

# BXUV.M500 - Fire-resistance Ratings - ANSI/UL 263

## Design/System/Construction/Assembly Usage Disclaimer

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Certified products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered Certified.

## Fire-resistance Ratings - ANSI/UL 263

BXUV - Fire Resistance Ratings - ANSI/UL 263 Certified for United States

BXUV7 - Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada

[See General Information for Fire-resistance Ratings - ANSI/UL 263 Certified for United States Design Criteria and Allowable Variances](#)

[See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada Design Criteria and Allowable Variances](#)

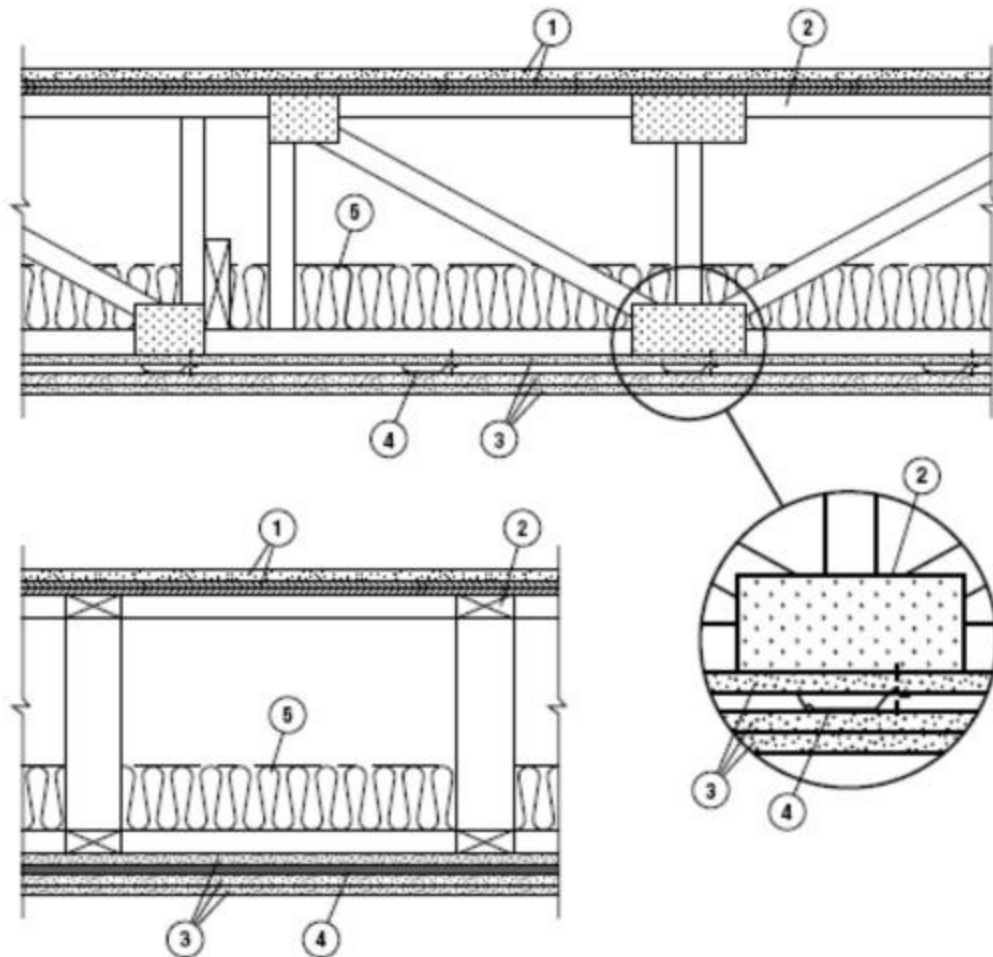
## Design No. **M500**

June 13, 2022

### **Unrestrained Assembly Rating — 2 Hr.**

**This design was evaluated using a load design method other than the Limit States Design Method (e.g., Working Stress Design Method). For jurisdictions employing the Limit States Design Method, such as Canada, a load restriction factor shall be used — See Guide [BXUV](#) or [BXUV7](#)**

**\* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**



1. **Flooring Systems** — The flooring system shall consist of one of the following:

#### System No. 1

**Subflooring** — Nom 23/32 in. thick wood structural panels installed perpendicular to trusses with end joints staggered. Plywood or panels secured to trusses with construction adhesive and No. 6d ringed shank nails, spaced 12 in. OC along each truss. Staples having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails.

