



Designation: E1264 – 22

# Standard Classification for Acoustical Ceiling Products<sup>1</sup>

This standard is issued under the fixed designation E1264; 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.

*This standard has been approved for use by agencies of the U.S. Department of Defense.*

## 1. Scope

1.1 This classification covers ceiling products that provide acoustical performance and interior finish in buildings. Products used in performance spaces and other special applications in some cases require more detailed specification than provided by this classification.

1.2 This classification classifies acoustical ceilings by type, pattern, and certain ratings for acoustical performance, light reflectance, and fire safety. It does not cover the aspects of acoustical ceilings when used as a component of a system or assembly tested for fire endurance or floor/ceiling sound transmission.

1.3 This classification does not include physical properties, such as structural hardness, friability, sag, linear expansion and contraction, and transverse strength, which affect the handling, installation, and use of acoustical ceiling products (see Test Methods C367).

1.4 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.5 *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.*

## 2. Referenced Documents

### 2.1 ASTM Standards:<sup>2</sup>

C367 Test Methods for Strength Properties of Prefabricated

Architectural Acoustical Tile or Lay-In Ceiling Panels  
C423 Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method  
C634 Terminology Relating to Building and Environmental Acoustics  
E84 Test Method for Surface Burning Characteristics of Building Materials  
E413 Classification for Rating Sound Insulation  
E795 Practices for Mounting Test Specimens During Sound Absorption Tests  
E1110 Classification for Determination of Articulation Class  
E1111 Test Method for Measuring the Interzone Attenuation of Open Office Components  
E1414 Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum  
E1477 Test Method for Luminous Reflectance Factor of Acoustical Materials by Use of Integrating-Sphere Reflectometers

## 3. Terminology

3.1 Terms used in this standard are defined either in Terminology C634 or within this standard. The definition of terms explicitly given within this standard take precedence over definitions given in Terminology C634. The definitions within Terminology C634 and this standard take precedence over any other definitions of defined terms found in any other documents, including other documents that may be referenced in this standard.

### 3.2 Definitions of Terms Specific to This Standard:

3.2.1 *acoustical panel, n*—a form of a prefabricated sound absorbing ceiling element used with exposed suspension systems.

3.2.2 *acoustical tile, n*—a form of a prefabricated sound absorbing ceiling element used with concealed or semi-exposed suspension systems, stapling, or adhesive bonding.

3.2.3 *butt, n*—a joint detail for acoustical tile, butt bevel, or butt square edge, without kerfing of the edges, intended for adhesive bonding to solid backing.

3.2.4 *cast or molded, n*—making ceiling products in a way that the raw materials are mixed with water or liquid binder, then deposited in a mold or form, and then dried/cured before being de-molded.

<sup>1</sup> This classification is under the jurisdiction of ASTM Committee E33 on Building and Environmental Acoustics and is the direct responsibility of Subcommittee E33.04 on Application of Acoustical Materials and Systems.

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<sup>2</sup> 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.

3.2.5 *dry felted, n*—making ceiling products in a way that mixes dry raw materials together and then air laid and cured with heat to form a fibrous or felted structure.

3.2.6 *edge and joint detail, n*—various edge and joint details are available in accordance with Table 1 and Fig. 1 for acoustical ceiling products.

3.2.7 *excelsior, n*—long, thin wood shavings.

3.2.8 *fissured pattern, n*—a surface with irregular depressions of varying lengths, widths, and depths extending below the basic product face.

3.2.9 *flush reveal edge, n*—acoustical lay-in panels are intended for use in direct hung exposed suspension systems with a narrow exposed edge that is flush with the panel face.

3.2.10 *flush tegular edge, n*—acoustical lay-in panels are intended for use in direct hung exposed suspension systems with a narrow exposed edge that is flush with the panel face.

3.2.11 *glass fiber base, n*—ceilings composed principally of glass in fiber form with appropriate binders.

3.2.12 *kerfed and rabbeted, n*—joint detail for acoustical tile. Tile with kerfed and rabbeted edges on all four sides, with or without beveled edges, are intended for concealed suspension system or adhesive bonding.

3.2.13 *kerfed and rabbeted long edges, ends trimmed, n*—acoustical tile, 2 ft (609.6 mm) or longer, is intended for installation in semi-exposed, or semi-exposed direct hung suspension systems.

3.2.14 *metal facings (pans), n*—metal facing (pan) ceiling systems with mineral or glass fiber base backings are intended for use where sound absorption is needed and where durable and easily maintainable surfaces are a necessity.

