

Kemlite

Kemlite Company, Inc.
 8015 Dixon Drive
 Florence, KY 41042
 Phone: (800) 626-1220
 Phone: (859) 371-7720
 Fax: (859) 371-8466
 E-mail: industrialfrp@kemlite.com
www.industrialfrp.com

This MANU-SPEC® utilizes the Construction Specifications Institute (CSI) *Manual of Practice*, including *MasterFormat™*, *SectionFormat™* and *PageFormat™*. A MANU-SPEC is a manufacturer-specific proprietary product specification using the proprietary method of specifying applicable to project specifications and master guide specifications. Optional text is indicated by brackets []; delete optional text in final copy of specification. Specifier Notes typically precede specification text; delete notes in final copy of specification. Trade/brand names with appropriate symbols typically are used in Specifier Notes; symbols are not used in specification text. Metric conversion, where used, is soft metric conversion.

This MANU-SPEC specifies fiberglass reinforced plastic (FRP) panels for use in roof and wall assemblies. These products are manufactured by Kemlite Company, Inc. Revise MANU-SPEC section number and title below to suit project requirements, specification practices and section content. Refer to CSI *MasterFormat™* for other section numbers and titles.

SECTION 07420 PLASTIC ROOF & WALL PANELS

PART 1 GENERAL

1.01 SUMMARY

Specifier Note: Revise paragraphs below to suit project requirements.

- A. Section Includes: Fiberglass reinforced plastic (FRP) panels.
- B. Related Sections:
 - 1. Sealants: Division 7 Sealant Sections.

Specifier Note: Article below may be omitted when specifying manufacturer's proprietary products and recommended installation. Retain Reference Article when specifying products and installation by an industry reference standard. If retained, list standard(s) referenced in this section. Indicate issuing authority name, acronym, standard designation and title. Establish policy for indicating edition date of standard referenced. Conditions of the Contract or Division 1 References Section may establish the edition date of standards. This article does not require compliance with standard, but is merely a listing of references used. Article below should list only those industry standards referenced in this section.

1.02 REFERENCES

- A. ASTM International:
 - 1. ASTM C177 Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.
 - 2. ASTM D635 Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position.
 - 3. ASTM D638 Standard Test Method for Tensile Properties of Plastics.
 - 4. ASTM D696 Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics Between -30°C and 30°C With a Vitreous Silica Dilatometer.
 - 5. ASTM D790 Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
 - 6. ASTM D2583 Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor.

7. ASTM D3841 Standard Specification for Glass-Fiber-Reinforced Polyester Plastic Panels.
8. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide fiberglass reinforced plastic (FRP) panels which have been manufactured and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.

Specifier Note: Article below includes submittal of relevant data to be furnished by Contractor before, during or after construction. Coordinate this article with Architect's and Contractor's duties and responsibilities in Conditions of the Contract and Division 1 Submittal Procedures Section.

1.04 SUBMITTALS

- A. General: Submit listed submittals in accordance with Conditions of the Contract and Division 1 Submittal Procedures Section.
- B. Product Data: Submit product data, including manufacturer's SPEC-DATA® sheet, for specified products.

Specifier Note: Article below should include prerequisites, standards, limitations and criteria that establish an overall level of quality for products and workmanship for this section. Coordinate article below with Division 1 Quality Assurance Section.

1.05 QUALITY ASSURANCE

Specifier Note: Paragraph below should list obligations for compliance with specific code requirements particular to this section. General statements to comply with a particular code are typically addressed in Conditions of the Contract and Division 1 Regulatory Requirements Section. Repetitive statements should be avoided.

- A. Regulatory Requirements and Approvals: [Specify applicable requirements of regulatory agencies].
 1. [Code agency name].
 - a. [Report or approval number].

Specifier Note: Article below should include special and unique requirements. Coordinate article below with Division 1 Product Requirements Section.

1.06 DELIVERY, STORAGE & HANDLING

- A. General: Comply with Division 1 Product Requirements Section.
- B. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by the manufacturer.

Specifier Note: Coordinate article below with Conditions of the Contract and with Division 1 Closeout Submittals (Warranty) Section.

1.07 WARRANTY

- A. Project Warranty: Refer to Conditions of the Contract for project warranty provisions.
- B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.

Specifier Note: Coordinate paragraph below with manufacturer's warranty requirements.

1. Warranty Period: [Specify term.] years commencing on Date of Substantial Completion.

Specifier Note: Coordinate article below with Division 1 Closeout Submittals (Maintenance Materials) Section.

1.08 MAINTENANCE

- A. Extra Materials: Deliver to Owner extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels. Comply with Division 1 Closeout Submittals (Maintenance Materials)

Section.

Specifier Note: Revise paragraph below specifying size and percentage as required for project.

1. Quantity: Furnish quantity of [Identify items.] units equal to [Specify %.] of amount installed.
2. Delivery, Storage and Protection: Comply with Owner's requirements for delivery, storage and protection of extra materials.

PART 2 PRODUCTS

Specifier Note: Retain article below for proprietary method specification. Add product attributes, performance characteristics, material standards and descriptions as applicable. Use of such phrases as "or equal" or "or approved equal" or similar phrases may cause ambiguity in specifications. Such phrases require verification (procedural, legal and regulatory) and assignment of responsibility for determining "or equal" products.

