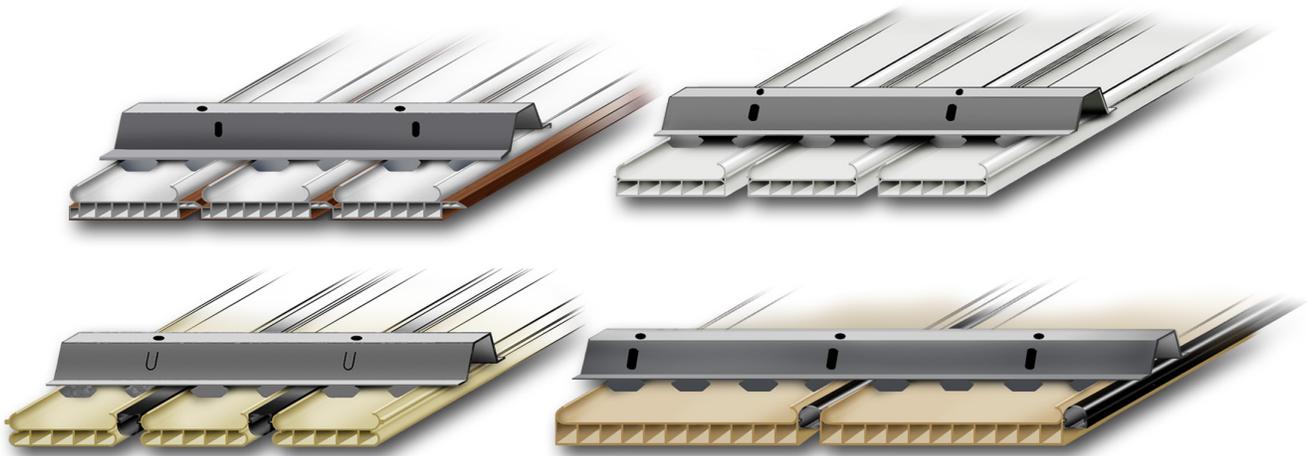




## OVERVIEW



## SYSTEM

Rulon's Endure Linear suspended linear canopy ceiling system is designed for ceilings and canopy systems in harsh environments as well as for modern interior applications. Endure Linear performs well in indoor swimming pools, water treatment plants, exterior store canopies and many other applications. Endure Linear offers a clean, smooth, modern appearance with rugged durability. It has been proven tough enough to survive high wind conditions where other ceilings have failed.



## TECHICAL DATA



### ENGINEERING CONSIDERATIONS

Endure Linear is manufactured by the extrusion of engineered polymer. All shop drawings and coordination details are produced by Rulon's engineering staff.



### ACCESSIBILITY

Endure Linear is a fully-accessible. The Rulon standard suspension carriers are manufactured from 0.7 mm thick galvanized steel. Panels can be attached and removed from the suspension carriers easily. Access Panels can be specified as required.



### ACOUSTICS

Endure Linear is manufactured with or without spacers, allowing sound to pass through the space between panels to the plenum space beyond. Endure Linear is acoustically transparent.



### SUSTAINABILITY

Endure Linear may contribute as required to the following LEED v4 credits: **MR BPD&O - Sourcing of Raw Materials**, **MR BPD&O - Material Ingredients**, **EQ Low-Emitting Materials**, **EQ Minimum Acoustic Performance**.



### FIRE PERFORMANCE

Endure Linear has been tested and meets **Class A** requirements as per ASTM E-84. Engineered polymer and steel components require no additional fire treatment.



### SEISMIC

Due to the attachment method, Endure Linear is generally exempt from acoustical seismic construction due to the diaphragm strength achieved by the integrated clip-attachment system on the carrier channels that receive the linear strips. In addition there are no lay-in ceiling panels that can become dislodged. This applies to seismic design cat A-F.



### INTEGRATIONS

Endure Linear can be easily trimmed in-field to accommodate MEP integrations. Lighting and MEP integration can be achieved with dedicated coordination and in conjunction with the [Integrated Lighting<sup>P</sup>](#) program at Rulon.



### GENERAL COSTING

Endure Linear is typically one of the most economical systems depending on the material and manufacturing requirements. Endure Linear qualifies as **\$\$\$\$** on the general costing scale. Local reps should be contacted in order to obtain a project-specific budget.



## SPECIFICATION

### COMPONENTS

#### HANGERS

#12- gauge wire hangers, braided wire, or aircraft cable (contractor-supplied).

#### SUSPENSION SYSTEM

Rulon standard suspension carriers are manufactured from 0.7 mm thick galvanized steel. For swimming pool areas and other corrosive environments, a corrosion-resistant Rulon carrier is available to prevent deterioration of the suspension system.

#### ATTACHMENT

Endure Linear is attached to standard suspension carriers via the attachment legs integral to the back of the Endure Linear ceiling strips. Placing one attachment leg into the groove of the suspension carriers and then pressing on the face of the Endure Linear will cause the strip to snap into place.