TABLE 1 Edge and Joint Detail, Types I, II, III, IV, VIII, IX, X, XI, and XII

Acoustical Unit	Edge Detail	Joint Detail
Tile	Beveled	Kerfed and Rabbeted or Tongue and Groove or Butt
	Square	Kerfed and Rabbeted or Tongue and Groove or Butt
	Beveled Long Edges, Square Edge Trimmed on Ends	Kerfed and Rabbeted Long Edges Only, Ends Trimmed. (For Semi-concealed System)
Panels	Square	
	Reveal	
	Tegular	
	Flush Reveal	
	Flush Tegular	
	Narrow Reveal	
	Narrow Flush Reveal	
Metal Pan	Square	
	Reveal	
	Tegular	
	Flush Reveal	
	Flush Tegular	
	Narrow Reveal	
	Narrow Flush Reveal	
Metal Strip	Narrow Flush Tegular	
	Varies with Manufacturer	

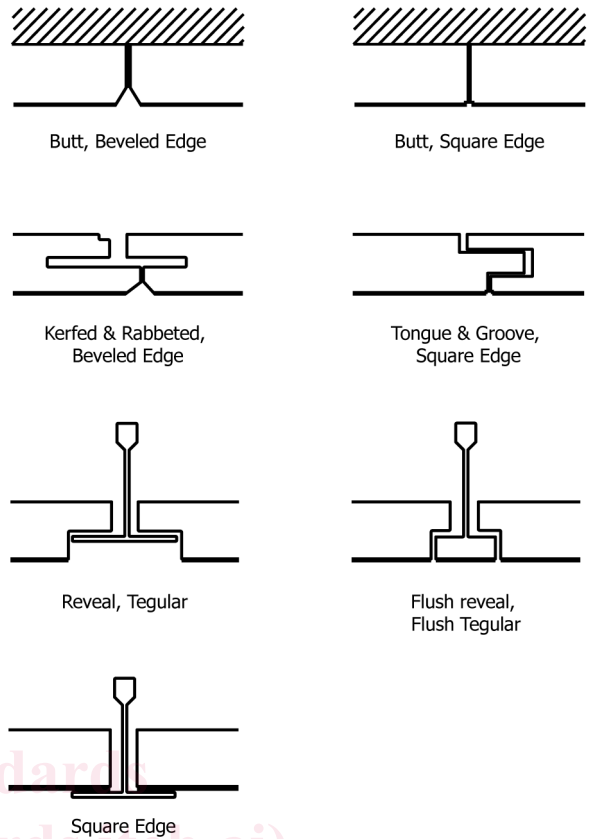


FIG. 1 Edge and Joint Details

3.2.15 *mineral base, n*—ceilings composed principally of mineral materials such as fibers manufactured from rock or slag, with or without binders.

3.2.16 *nodular, n*—ceiling products that contain fiber or filler materials, or both, combined in a way to create small rounded or irregularly shaped lumps or balls of material.

3.2.17 *plenum, n*—space between the top (backside) of the finished ceiling and the underside of the floor deck or roof deck above.

3.2.18 *reveal edge, n*—acoustical lay-in panels with step-down edge are intended for use in direct hung exposed suspension systems.

3.2.19 *square edge, n*—acoustical lay-in panels with square edges are intended for use in direct hung exposed suspension systems.

3.2.20 *Discussion*—Reveal, flush reveal, tegular, flush tegular, and square edged panels are laid in place and are pushed upward for removal or access to the plenum above.

3.2.21 *textured pattern, n*—granular or raised (fine, coarse, or a blend), felted or matted surface as an integral part of the basic product or superimposed on the product surface.

3.2.22 *tegular edge, n*—acoustical lay-in panels with step-down edge are intended for use in direct hung exposed suspension systems.

3.2.23 *tongue and groove, n*—joint detail for acoustical tile. Tile with tongue and groove edges are intended for stapling, concealed suspension system, or adhesive bonding.

3.2.24 *wet felted, n*—ceiling products made in a way that the raw materials are slurried in water to mix them, then agglomerated, dewatered, and dried to form a fibrous or felted structure.

#### 4. Significance and Use

4.1 This classification is used to classify and aid in the selection of acoustical ceiling products.

#### 5. Basis of Classification

5.1 Acoustical ceiling products described using this classification are one or more of the following types, forms, patterns, acoustical ratings, light reflectance values, and fire classes, as specified.

##### 5.2 Ceiling Types:

5.2.1 *Type I*—Cellulose base with painted finish.

5.2.2 *Type II*—Cellulose base with membrane-faced overlay.

5.2.3 *Type III*—Mineral base with painted finish.

5.2.3.1 *Form 1*—Nodular.

5.2.3.2 *Form 2*—Wet felted.

5.2.3.3 *Form 3*—Dry felted.

