

## LINEA REFLECTOR PANELS

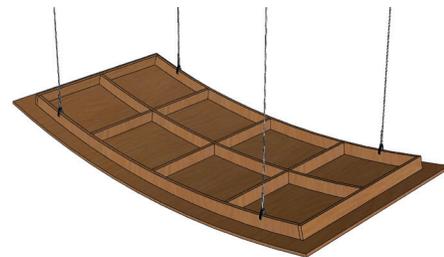
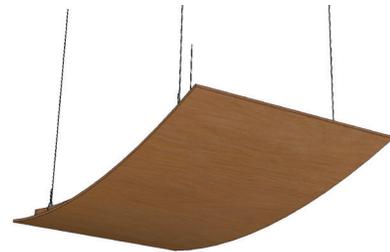
LINEA Reflector Panels control reverberant spaces with the warmth and beauty of wood in a variety of patterns, veneers, and finishes. Reflector Panels are designed for large spaces such as Performing Arts Centers, Lecture Halls and Auditoriums that require enhanced sound directivity, strength, and timing of reflections to create superior acoustics. Reflector Panels add shape and visual dimension to ceilings and walls to create a clearer and more consistent listening environment for music educators, performers, and audiences. Additional sound absorbing media can be installed behind the panels to further enhance acoustical performance.

**LINEA REFLECTOR PANELS** are intended for large spaces that will benefit from improved directional strength and timing of sound reflections to greatly enhance the listening quality of the audience like:

- Auditoriums
- Lecture Halls
- Performing Arts Centers
- Worship Spaces
- Music Rehearsal Spaces

**LINEA REFLECTOR PANELS will:**

- Provide acoustical intimacy, clarity, and increased sound strength that will benefit both speech and music programs.
- Enhance listening environments by controlling strong reflections and dispersing sound evenly across audiences and their listening space.
- Create a visually stunning space and assure the timing and strength of live performances by eliminating late reflections.



*Linea Reflector Panels*



*\*Product information is subject to change without notice.*

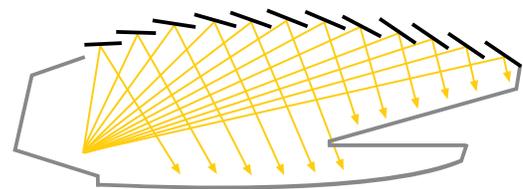
### FEATURES | BENEFITS

- Both Flat and Curve shaped panels are available
- Panel radius and dimensions are variable to meet both acoustical and design requirements
- Available in a variety of standard and custom sizes and finishes to suit the architectural and acoustical requirements of the project
- Several perforation pattern options are available for sound diffusion
- A retractable version is also available and is ideal for multi-use environments
- Custom sizes up to 4' x 10' (dimensions follow curvature)
- The angle of reflection is adjusted in the field using turnbuckle and cable suspension
- Easily install Flat or Curved Panels with a wide variety of hardware options depending on the application and need for access. Typically installed with Aircraft cable and other hardware
- Class A Fire Rated per ASTM E-84 (USA) and CAN/ULC S102 (Canada) is standard.
- FSC Certified or PEFC wood options available
- *Optional: Sound Absorbing Blanket on back side*



#### REFLECTION

*Acoustic Reflection refers to the perfect transferral of sound as it bounces off a surface. Perfect reflection will result in a zero loss of sound from material contact. Solid, unperforated surfaces will offer the highest acoustic reflection.*



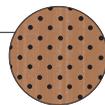
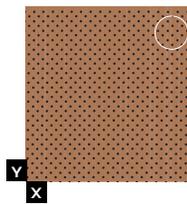
Reflection Diagram



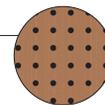
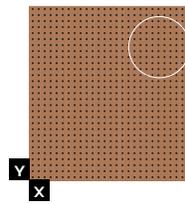
#### DIFFUSION

*The efficacy with which sound is evenly distributed over a given environment. A well-diffused acoustic environment results in a balanced, and typically attractive sound response.*

### Where Sound Diffusion is required



Hole Diameter: **0.65mm**  
 Spacing: Y 2mm  
 X 2mm  
 NRC Range: Up to 0.90\*



Hole Diameter: **1mm**  
 Spacing: Y 3mm  
 X 3mm  
 NRC Range: Up to 0.90\*

\* NRC Ranges are dependent on various factors including, but not limited to, mounting method and sound absorbing insulation behind panels.

