



Designation: ~~E1264 – 22~~ E1264 – 23

## 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

<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](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

**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.

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.

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**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 Tegular	
Metal Pan	Square	
	Reveal	
	Tegular	
	Flush Reveal	
	Flush Tegular	
	Narrow Reveal	
	Narrow Tegular	
Metal Strip	Narrow Flush Reveal	
	Narrow Flush Tegular	
Metal Strip	Varies with Manufacturer	

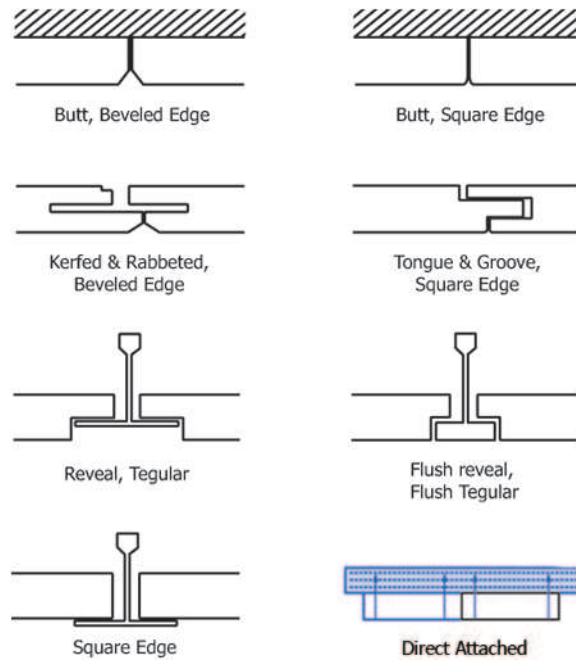


FIG. 1 Edge and Joint Details

iTeh Standards

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.

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 1—Cellulose base with painted finish:*

###### Type A – Mineral Base

###### Form A1 – with painted finish

1.1 Nodular

1.2 Wet formed

1.3 Dry formed

1.4 Cast or molded

1.5 Other

###### Form A2 – with membrane-faced overlay

2.1 Nodular

2.2 Wet formed

2.3 Dry formed

2.4 Cast or molded

2.5 Other

###### Form A3 – with a scrubbable pigment or clear finish

3.1 Nodular

3.2 Wet formed

3.3 Dry formed

3.4 Cast or molded

3.5 Other

###### Form A4 – with plastic or aluminum faced overlay

4.1 Nodular

4.2 Wet formed

4.3 Dry formed

4.4 Cast or molded

4.5 Other

###### Form A5 – with fabric faced overlay

5.1 Nodular

5.2 Wet formed

5.3 Dry formed

5.4 Cast or molded

5.5 Other

Type B – Glass fiber base with membrane overlay

Form B1 – Plastic

Form B2 – Cloth

Form B3 – Other

Type C – Aluminum or steel facing pan with mineral or glass backing

Form C1 – Perforated

Form C2 – Non perforated

Type D – Aluminum or steel facing plank with mineral or glass fiber backing

Form D1 – Perforated

Form D2 – Non perforated

Type E – Excelsior bonded with inorganics

Form E1 – with a scrubbable pigment

Form E2 – with a mineral or glass fiber facing

Form E3 – with a mineral or glass fiber backing

Type F – Wood with a mineral or glass fiber backing

Form F1 – Perforated

Form F2 – Non perforated

Type G – Gypsum

Form G1 – Perforated

Form G2 – Non-perforated

Type H – Polycarbonate or Plastic

Type I – Felt including polyester, wool, cotton, and cellulose

Type J – Melamine foam tiles, planks and panels

Type XX – Other type (describe)

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

~~NOTE 1—The facings specified in Type A and Type B shall be separate overlays and not coatings similar to paint.~~

~~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 2—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 3—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 which a suspended ceiling and common plenum space overlay a two-room suite separated by a massive dividing wall. Sound must travel up through the source room ceiling, across the plenum, and down through the receive room ceiling. Modifications to the plenum space such as overlays and barriers must be specified. STC ratings obtained from Test Method E90 or E336 data are not acceptable.

7.2 *light reflectance (LR) coefficient*—When LR is to be part of the classification, an acoustical ceiling LR coefficient shall be measured and reported in accordance with Test Method E1477.

7.3 *Fire Class/Surface Burning Characteristics*—Acoustical ceiling products shall be tested in accordance with Test Method E84, and shall be classified as follows:

7.3.1 *Class A*—The flame spread index of Class A ceiling products shall be 25 or less, and the material shall show no evidence of continued progressive combustion after the test flame has been extinguished. All surfaces, including those that would be exposed by cutting through the material in any way, shall meet these requirements. In addition, Class A ceiling products shall have a smoke developed index of 50 or less.

7.3.2 *Class B*—The flame spread index of Class B ceiling products shall be 26 to 75 on the face side, and the Class B ceiling product shall have a smoke developed index of 450 or less.

7.3.3 *Class C*—The flame spread index of Class C Ceiling products shall be 76 to 200 on the face side, and the Class C ceiling product shall have a smoke developed index of 450 or less.

NOTE 4—Classes A, B, and C are equivalent, respectively, to Classes I, II, and III of various building code authorities.