

# ENDURE™ DATA SHEET

SYSTEM: ENDURE DIRECT ATTACH | STYLE: ED400



Endure™ Direct Attach is a tough, long-lasting ceiling system designed for a variety of applications, from adverse exterior environments to decorative interiors and more.



Endure™ Direct Attach 400 is a wood-alternative, metal-alternative, or solid color virtually maintenance-free extruded polymer system with tongue & groove edges and a flat back for direct attach applications. The 400 ceiling system consists of extruded linear strips that are installed end-to-end with perimeter and expansion trims as required to create a continuous, monolithic appearance.

Endure™ Direct Attach 400 is available in Endure™.



## DESIGN

Endure™ Direct Attach 400 is manufactured by the extrusion of Endure™, a proprietary engineered polymer blend, and is a tongue & groove ceiling or wall system. Strips install via staples or rivets attached to the back of the groove. [Primary Access Panels](#) can be coordinated with MEP locations and cut in-field.



## ACOUSTICS

Endure™ Direct Attach 400 is manufactured with tongue & groove edges to achieve a monolithic appearance and is considered **acoustically transparent**.



## FIRE PERFORMANCE

Endure™ Direct Attach 400 has been tested and meets **Class A** requirements as per ASTM E-84. Extrusions and carriers require no additional fire treatment.



## SUSTAINABILITY

Endure™ Direct Attach 400 contributes to sustainability initiatives like **WELL** and **LEEDv4** through Indoor Advantage Gold certification.



## SEISMIC

Endure™ Direct Attach 400 is generally **exempt from seismic code requirements**. Local code should be consulted to determine additional seismic requirements.



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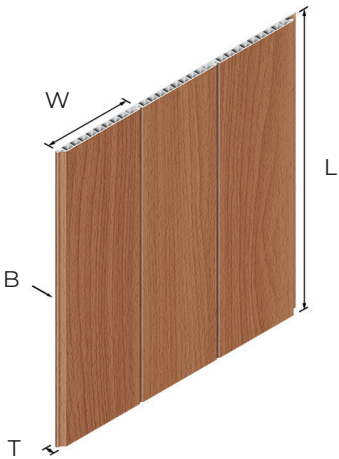
# SPECIFICATION

## COMPONENTS

### SYSTEM PROFILES & DIMENSIONS

Endure™ Direct Attach is twin-walled to provide added structural strength, and to enhance thermal insulation. Standard widths/profiles are as follows:

SYSTEM	ED400
W (WIDTH)	4" (NOMINAL)
T (THICKNESS)	3/8"
L (LENGTH)	12'
B (BACK)	SMOOTH
E (EDGE)	SQUARE



## INSTALLATION

### ATTACHMENT

Endure™ Direct Attach is attached to furring strips or plywood backing via fast acting adhesive or 1/4" crown staples placed 16" [406 mm] or 24" [610 mm] on center through the back leg of the groove side of Endure™ strip. Strips are installed consecutively.

### SPECIAL CONDITIONS

Ceiling termination at a wall or soffit is accomplished using Rulon perimeter trim #470 (see drawing P4700001).

## MATERIAL CHARACTERISTICS

### DENSITY

96.8 lbs/cu.ft

### YIELD STRESS & TENSILE STRENGTH

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

### MODULUS OF ELASTICITY

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

### VICAT SOFTENING POINT

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

# SPECIFICATION

## CHEMICAL RESISTANCE

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

## THERMAL RESISTANCE

Endure™ Direct Attach 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 =  $55 \pm 5 \times 10^{-6}$  / °C
- For every +10°F, an 18' piece of Endure™ Direct Attach will expand by .066" [2 mm] (approx. 1/16")

## IMPACT & GRAFFITI RESISTANCE

Endure™ Direct Attach is naturally resistant to denting or marking from impacts. Endure™ Direct Attach 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™ Direct Attach can be wiped clean with a damp cloth or a very mild detergent solution reduced for additional strength.

## FENESTRATION & WIND LOAD TESTING

Endure™ Direct Attach 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 project specific criteria.

## FOOD PROCESSING

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

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## FINISHES

### ENDURE™ FINISHES

Endure™ Direct Attach is available in a variety of standard colors, woodgrain films, and metallic films. A full range of finishes can be found at [rulonco.com/endure-fs](http://rulonco.com/endure-fs). Endure™ Direct Attach colors are very stable for interior and exterior use, and will exhibit insignificant change or fading with time.

# SPECIFICATION

## SHIPPING & STORAGE

### SHIPPING

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

### STORAGE

Endure™ Direct Attach shall be stored flat and level, either inside or outside. If material is stored outside and left on the skid(s), a tarp is required to cover the material to prevent water saturation.

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## NOTES

### SPECIAL NOTES

<sup>1</sup> Primary Access Panels are sections of a system that have been removed and assembled into a lift & shift panel for required-access locations.

# TYPICAL DETAILS

