

SECTION 095XX

TRANSPARENT/TRANSLUCENT/PRINTED MICROPERFORATED ABSORBER FOIL (CLEARSORBER FOIL)

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Transparent, translucent and printed microperforated foil.
- B. Hardware as required for attachment to substrate.
- C. Coordination with all trades having elements that attach to, penetrate through or are concealed behind/above the foils of this section.

1.02 RELATED SECTIONS

- A. Section 08400 – Entrances and storefronts
- B. Section 08500 - Windows
- C. Section 08600 - Skylights
- D. Section 08700 - Hardware
- E. Section 08800 – Glazing
- F. Section 08900 – Glazed curtain wall

1.03 ALTERNATES

- A. Prior Approval: Proposed substitutions for products in this section may be submitted to the architect and acoustical consultant no later than ten working days prior to the bid due date. Substitutions shall only be considered if submitted with complete information including acoustic data, flammability and light transmission and a sample not smaller than 304.8 mm x 304.8 mm (12" x 12") showing product design, material composition, size, hole pattern, standard penetrations and mounting hardware, if applicable. Acceptance of substituted products is contingent on the architect's and acoustical consultant's approval and the substitution's compliance with all specified criteria. The architect shall approve substitution request via addendum.
- B. Unapproved Substitutions. Substitutions not approved via addendum shall not be submitted to the architect or acoustical consultant.

1.04 REFERENCES

- A. Local Building Code – Current Edition

- B. International Standards Organization (ISO)
 1. DIN EN 20 354 - Measurement of sound absorption by the reverberation room method.
 2. DIN EN ISO 13 468-1: Light Transmission
 3. DIN 4102: Flame Spread

- C. American Society for Testing & Materials (ASTM)
 1. ASTM C 423 - Measurement of sound absorption by the reverberation room method
 2. ASTM C 635 - Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings
 3. ASTM C 636 - Recommended Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile & Lay-In Panel Ceilings
 4. ASTM E 84: Standard Test Method for Surface Burning Characteristics of Building Materials
 5. ASTM E 795 - Standard Practice for Mounting Test Specimens during Sound Absorption Tests
 6. ASTM E 1264 - Classification for Acoustical Ceiling Products

1.05 SYSTEM DESCRIPTION

- A. Design Requirements: Sound absorption shall be provided by viscous losses in the microperforations of the foil, whose sub-millimeter diameter is comparable to the thickness of a boundary layer of air as long as an air cavity is provided between the foil and the vision glass.

- B. Performance Requirements
 1. Random Incidence, Third-octave Band (Hz), Sound Absorption Coefficients (α): Tested by independent, accredited, facility according to DIN EN 20 354. (Comparable Tests: ASTM 423).

# Foils	C (mm)	F (mm)	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000
1	30	N/A	0.02	0.01	0.01	0.01	0.03	0.05	0.07	0.07	0.1	0.18	0.3	0.46	0.58	0.64	0.63	0.58	0.48	0.33
1	50	N/A	0.01	0.01	0.02	0.03	0.05	0.07	0.1	0.14	0.24	0.4	0.52	0.62	0.65	0.62	0.57	0.44	0.36	0.35
1	100	N/A	0.03	0.03	0.04	0.08	0.14	0.22	0.33	0.45	0.55	0.63	0.65	0.57	0.42	0.31	0.41	0.44	0.37	0.39
2	50	30	0.05	0.04	0.05	0.09	0.11	0.23	0.37	0.55	0.69	0.69	0.76	0.74	0.66	0.71	0.77	0.64	0.47	0.39
2	100	30	0.07	0.08	0.11	0.2	0.3	0.5	0.64	0.76	0.75	0.74	0.68	0.63	0.67	0.71	0.69	0.65	0.58	0.47

foils = number of foil layers; C = spacing (mm) of foil from reflective surface; F = spacing (mm) between two foil layers.