**Vapor Barrier** — (Optional) — Nom 0.030 in. thick commercial asphalt saturated felt.

**Finish Flooring - Floor Topping Mixture\*** — Min 3/4 in. thickness of floor topping mixture having a minimum compressive strength of 1500 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

**MAXXON CORP** — Type Maxxon Standard and Maxxon High Strength

**Floor Mat Materials\* - (Optional)** — Floor mat material loose laid over the subfloor. Refer to manufacturer's instructions regarding the minimum thickness of floor topping over each floor mat material.

**MAXXON CORP** — Type Encapsulated Sound Mat.

**Floor Mat Reinforcement** — (Optional) Refer to manufacturer's instructions regarding minimum thickness of floor topping for use with floor mat reinforcement.

**Metal Lath** — (Optional) 3/8 in. expanded galvanized steel diamond mesh, 3.4 lbs/sq yd loose laid over the floor mat material.

**Fiber Glass Reinforcement** — (Optional) 0.015 in. thick PVC coated non-woven fiberglass mesh, 0.368 lbs./sq. yd loose laid over the floor mat material.

#### System No. 2

**Subflooring** — Nom 23/32 in. thick wood structural panels installed perpendicular to trusses with end joints staggered. Plywood or panels secured to trusses with construction adhesive and No. 6d ringed shank nails, spaced 12 in. OC along each truss. Staples having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails.

**Vapor Barrier** — (Optional) Nom 0.010 in. thick commercial asphalt saturated felt.

**Finish Flooring - Floor Topping Mixture\*** — Min 3/4 in. thickness of floor topping mixture having a minimum compressive strength of 1800 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

**UNITED STATES GYPSUM CO** — Types LRK, HSLRK, CSD

**USG MEXICO S A DE C V** — Types LRK, HSLRK, CSD

**Floor Mat Materials\*** — (Optional) Floor mat material loose laid over the subfloor. Refer to manufacturer's instructions regarding the minimum thickness of floor topping over each floor mat material.

**UNITED STATES GYPSUM CO** — Types SAM, LEVELROCK® Brand Sound Reduction Board, LEVELROCK® Brand Floor Underlayment SRM-25

### System No. 3

**Subflooring** — Min 19/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered.

**Floor Mat Materials\* — (Optional)** — Floor mat material nom 1/8 in. (3 mm) thick loose laid over the subfloor. Floor topping thickness shall be a min of 3/4 in. (19 mm)

**HACKER INDUSTRIES INC** — FIRM-FILL SCM 125

**Alternate Floor Mat Materials — (Optional)** — Floor mat material nom 1/4 in. (6 mm) thick loose laid over the subfloor. Floor topping thickness shall be a min of 1 in. (25 mm)

**HACKER INDUSTRIES INC** — Type FIRM-FILL SCM 250

**Alternate Floor Mat Materials — (Optional)** — Floor mat material nom 3/8 in. (10 mm) thick loose laid over the subfloor. Floor topping thickness shall be a min of 1-1/4 in. (32 mm)

**HACKER INDUSTRIES INC** — FIRM-FILL SCM 400

**Alternate Floor Mat Materials — (Optional)** — Floor mat material nom 3/4 in. (19 mm) thick loose laid over the subfloor. Floor topping thickness shall be a min of 1-1/2 in. (38 mm)

**HACKER INDUSTRIES INC** — Type FIRM-FILL SCM 750

**Alternate Floor Mat Materials — (Optional)** — Floor mat material nom 5/64 in. (2 mm) thick adhered to subfloor with Hacker Floor Primer. Primer to be applied to the surface of the mat prior to the placement of floor-topping mixture. Floor topping thickness a min 1 in. over the floor mat.

**HACKER INDUSTRIES INC** — Type Hacker Sound-Mat (HSM1.02)

**Alternate Floor Mat Materials — (Optional)** — Floor mat material nom 1/4 in. (6 mm) thick adhered to subfloor with Hacker Floor Primer. Primer to be applied to the surface of the mat prior to the placement of a min 1-1/4 in. (32 mm) of floor-topping mixture.

**HACKER INDUSTRIES INC** — Type Hacker Sound-Mat II (HSM2.06)

**Metal Lath (Optional)** — For use with 3/8 in. (10 mm) or greater floor mat materials, 3/8 in. expanded steel diamond mesh, 3.4 lbs/sq yd placed over the floor mat material. Hacker Floor Primer to be applied prior to the placement of the metal lath. When metal lath is used, floor topping thickness a nom 1-1/4 in. over the floor mat.

**Finish Flooring — Floor Topping Mixture\*** — Min 3/4 in. thickness of floor topping mixture having a min compressive strength of 1100 psi. Mixture shall consist of 6.8 gal of water to 80 lbs of floor topping mixture to 1.9 cu ft of sand.