5.2.3.4 *Form 4*—Cast or molded.

5.2.3.5 *Form 5*—Other (describe).

5.2.4 *Type IV*—Mineral base with membrane-faced overlay.

5.2.4.1 *Form 1*—Nodular.

5.2.4.2 *Form 2*—Wet felted.

5.2.4.3 *Form 3*—Dry felted.

5.2.4.4 *Form 4*—Cast or molded.

5.2.4.5 *Form 5*—Other (describe).

5.2.5 *Type V*—Perforated steel facing (pan) with mineral or glass fiber base backing.

5.2.6 *Type VI*—Perforated stainless steel facing (pan) with mineral or glass fiber base backing.

5.2.7 *Type VII*—Perforated aluminum facing (pan) with mineral or glass fiber base backing.

5.2.8 *Type VIII*—Cellulose base with scrubbable pigmented or clear finish.

5.2.9 *Type IX*—Mineral base with scrubbable pigmented or clear finish.

5.2.9.1 *Form 1*—Nodular.

5.2.9.2 *Form 2*—Wet felted.

5.2.9.3 *Form 3*—Dry felted.

5.2.9.4 *Form 4*—Cast or molded.

5.2.10 *Type X*—Mineral base with plastic or aluminum membrane-faced overlay, or both.

5.2.11 *Type XI*—Mineral base with fabric-faced overlay.

5.2.11.1 *Form 1*—Nodular.

5.2.11.2 *Form 2*—Wet felted.

5.2.11.3 *Form 3*—Dry felted.

5.2.11.4 *Form 4*—Cast or molded.

5.2.12 *Type XII*—Glass fiber base with membrane-faced overlay.

5.2.12.1 *Form 1*—Plastic.

5.2.12.2 *Form 2*—Cloth.

5.2.12.3 *Form 3*—Other.

5.2.13 *Type XIII*—Aluminum or steel strip with mineral or glass fiber base backing.

5.2.13.1 *Form 1*—Perforated.

5.2.13.2 *Form 2*—Non-perforated.

5.2.14 *Type XIV*—Excelsior bonded with inorganic binders.

5.2.14.1 *Form 1*—No backing.

5.2.14.2 *Form 2*—Backed with mineral or glass fiber base backing.

5.2.15 *Type XX*—Other types (describe).

NOTE 1—The facings specified in Type II, Type IV, Type X, Type XI, and Type XII shall be separate overlays and not coatings similar to paint.

NOTE 2—The minimum thickness of metallic facings (pans) specified in Type V, Type VI, and Type VII shall be sufficient to support the length of the facing, or instead thereof, stiffeners or ribs are available to ensure rigidity.

#### 6. Ceiling Pattern

6.1 Patterns for acoustical ceilings shall be described by one or more of the following:

Pattern Designation	Pattern Description
A	Perforated, regularly spaced large holes
B	Perforated, randomly spaced large holes
C	Perforated, small holes
D	Fissured
E	Lightly textured
F	Heavily textured
G	Smooth
H	Printed
I	Embossed
J	Embossed-in-register
K	Surface scored
L	Random swirl
Z	Other patterns (describe)

#### 7. Ratings

7.1 *acoustical ratings*—An acoustical ceiling product shall meet one or more of the following acoustical performance requirements:

7.1.1 *noise reduction coefficient (NRC)*—When NRC is to be part of the classification, an acoustical ceiling product NRC rating shall be measured and reported in accordance with Test Method C423.

7.1.2 *articulation class (AC)*—When AC is to be part of the classification, an acoustical ceiling AC rating shall be measured and reported in accordance with Test Method E1111 and Classification E1110.

NOTE 3—Specify AC rating only when rating the acoustical performance of ceiling products designed to accommodate open-plan areas. AC is applicable for any ceiling material used as part of an acoustically designed system incorporating background sound masking and speech privacy space dividers. AC is the preferred rating scheme for selecting ceiling products for open-plan in lieu of the NRC rating scheme. (The addition of hard surfaced elements in the ceiling, such as surface mounted or recessed lighting fixtures can impair the AC rating, depending upon the area of the hard surface and its location relevant to occupants in the space.)

7.1.3 *ceiling attenuation class (CAC)*—When CAC is to be part of the classification, an acoustical ceiling CAC rating shall be measured and reported in accordance with Test Method E1414 and Classification E413.

NOTE 4—Ceiling attenuation class (CAC) is a single number rating obtained according to Test Method E1414 and Classification E413. The normalized ceiling attenuation ( $D_{n,c}$ ) values obtained according to Test Method E1414 are used instead of sound transmission loss (TL) values in Classification E413. Test Method E1414 is a two-room test method in