1.06 SUBMITTALS

- A. **Product Data:** Submit standard cut sheet including basic system description, options and component sizes. Identify all applicable features and options. Cross out any inapplicable features or options.
- B. **Shop Drawings:** The contractor shall produce and submit shop drawings of products and suspension or mounting systems overlaid on base drawings (interior elevations or reflected ceiling plans) supplied electronically by the architect. Show overall layout with dimensions and references to details as necessary for penetrations, joints, ends and intersections with other materials or building components. Submit schedule of all quantities, sizes, hole patterns, borders and transparency. Field verify site conditions with dimensions shown on shop drawings.
- C. **Samples:** Submit a 12.7 cm (5") x 21.6 cm (8.5") sample of foil with appropriate transparency and mounting option.
- D. **Design Data / Test Reports:** Submit third-octave band sound absorption coefficient data according to ISO DIN EN 20 354, submit light transmission at 400-800 nm according to DIN EN ISO 13468-1 and fire rating according to DIN 4102.

1.07 QUALITY ASSURANCE

- A. **Qualifications:** Manufacturer and installation contractor shall have a minimum of three years experience installing ceilings or window treatments.
- B. **Single Source:** All products under this section shall be supplied by a single manufacturer to ensure consistency in product and finish.
- C. **Flammability and Smoke:** Foil shall meet the performance requirements established by the United States model building codes (IBC/UBC) for light transmitting plastics.
 - ASTM D2843 Smoke Density Rating - 3 to 33% vs. 75% maximum allowable
 - ASTM D635 Combustion Rating – CC-2 rating (burn less than 2.5"/minute)
 - ASTM D1929 Self-Ignition Temperature – 850 degrees vs. 650 degrees minimum.
- E. **Light Transmission:** 83% transparent foil, 72% translucent foil (in the range 400-800 nm), per DIN EN ISO 13 468-1
- F. **UV Stabilized:** The foil shall be UV stabilized
- G. **Static Charges:** Neutral reaction to static charges when ambient relative humidity is greater than 40%
- H. **Pre-Installation Meeting:** Installing contractor shall organize and conduct pre-installation meetings with all other trades to coordinate substrate conditions,

conditioning of the space (temperature & humidity), and elements attaching to, penetrating through or concealed above/behind work in this section

1.08 DELIVERY STORAGE AND HANDLING

- A. Shipping, Handling and Unloading: Deliver foils to the project site in the manufacturer's original, unopened packaging. Do not unpack or handle foils until ready to install.
- B. Storage and Protection: Store all foils in a clean, dry, fully-enclosed storage facility. Protect products from damage that may be caused by exposure to chemicals and extreme temperatures.
- C. Acceptance at Site: Full or partial installation constitutes complete product acceptance.
- D. Waste Management and Disposal: Dispose of all packaging materials and debris in a safe and environmentally responsible manner according to the instructions set forth by the General Contractor, local ordinances or codes and the Environmental Protection Agency.

1.09 PROJECT CONDITIONS

- A. Project Environmental Requirements: Prior to unpacking or installing foils, ensure that the installation area is fully enclosed and conditioned. Ensure that the building's mechanical systems are fully operational and will not be turned off again even for testing and balancing of the mechanical systems. Coordinate with other trades to ensure that all work above or behind foils is complete and that all wet and dusty trades have completed work.
- B. Product Handling: Handle foils carefully so as to avoid creasing, scuffing or wrinkling the face or edges.

1.10 WARRANTY

- A. Submit to Owner or Owner's Representative a written and dated warranty issued by the foil manufacturer warranting the foil against defects in materials or manufacturing for a period of one (1) year from the date of delivery.
- B. Components used in the system but not provided by the manufacturer are excluded from the manufacturer's warranty. Damage caused by improper storage, handling or installation is excluded from the warranty.

1.11 OWNER'S INSTRUCTIONS

- A. Installing contractor shall provide to the building owner or to the owner's representative a copy of the manufacturer's maintenance manual supplied with the foil.

1.12 MAINTENANCE

- A. Extra Materials: If provided per the project requirements, extra materials shall remain in the manufacturer's original, unopened packaging and shall be given to the building owner or owner's representative upon substantial completion of work.