**HACKER INDUSTRIES INC** — Firm-Fill Gypsum Concrete, Firm-Fill 2010, Firm-Fill 3310, Firm-Fill 4010, Firm-Fill High Strength, Gyp-Span Radiant

### System No. 4

**Subflooring** — Nom 23/32 in. thick wood structural panels installed perpendicular to trusses with end joints staggered. Plywood or panels secured to trusses with construction adhesive and No. 6d ringed shank nails, spaced 12 in. OC along each truss. Staples having

equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails.

**Vapor Barrier** — (Optional) — Commercial asphalt saturated felt, 0.030 in. thick.

**Vapor Barrier** — (Optional) — Nom 0.010 in. thick commercial rosin-sized building paper.

**Finish Flooring\*** — Min 3/4 in. thickness of any Floor Topping Mixture bearing the UL Classification Marking as to Fire Resistance. See Floor- and Roof-Topping Mixtures (CCOX) category for names of Classified Companies. Refer to the manufacturer's instructions accompanying the material and/or contact the manufacturer's technical support for specific mix design and minimum thickness recommended for use with eligible floor mat(s).

**Floor Mat Materials\*** — (Optional) — Nom. 1/4 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 3/4 in.

**KEENE BUILDING PRODUCTS CO INC** — Types Quiet Qurl 55/025 and Quiet Qurl 55/025 N

**Alternate Floor Mat Materials\*** — (Optional) — Floor mat material Nom. 3/8 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 1 in.

**KEENE BUILDING PRODUCTS CO INC** — Types Quiet Qurl 60/040 and Quiet Qurl 60/040 N

**Alternate Floor Mat Materials\*** — (Optional) — Floor mat material Nom. 3/4 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 1-1/2 in.

**KEENE BUILDING PRODUCTS CO INC** — Types Quiet Qurl 65/075, Quiet Qurl 65/075 N

**Alternate Floor Mat Materials\*** — (Optional) — Floor mat material Nom. 1/8 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 3/4 in.

**KEENE BUILDING PRODUCTS CO INC** — Types Quiet Qurl 52/013 and Quiet Qurl 52/013 N

**Alternate Floor Mat Materials\*** — (Optional) — Floor mat material Nom. 1/4 in. entangled net core with a compressible fabric attached to the bottom loose laid over the subfloor. Floor topping thickness shall be a minimum of 1 in.

**KEENE BUILDING PRODUCTS CO INC** — Types Quiet Qurl 55/025 MT and Quiet Qurl 55/025 N MT

### System No. 5

**Subflooring** — Nom 23/32 in. thick wood structural panels installed perpendicular to trusses with end joints staggered. Plywood or panels secured to trusses with construction adhesive and No. 6d ringed shank nails, spaced 12 in. OC along each truss. Staples having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails.

**Vapor Barrier** — (Optional) — Nom 0.030 in. thick commercial asphalt saturated felt.

**Finish Flooring — Floor Topping Mixture\*** — Min 3/4 in. thickness of floor topping mixture, having a min compressive strength of 1000 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

**DEPENDABLE LLC** — Types GSL M3.4, GSL K2.6 and GSL RH

**Floor Mat Materials\*** — (Optional) — Nom. 1/4 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 3/4 in.

**KEENE BUILDING PRODUCTS CO INC** — Types Quiet Qurl 55/025 and Quiet Qurl 55/025 N

**Alternate Floor Mat Materials\*** — (Optional) — Floor mat material Nom. 3/8 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 1 in.

**KEENE BUILDING PRODUCTS CO INC** — Types Quiet Qurl 60/040 and Quiet Qurl 60/040 N

**Alternate Floor Mat Materials\*** — (Optional) — Floor mat material Nom. 3/4 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 1-1/2 in.

**KEENE BUILDING PRODUCTS CO INC** — Types Quiet Qurl 65/075, Quiet Qurl 65/075 N

**Alternate Floor Mat Materials\*** — (Optional) — Floor mat material Nom. 1/8 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 3/4 in.

**KEENE BUILDING PRODUCTS CO INC** — Types Quiet Qurl 52/013 and Quiet Qurl 52/013 N

**Alternate Floor Mat Materials\*** — (Optional) — Floor mat material Nom. 1/4 in. entangled net core with a compressible fabric attached to the bottom loose laid over the subfloor. Floor topping thickness shall be a minimum of 1 in.

**KEENE BUILDING PRODUCTS CO INC** — Types Quiet Qurl 55/025 MT and Quiet Qurl 55/025 N MT

### System No. 6

**Subflooring** — Nom 23/32 in. thick wood structural panels installed perpendicular to trusses with end joints staggered. Plywood or panels secured to trusses with construction adhesive and No. 6d ringed shank nails, spaced 12 in. OC along each truss. Staples having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails.