### Wood Species

*\*See our species sheet for more options.*

#### Common Wood Veneer Species



White Oak Walnut Maple Birch Douglas Fir Cherry

#### Simulated Finishes



Pickled White Light Cherry Dark Cherry Maple Walnut

*\*Product information is subject to change without notice.*

### PHYSICAL DATA



WOOD SELECTIONS	
<b>Wood Species</b>	LINEA Reflector Panels may be specified in a wide variety of real wood or engineered wood veneers.
<b>Internal Core</b>	LINEA Reflector Panel cores are made from Class A fire rated, high recycled content MDF. Cores can be specified as FSC Certified and with No Added Urea Formaldehyde (NAUF)



FINISHES	
<b>Finishes</b>	LINEA Reflector Panels for interior applications are factory finished smooth in a Clear 10 <sup>+</sup> matte sheen in either a solvent-based or low voc water-based coating depending on customer specifications. Tinted clear finishes, custom stains and painted finishes are also available. Sheen options include matte, satin, or semi-gloss.
<b>Antibacterial</b>	LINEA offers an Antibacterial Coating for interior wood product installations where cleanliness and hygiene are of the utmost importance. The coating has been specially formulated to provide excellent object/surface protection levels and deliver extraordinarily high physical/chemical resistance. Furthermore, the presence of active metals boosts durability and protects the coating film from bacterial attack and the effects will last over time.



PANEL SIZES	
<b>Sizes</b>	LINEA Reflector Panels are manufactured custom up to 4' x 10'. Larger panels may be joined in the field. <i>Contact LINEA for details.</i>
<b>Tolerances</b>	LINEA Reflector Panels are built in accordance with CISCA dimensional tolerances.
<b>Panel Weight</b>	Minimum of 3 lb/sf



TECHNICAL DATA	
<b>Fire Rating</b> <i>Veneer/ Composite</i>	LINEA Reflector Panels with real wood or engineered wood veneers are laminated to Class A Fire Rated, recycled, NAUF MDF or Particleboard composite cores. The combination of Wood Veneer and Finish is less than 1mm thick (0.5mm in most cases) and therefore should not be considered significant to the overall rating (per AWI/AWMAC).
<b>Acoustics</b>	LINEA Reflector Panels are considered highly reflective with little to no sound absorption. Sound absorption per square foot of panel is approximately 0.10 Sabins or less. Consider Linea Microperforations for areas where Sound Diffusion is required
<b>Seismic</b>	LINEA Reflector Panels are engineered for applications in all seismic areas when installed per LINEA installation instructions and local code.
<b>Installation</b>	Install varies depending on project requirements. Install per manufacturer's instructions. Panels in areas where accessibility is not required can be suspended directly from the ceiling deck by the interior shaping ribs with standard aircraft cable. Accessible ceiling panels are commonly installed with C-hangers. C-hangers simply screw to the backs of the panels and suspend the panels from C-channel. For wall applications, Z-clips provide a secure attachment to furring or a ply board wall.
<b>Ceiling Access</b>	Access above is achieved with a variety of installation techniques. C-Hangers and Torsion Springs are the two most common installation methods for individual panel accessibility.
<b>Warranty</b>	1 Year Warranty on all LINEA panel products. <i>Contact LINEA for details.</i>



SHIPPING AND SITE CONDITIONS	
<b>Shipping</b>	LINEA products are carefully packaged and shipped in palletized wooden crates.
<b>Site Conditions</b>	Wood products are hygroscopic in nature and must be stored, installed & maintained in a controlled building environment. Temperature range should be maintained between 60° - 90° F (15° - 32° C). Relative Humidity range should be kept within a minimum 25% - max. 55% (not to exceed 20% RH from peaks to valleys). Failure to maintain site conditions will void the LINEA warranty

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### ACOUSTICS

LINEA Reflector Panels are considered highly reflective with little to no sound absorption. Sound absorption per square foot of panel is approximately 0.10 Sabins or less. Consider Linea Microperforations for areas where Sound Diffusion is required



### LEED®

Linea products can contribute towards LEED certification

MR-2.1   2.2	Construction Waste Management
MR-3.1   3.2	Materials Reuse
MR-4.1   4.2	Recycled Content
MR-5.1   5.2	Regional Materials (location dependent)
MR-7.0	Wood available as FSC Certified, upon request
EQ-3.1   3.2	Construction IAQ Management Plan
EQ-4.1   4.2   4.4	Low emitting materials

### Disclaimers

#### Appearance

Variation among wood panel appearance may occur due to the natural characteristics of real wood and wood grain. Variation may be reduced, but not eliminated by using custom stains, tinted clear finishes or engineered wood veneers.

#### Fire Performance

Individual product components (*wood, fabric, finish*) comply with Class A fire retardant testing, ASTM E-84 and CAN/ULC S-102 submittal data is based on supplier tests. Product assembly testing has not been completed due to assemblies varying on a project-by-project basis. To exceed today's changing codes and environmental requirements, Linea recommends sprinkling both the ceiling and the plenum (concealed space) in lieu of using chemical fire retardants. Linea recommends the specifier consult a fire protection engineer, NFPA 13, and local codes for assistance where fire suppression and automatic fire detection systems are present.



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