampling Materials for Lead in Surface Dust
- E1796 Guide for Selection and Use of Liquid Coating Encapsulation Products for Leaded Paint in Buildings
- E1827 Test Methods for Determining Airtightness of Buildings Using an Orifice Blower Door
- E1828 Practice for Evaluating the Performance Characteristics of Qualitative Chemical Spot Test Kits for Lead in Paint (Withdrawn 2010)³
- E1918 Test Method for Measuring Solar Reflectance of Horizontal and Low-Sloped Surfaces in the Field
- E1925 Specification for Engineering and Design Criteria for Rigid Wall Relocatable Structures

3. Terminology

- 3.1 Symbols:
- a-height of cantilevered shear wall, in metres (feet).
- **b**—length of cantilevered shear wall, in metres (feet).
- **C**—initial length of the diagonal $\sqrt{a^2+b^2}$, in metres (feet).
- δ —diagonal elongation, in millimetres (inches).
- Δ —total horizontal displacement of the top of the wall measured with respect to the test apparatus, in millimetres (inches). This value includes effects due to panel rotation, translation, and shear.
- E—modulus of elasticity of flange or web material, depending upon which material is held constant in a transformed section analysis, psi (or MPa)
- G-shear modulus of the web material, psi (or MPa)
- **G'**—shear stiffness of the diaphragm obtained from test (includes shear deformation factor for the connection system), lbf/in. (or N/mm)
- G—shear stiffness obtained from test, in newtons per metre (pound-force per inch).
- G'—global shear stiffness, includes rotation and translational displacements as well as diaphragm shear displacement.
- G'_{int}—internal shear stiffness, includes only the shear displacement of the wall in calculation.
- **I**—moment of inertia of the transformed section of the diaphragm based on webs or flanges, in.⁴ (or mm⁴)
- L-total span of a simply supported diaphragm, in. (or mm)
- P-concentrated load, lbf (or N)
- **P**—concentrated load applied at the top edge of the wall at the selected reference displacement, in newtons (pound-force).
- P_u —highest load level held long enough to record gage measurements, in newtons (pound-force).
- $\mathbf{R}_{\mathbf{n}}$ —maximum diaphragm reaction, lbf (or N)
- S_u —ultimate shear strength of the diaphragm, lbf/ft (or N/m)
- a-span length of cantilever diaphragm, in. (or mm)
- **b**—depth of diaphragm, in. (or mm)
- t-thickness of web material, in. (or mm)
- w-uniform load, lbf/in. (or N/mm)
- Δ_{b} —bending deflection of diaphragm, in. (or mm)
- Δ_k —empirical expression for that portion of the diaphragm deflection contributed by the shear deformation of the connection system, in. (or mm)
- Δ_s —pure shear deformation of diaphragm, in. (or mm)
- Δ_{s} '—apparent total shear deformation of the diaphragm based on test (see 8.1.2.2), in. (or mm). This factor includes both

the pure shear deformation and that contributed by distortion of the connection system.

 Δ_t —total deflection of diaphragm, in. (or mm)

 $\Delta_{1,2,-}$ deformation measured at Point 1, 2, - - - , in. (or mm)

3.2 Terms and Their Definitions:

accreditation, *n*—official authorization, approval, or recognition accorded an individual or organization based upon specific qualification.

DISCUSSION—In specific use, it is necessary to include an identification of the type, scope, and limitations of the accreditation, and by whom granted.

ACH₅₀, *n*—the ratio of the air leakage rate at 50 Pa (0.2 in. H_2O), corrected for a standard air density, to the volume of the test zone (1/h). E1827

acid rain—rain having a pH of less than 5.65.

DISCUSSION—The pH of distilled water in equilibrium with carbon dioxide under laboratory conditions is 5.6.

active solar energy system—See building subsystem.⁴

adapt—See building modification.

add—See building modification.

- **aged insulation value**—thermal resistance (R-value) of a thermal insulation material as determined after standard conditioning to simulate service exposure.
- air-change rate—air-leakage in volume units per hour divided by the building space volume with identical volume units (normally expressed as air changes per hour, ACH or ACPH). E779
- air exfiltration—air leakage out of the building driven by negative pressure. E1677

negative pressure—air pressure on the outdoor side of a building envelope lower than on the indoor side. **E1677**

- air-handling unit—the distribution-system fan and portion of the distribution system that is integral to the furnace, air-conditioner, or heat-pump. E1554/E1554M
- air infiltration—air leakage into the building drive by positive pressure. E1677

positive pressure—air pressure on the outdoor side of a building envelope higher than on the indoor side. E1677

- **air leakage**, *n*—*in buildings*, the passage of uncontrolled air through **cracks** or openings in the building envelope or its **components**, such as ducts, because of air pressure or temperature difference.
- air leakage—the movement/flow of air through the building envelope, which is driven by either or both positive (infiltration) and negative (exfiltration) pressure differences across the envelope. E1677

DISCUSSION—These pressure differences are caused by wind, mechanical systems, and temperature differences (stack effect).

- air-leakage graph—the graph that shows the relationship of measured air flow rates to the corresponding measured pressure differences (usually plotted on a log-log scale). E779
- air leakage rate, Q_{env} , *n*—the total volume of air passing through the test zone envelope per unit of time (m³/s, ft³/min). E1827
- air-leakage rate—the volume of air movement per unit time across the building envelope. **E779**

Note 1—This movement includes flow through joints, cracks, and porous surfaces, or combination thereof. The driving force for such an air leakage in service can be either mechanical pressurization and depressurization, natural wind pressures, or air temperatures differentials between the building interior and the outdoors, or combination thereof.