**Vapor Barrier** — (Optional) Nom 0.010 in. thick commercial asphalt saturated felt.

**Finish Flooring — Floor Topping Mixture\*** — Min 3/4 in. thickness of floor topping mixture having a minimum compressive strength of 1000 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

**FORMULATED MATERIALS LLC** — — Types FR-25, FR-30, and SiteMix

**Floor Mat Materials\*** — (Optional) Floor mat material loose laid over the subfloor. Refer to manufacturer's instructions regarding the minimum thickness of floor topping over each floor mat material.

**FORMULATED MATERIALS LLC** — Types M1, M2, M3, Elite, Duo, R1, and R2

### System No. 7

**Subflooring** — Nom 23/32 in. thick wood structural panels installed perpendicular to trusses with end joints staggered. Plywood or panels secured to trusses with construction adhesive and No. 6d ringed shank nails, spaced 12 in. OC along each truss. Staples having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails.

**Finish Flooring - Floor Topping Mixture\*** — Min 1 in. thickness of floor topping mixture having a min compressive strength of 4500 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

**SIKA DEUTSCHLAND GMBH** — Type SCHONOX AP Rapid Plus

### System No. 8

**Subflooring** — Nom 23/32 in. thick wood structural panels installed perpendicular to trusses with end joints staggered. Plywood or panels secured to trusses with construction adhesive and No. 6d ringed shank nails, spaced 12 in. OC along each truss. Staples having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails.

**Vapor Barrier** — (Optional) - Nom 0.030 in. thick commercial asphalt saturated felt.

**Finish Flooring - Floor Topping Mixture\*** — Min 3/4 in. thickness of any Floor Topping Mixture bearing the UL Classification Marking as to Fire Resistance. See Floor- and Roof-Topping Mixtures (CCOX) category for names of Classified Companies. Refer to the manufacturer's instructions accompanying the material and/or contact the manufacturer's technical support for specific mix design and minimum thickness recommended for use with eligible floor mat(s).

**Floor Mat Materials\*** — (Optional, Not Shown) - Floor mat material loose laid over the subfloor. Refer to manufacturer's instructions regarding the minimum thickness of floor topping over each floor mat material.

**LOW & BONAR INC** — EnkaSonic® by Colbond a member of the Low & Bonar group Types 125, 250, 250 Plus, 400, 400 Plus, 750 and 750 Plus.

**Floor Mat Reinforcement** — (Optional) - Refer to manufacturer's instructions regarding minimum thickness of floor topping for use with floor mat reinforcement.

**Metal Lath** — (Optional) — Expanded steel diamond mesh, 2.5 lb / sq yd loose laid over floor mat material.

**Fiberglass Mesh Reinforcement** — (Optional) — Coated non-woven glass fiber mesh grid loose laid over floor mat material.

**System No. 9**

**Subflooring — Subflooring** — Nom 23/32 in. thick wood structural panels installed perpendicular to trusses with end joints staggered. Wood structural panels secured to trusses with construction adhesive and No. 6d ringed shank nails, spaced 12 in. OC along each truss. Staples having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails. Screws may be substituted for nails, one for one, when the head diameter, length, and spacing equal or exceed the requirements for the specified nails.

**Finish Floor - Building Units\*** — Min 1/2 in. thick magnesium oxide panels installed parallel, perpendicular, or diagonally to trusses with panel edges offset a min of 4 in. between subfloor and magnesium oxide panels. Panels secured to subfloor with construction adhesive and corrosion resistant fasteners, spaced max 12 in. OC around the perimeter and in the field of the panel. Fasteners must be placed no closer than 1/2 in. from all panel edges and no closer than 2 in. from panel corners. Screws may be substituted for nails, one for one, when the head diameter, length, and spacing equal or exceed the requirements for the specified nails.

**HUBER ENGINEERED WOODS L L C** — Type 1/2 in. Square Edge Exacor™ Board

**System No. 10**

**Building Units\*** — Nom 3/4 in. thick. Long dimension of panels to be perpendicular to trusses with end joints staggered a min of 4 ft. and joints centered over the joists. Panels secured to wood joists with 2 in. x 0.113 in. Ring Shank nails spaced a max of 12 in. OC in the field and on the perimeter. Fasteners must be placed no closer than 1/2 in. from all panel edges and no closer than 2 in. from panel corners. Screws may be substituted for nails, one for one, when the head diameter, length, and spacing equal or exceed the requirements for the specified nails. When used, **Batts and Blankets\***, Item 5B are required.