#### PROFILES

Endure Linear ceiling strip profiles are formed by the extrusion of engineered polymer. Endure Linear strip profiles are twin-walled to provide added structural strength, and to enhance thermal insulation:

- #800 Series Engineered Polymer Strips: The ceiling pans are 3-1/4" [83 mm] wide, and placed into a design module of 4" [102 mm] with square sides (see drawing P8000001). The spaces between the strips may be left open, or filled with compatible Engineered Polymer spacers to achieve varying module widths of 4"/8"/12"/etc.
- #810 Series Engineered Polymer Strips: The ceiling pans are 7-1/4" [184 mm] wide, and placed into a design module of 8" [203 mm] with square sides (see drawing P810XXP). The spaces between the strips may be left open, or filled with compatible Engineered Polymer spacers to achieve varying module widths of 8"/16"/24"/etc.
- #850 Series Engineered Polymer Strips: The ceiling pans are 3-1/4" [83 mm] wide, and placed into a design module of 4" [102 mm] with rounded sides (see drawing P8500001). The spaces between the strips may be left open, or filled with compatible Engineered Polymer spacers.
- #900 Series Engineered Polymer Strips: The ceiling pans are 3-1/4" [83 mm] wide with an integral 3/4" [19 mm] spacer and placed into a design module of 4" [102 mm] with square sides (see drawing P9000001).

#### CONDITIONS

Ceiling termination at a wall or soffit is accomplished using Rulon perimeter trim #870 (see drawing P9000002), double-stacked trim, or 4" fascia trims available for ceiling cloud conditions.



## SPECIFICATION

### MATERIAL CHARACTERISTICS

#### DENSITY

96.8 lbs/cu.ft

#### YIELD STRESS & TENSILE STRENGTH

6,525 psi (Yield stress is the tension at which the Endure Linear strips will no longer return to their original shape). 6,525 psi (Tensile strength is the tension at which the Endure Linear strips break.)

#### MODULUS OF ELASTICITY

464,000 psi (MOE is the value used to determine the behavior of Endure Linear strips under various load conditions).

#### VICAT SOFTENING POINT

82C = 180F (Temperature at which Endure Linear strips become pliable for bending)

#### CHEMICAL RESISTANCE

Endure Linear has excellent resistance to many chemicals making it suitable for a wide range of harsh environment applications. Additional information regarding specific chemical resistances is available upon request.

#### THERMAL RESISTANCE

Endure Linear has excellent thermal insulation characteristics compared to metal and other ceiling materials. It resists the formation of condensation and retards heat. The following is a list of specific thermal characteristics:

##### Usable Temperature Range

- Maximum Allowable Temperature = 72°C = 162°F
- Minimum Allowable Temperature = -50°C = -58°F

##### Insulating Properties

- Coefficient of Thermal Conductivity = 0.17W / °C × m
- Similar in value to Oak of the same thickness

##### Expansion & Contraction

- Coefficient of Linear Expansion = 55±5 × 10<sup>-6</sup> / °C
- For every +10°F, an 18' piece of Endure Linear will expand by .066" [2 mm] (approx. 1/16")



## **SPECIFICATION**

### **MATERIAL CHARACTERISTICS**

#### **IMPACT & GRAFFITI RESISTANCE**

Endure Linear is naturally resistant to denting or marking from impacts. It is recommended that carrier spans be reduced to provide added stiffness to ceilings where regular impacts are likely. Similarly, where exterior conditions allow substantial wind loads to occur, carrier spans should be reduced for additional strength. Endure Linear is inherently anti-graffiti which can simply be removed with pressure washing. Graffiti prone installations should include appropriate carrier spacing, contact Rulon International Engineering.

#### **CLEANING**

Once installed, Endure Linear can be wiped clean with a damp cloth or a very mild detergent solution reduced for additional strength.

#### **FENESTRATION & WIND LOAD TESTING**

Endure Linear meets ASTM E330/E330 M-14, Standard test method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference, tested up to 112.5 P.S.F. (207 MPH Wind Load). Contact Rulon Technical Department for Carrier/Compression Strut spacing based upon project specific criteria.

#### **FOOD PROCESSING**

Endure Linear's smooth surface meets USDA/FSIS guidelines for use in food processing areas.

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### **COLOR**

#### **COLOR**

Endure Linear is available in a variety of standard colors including white, sand, beige, light grey and medium grey. Premium and custom colors are available. Endure Linear colors are very stable for interior use, and will exhibit insignificant change or fading with time. It is recommended that for exterior use, or where substantial amounts of ultraviolet light are present, that the choice of deep-tone colors be restricted.

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### **SHIPPING & STORAGE**

#### **SHIPPING**

Endure Linear is shipped in full-box cartons either on skids or floor load depending on size of order.

#### **STORAGE**

Endure Linear shall be stored flat and level, in a fully enclosed space away from sunlight or moisture.



## ENDURE LINEAR DATA SHEET

System: 800/810/850/900 | Style: Linear



### NOTES

▯ The Integrated Lighting program at Rulon is in partnership with GE Lighting and is an effort to coordinate MEPs more effectively and provide for a more streamlined process of integration.