- air leakage rate—the time rate of air flow across the air retarder. Expressed as cubic feet per minute per square foot of AR surface at a stated pressure differential across the AR expressed in inches of H_2O . (Cubic meters per second per square meter of AR surface at a pressure differential in Pascals.) E1677
- air leakage rate—the volume of air movement per unit time across the building envelope. This movement includes flow through joints, cracks, and porous surfaces or combinations thereof. The driving force for such air leakage in buildings can be either mechanical pressurization or evacuation, natural wind pressures, or air temperature differentials between the building interior and the outdoors, or combinations thereof. E1186
- air-leakage rate—the volume of air movement per unit time across the building envelope or the exterior envelope of the air distribution system. E1554/E1554M

DISCUSSION—This movement includes flow through joints, cracks, and porous surfaces, or combinations thereof. The driving forces for such air leakage in service can be mechanical pressurization and depressurization, natural wind pressures, and air temperature differentials between the building interior and the outdoors.

- air leakage site—a location on the building envelope where air enters or exits the building causing air leakage to occur. E1186
- air retarder (AR)—a material or system in building construction that is designed and installed to reduce air leakage either into or through the opaque wall. E1677
- **air sampling pump**—a portable, battery-powered air pump that may be attached to a belt on a worker or to a stationary object. The pump is used to draw air through a filter holder that is placed within the personal breathing zone of a worker. Alternatively, the pump may be attached to a stationary object in order that it may be used for area sampling. **E1553**
- airtightness, *n*—the degree to which a test zone envelope resists the flow of air. E1827

Note 2— ACH_{50} , air leakage rate, and effective leakage area are examples of measures of building airtightness.

⁴ Boldface terms are defined in this terminology.

alter—See building modification.

- analysis run—a period of measurement time on a given instrument during which data is calculated from a single calibration curve (or single set of curves). Recalibration of a given instrument produces a new analysis run. E1613
- **anchor**, *n*—a device used to connect securely a **building component** to adjoining construction, to a supporting member, or to the ground.
- **anchorage**, *n*—a means of connecting securely, by using an **anchor**, a **building component** to adjoining construction, supporting member(s), or to the ground.
- anchorage system—a group of interacting elements, components, and structures.
- **anchoring system**—a group of interacting anchors and elements.
- anodic stripping voltammetry-an electroanalytical technique in which the concentration of analyte metal species dissolved in solution is determined in the following manner. The analyte is first deposited (preconcentrated) electrochemically by reducing the dissolved ion in solution to immobilized metal species at a mercury electrode surface. The metal is deposited in the form of an amalgam (with Hg) at an applied potential (voltage) which is negative of the standard oxidation potential for the metal/ion redox couple. After deposition, the preconcentrated metal species is then "stripped" from the mercury electrode by applying a positive potential sweep, which causes anodic oxidation of the analyte metal species to dissolved ion. The current associated with this reoxidation is measured. The peak current is proportional to the original concentration of dissolved analyte species over a wide range of concentrations. E1775

apartment—See dwelling unit.

apartment building—See building.

- architectural strip seal—a preformed membrane or tubular extrusion, manufactured from a fully cured elastomeric alloy, having flanges or other means of mechanically or chemically securing it.
 E1783/E1783M
- area samples—air samples that are collected at various stationary sites, but not for a person; area samples are therefore to be distinguished from personal air samples.E1553

artifact, *n*—an object (as a tool, ornament, or element of a structure) showing human workmanship or modification. DISCUSSION—Examples of building element artifacts are stained glass windows and fine art finishes.

- **as-built**, *adj*—pertaining to the as-constructed, **as-fabricated**, as-manufactured, or as-furnished state of a finished product relating to size, shape, materials, and finish regardless of drawings or specifications.
- **as-fabricated**, *adj*—(1) *of a milled metal product*, pertaining to the surface appearance and texture or temper produced by the original forming process. (2) *of a formed metal product*, pertaining to the surface appearance of the product to removal of disfigurations caused by the forming process.

aspect, *n*—of serviceability, a broad component of serviceability, comprising several related topics of serviceability.

DISCUSSION—The serviceability of a building or building-related facility can be rated on each topic for which a scale has been prepared, but not for an aspect.

aspect ratio—a ratio of long side to short side of glass plate. E998

attic—See building space.

average breaking stress (ABS)—the average maximum principal tensile stress (MPTS) at failure, representative of the glass under test. The ABS is dependent on a number of factors including geometry, time history of load, surface condition, etc. Glasses with residual surface stresses, such as heat-strengthened or fully tempered, must have their residual stresses added to the state of stress at the specified load. As defined for use in the standard, the ABS is for annealed glass.

average grade-See grade.

back bedding-See windows and doors.

back putty-See windows and doors.

balance-See windows and doors.

- **bar**, n—a round, square, rectangular, or other polygonal solid member having a length greater than its width or thickness; and usually of rolled, drawn, or extruded metal (if of steel, having dimensions of 0.204 in. (5.2 mm) or more in thickness, and 8.0 in. (20.3 mm) or less in width).
- **bar-size section**—a hot-rolled steel angle, channel, tee, or zee having a maximum cross-section dimension of less than (76 mm) (3.0 in.)
- base substrate—a material upon which films, treatments, adhesives, sealants, membranes, and coatings are applied. The base substrate can also be considered to be the actual material of construction that the surface is attached to. This does not refer to the layers of paint under the outermost or surface layer. E1796

basement—See building space.

batch—a group of samples (n > 2) that are obtained in a similar environment (for example, a set of area or personal samples) and are processed together using the same reagents and equipment.E1553

bathroom—See building space.

bead-See windows and doors.

- **beadboard**, *n*—molded **expanded polystyrene thermal insulation board**; also called **MEPS**.
- **beam**, *n*—a structural member intended primarily to resist transverse forces, and subject to bending by these forces.

bearing wall-See wall.