**HUBER ENGINEERED WOODS L L C** — Type 3/4 in. Tongue and Groove Exacor™ Board

2. **Trusses** — Parallel chord trusses, spaced a max of 24 in. OC, fabricated from nom 2 by 4 lumber, with lumber oriented vertically or horizontally. Min truss depth is 12 in. Truss members secured together with min 0.0356 in. thick galv steel plates. Plates have 5/16 in. long teeth projecting perpendicular to the plane of the plate. The teeth are in pairs facing each other (made by the same punch), forming a split tooth type plate. Each tooth has a chisel point on its outside edge. These points are diagonally opposite each other for each pair. The top half of each tooth has a twist for stiffness. The pairs are repeated on approx. 7/8 in. centers with four rows of teeth per inch of plate width.

3. **Gypsum Board\*** — Three layers of 5/8 in. thick by 4 ft wide gypsum board. Top layer boards installed with the long dimension perpendicular to trusses with end joints located under bottom of trusses. End joints in adjacent rows shall be staggered on adjacent trusses. Top layer boards secured to bottom chord of trusses with 1-5/8 in. long Type S bugle head screws, spaced max 8 in. OC. Screws located 1-1/2 to 2 in., and 3/4 in. from side and end joints, respectively. Bottom two layers of gypsum board installed perpendicular to furring channels with end joints centered on the furring channels. Middle layer boards secured to each furring channel with 1 or 1-1/4 in. long Type S-12 bugle head steel screws spaced max 8 in. OC. Screws located 1-1/2 to 2 in. and 5/8 to 3/4 in. from side and end joints, respectively. Face layer boards secured to each furring channel through the middle layer with 1-5/8 or 1-7/8 in. long Type S-12 bugle head steel screws, spaced a max of 8 in. OC. Screws located 1-1/2 to 2 in. and 5/8 to 3/4 in. from side and end joints, respectively. End joints and side joints of the face layer boards shall be staggered a min of 16 in. from the joints in the middle layer. If end joints of the face layer boards are not centered on the furring channels, the end of boards at the end joint shall be attached to the middle layer boards with 1-1/2 in. long Type G steel screws spaced 8 in. OC and located 1-1/2 in. from the end joint. All screws shall be driven no further than flush with the face of the boards in order not to damage the core of the boards.

**AMERICAN GYPSUM CO** — Type AG-C

**CERTAINTED GYPSUM INC** — Type C

**CGC INC** — Types C, IP-X2, IPC-AR, ULIX

**CERTAINTED GYPSUM INC** — Type LGFC-C/A

**GEORGIA-PACIFIC GYPSUM L L C** — Types 5, DAPC, TG-C

**NATIONAL GYPSUM CO** — Types FSK-C, FSK-G, FSW-C, FSW-G

**UNITED STATES GYPSUM CO** — Types C, IP-X2, IPC-AR, ULIX

**USG BORAL DRYWALL SFZ LLC** — Type C

**USG MEXICO S A DE C V** — Types C, IP-X2, IPC-AR

4. **Furring Channels** — Resilient channels, 1/2 in. deep, or inverted hat type furring channels, 7/8 in. deep, formed from 0.019 in. thick galv steel, spaced 12 in. OC perpendicular to trusses. Channels secured to each truss with 1-7/8 in. long Type S steel screws.

5. **Batts and Blankets\*** — Any glass fiber or mineral wool insulation bearing the UL Classification Marking as to Surface Burning Characteristics and/or Fire Resistance. Insulation secured against the subflooring, held suspended in the concealed space or draped over the resilient channels (or furring channels) and gypsum panel membrane. There is no limit in the overall thickness of insulation.

5A. **Loose Fill Material\*** — As an alternate to Item 5, any loose fill material bearing the UL Classification Marking for Surface Burning Characteristics. There is no limit in the overall thickness of insulation.

5B. **Batts and Blankets\*** — for use with flooring **System 10** - 3-1/2 in. thick, min 0.62 pcf glass fiber batt insulation draped over the resilient channels. Any glass fiber batt insulation bearing the UL Classification Marking for Surface Burning Characteristics or fire Resistance may be used. See **Batts and Blankets\* (BKNV or BZJZ)** category in the Fire Resistance Directory for names of manufacturers.

6. **Finishing System** — (Not Shown) — Vinyl, dry or premixed joint compound, applied in two coats to joints and screw-heads. Nom 2 in. wide paper tape embedded in first layer of compound over all joints. As an alternate, nom 3/32 in. thick veneer plaster may be applied to the entire surface of gypsum board.

**\* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

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