PART 2 PRODUCTS

2.01 MANUFACTURER

- A. RPG Diffusor Systems, Inc., 651-C Commerce Drive, Upper Marlboro, MD 20774
301-249-0044 (telephone), 301-249-3912 (facsimile), <http://www.rpginc.com>.

2.02 MATERIALS

- A. Foil: Kaetaphon polycarbonate

2.03 MANUFACTURED UNITS

- A. Panels: (consult manufacturer for available combinations)
 1. Widths: 1.00 m, 1.05 m, 1.10 m, 1.15 m, 1.20 m, 1.25 m
 2. Length: limited only by specific application/support
 3. Thickness: 0.105 mm
 4. surface weight 0.14 kg/m²
 5. Hole diameter: 0.21 mm
 6. Space between holes: 2 mm
 7. Edge condition: Natural edge
 8. Transparent, translucent or printed

2.04 FABRICATION

- A. Shop Assembly: Panels shall have metal grommets on all four corners for connection to mounting springs.

2.05 SOURCE QUALITY CONTROL

- A. Manufacturing facility for panels shall be ISO 9001 certified and provide certification documentation upon request by Architect.

PART 3 EXECUTION

3.01 INSTALLERS

- A. Installing contractor shall have a minimum of three (3) years successful experience installing ceiling or window treatments using similar mounting techniques or suspension systems.

3.02 EXAMINATION

- A. Site Verification of Conditions: Examine installation area for compliance with all manufacturer's requirements and ensure uninstalled products have been stored, handled properly prior to commencing installation. Inspect all substrates for completion and quality of work to ensure that surfaces are level, plumb, clean, dry and completely cured from water or solvent evaporation. Do not commence installation if the structural capacity of the substrate is questionable or inadequate.
- B. Coordination with Other Trades: Coordinate with all other trades to ensure that wet work including concrete, terrazzo, plastering, painting, etc. in the installation area is complete, cured and dry prior to installation. Coordinate with all other trades to verify that components associated with mechanical, electrical, lighting, data, telecommunication, audio, video, fire suppression and other building systems are installed behind or above designated installation areas prior to commencing installation.

3.03 PREPARATION

- A. Protection: Protect all floor, wall and ceiling finishes against possible damage prior to commencing installation and during installation.
- B. Surface Preparation: When necessary, field measure substrates to acquire accurate dimensions of foils and submit final dimensions to manufacturer for fabrication.

3.04 INSTALLATION

- A. Install foil sheets as shown and detailed in the architectural drawings and according to manufacture's guidelines and industry standards.

3.05 CONSTRUCTION

- A. Interface With Other Work: Coordinate foil installation with other trades including glazing, skylights, windows, curtain walls, etc.

3.06 ADJUSTING

- A. Following initial installation, adjust mounting hardware or suspension system so that foils can be removed easily, yet stay safely secured upon replacement. Adjust foils so that surfaces are aligned, flush and level or plumb and have no sags or creases.
- B. Remove and replace at no extra charge any damaged foils that cannot be repaired to the Owner's and Architect's satisfaction.

3.07 CLEANING

- A. Remove dust from surfaces, by vacuuming using only a soft brush. Do not scratch foil surfaces with sharp metal or plastic vacuum cleaner extensions. Remove

general surface dirt with a clean, soft cloth dampened with a diluted, mild, cleaning agent and warm water. Wipe again with clean, soft cloth dampened only with warm water. Finally, dry surface completely with clean, dry cloth. Do not use abrasive cleaners with grit or cloths that could scratch the foil surface.

- B. Remove and replace at no additional charge any materials that cannot be cleaned to the Owner's satisfaction.

3.08 DEMONSTRATION

- A. Demonstrate to the building owner or to the owner's representative the safe and proper method for removing and replacing all types of accessible foils.
- B. Supply the building owner or the owner's representative with any special tools provided by the manufacturer required to unlatch safety hardware on accessible foils.

3.09 PROTECTION

- A. Upon completion of work, protect installed foils from damage or soiling until project substantial completion and owner occupancy.

END OF SECTION