2.01 FIBERGLASS REINFORCED PLASTIC (FRP) PANELS

Specifier Note: Paragraph below is an addition to CSI *SectionFormat* and a supplement to MANU-SPEC. Retain or delete paragraph below per project requirements and specifier's practice.

A. Manufacturer: Kemlite Company, Inc.

1. Contact: 8015 Dixon Drive, Florence, KY 41042; Telephone: (800) 626-1220, (859) 371-7720; Fax: (859) 371-8466; E-mail: industrialfrp@kemlite.com; website: www.industrialfrp.com.

Specifier Note: Edit Paragraph below to suit project requirements. If substitutions are permitted, edit text below. Add text to refer to Division 1 Project Requirements (Product Substitutions Procedures) Section.

B. Substitutions: No substitutions permitted.

Specifier Note: Paragraphs below list proprietary fiberglass reinforced plastic (FRP) panel products offered by Kemlite Company, Inc. Select products appropriate to project. Consult manufacturer regarding product options. Select product characteristics required; delete characteristics not required. Refer to manufacturer's SPEC-DATA® product sheet.

2.02 MATERIALS**A. ISO-TUFF Fire Rated (FR):**

1. Material Standard: Comply with ASTM D3841.
2. Weight: [8 oz/ft² (2441 g/m²)] [12 oz/ft² (3662 g/m²)].
3. Nominal Glass Content: 25% by weight.

Specifier Note: The first 3 profiles below are standard; the last 5 are nonstandard. Custom profiles are available.

4. Profile: [4.2 inches x 1 1/16 inches (107 x 27 mm)] [7.2 inches x 1 1/2 inches (183 x 38 mm)] [5.33 inches x 1 3/4 inches (135 x 44 mm)] [2.67 inches x 7/8 inch (68 x 22.2 mm)] [2.5 inches x 1/2 inch (64 x 12.7 mm)] [7 inches x 1 1/2 inches (178 x 38 mm)] [4 inches x 1 inch (102 x 25.4 mm)] [13.3 inches x 1 7/8 inches (338 x 48 mm)].

Specifier Note: The first 2 colors below are translucent; the second 2 are opaque.

5. Color: [White (405)] [Clear (502)] [Stone White (945)] [Gray (675)].

Specifier Note: Gel-Coat and Tedlar are available where higher quality smooth finishes are required.

6. Surface: [Embossed] [Smooth].
7. Physical Properties:
 - a. Barcol Hardness (ASTM D2583): 40, nominal.
 - b. Flexural Strength (ASTM D790): 30,000 psi (207 MPa), nominal.
 - c. Flexural Modulus (ASTM D790): 1,000,000 psi (6900 MPa), nominal.

- d. Tensile Strength (ASTM D638): 15,000 psi (104 MPa), nominal.
 - e. Coefficient of Expansion (ASTM D696): 1.6×10^{-5} in/in°F.
 - f. Conductivity (k-factor) (ASTM C177): Not more than 1.2 Btu/(ft² × h × °F) (2.08 W/(m × k)).
 - g. Flamespread (ASTM E84): Not more than 25.
 - h. Flammability - Average Time of Burning (ASTM D635): Not more than 5 seconds.
 - i. Flammability - Average Extent of Burning (ASTM D635): Not more than 1 inch (25.4 mm).
 - j. Flammability - Building Code Classification (ASTM D635): CC1 or C1.
- B. ISO-TUFF Fire Rated (FR) High Strength:
- 1. Material Standard: Comply with ASTM D3841.
 - 2. Weight: [8 oz/ft² (2441 g/m²)] [16 oz/ft² (4883 g/m²)].
 - 3. Nominal Glass Content: 40% by weight.

Specifier Note: The first 3 profiles below are standard; the last 5 are nonstandard. Custom profiles are available.

- 4. Profile: [4.2 inches × 1 1/16 inches (107 × 27 mm)] [7.2 inches × 1 1/2 inches (183 × 38 mm)] [5.33 inches × 1 3/4 inches (135 × 44 mm)] [2.67 inches × 7/8 inch (68 × 22.2 mm)] [2.5 inches × 1/2 inch (64 × 12.7 mm)] [7 inches × 1 1/2 inches (178 × 38 mm)] [4 inches × 1 inch (102 × 25.4 mm)] [13.3 inches × 1 7/8 inches (338 × 48 mm)].

Specifier Note: The first 2 colors below are translucent; the second 2 are opaque.

- 5. Color: [White (405)] [Clear (502)] [Stone White (945)] [Gray (675)].

Specifier Note: Gel-Coat and Tedlar are available where higher quality smooth finishes are required.

- 6. Surface: Smooth.
 - 7. Physical Properties:
 - a. Barcol Hardness (ASTM D2583): 40, nominal.
 - b. Flexural Strength (ASTM D790): 32,500 psi (224 MPa), nominal.
 - c. Flexural Modulus (ASTM D790): 900,000 psi (6201 MPa), nominal.
 - d. Tensile Strength (ASTM D638): 28,000 psi (193 MPa), nominal.
 - e. Coefficient of Expansion (ASTM D696): 1.6×10^{-5} in/in°F.
 - f. Conductivity (k-factor) (ASTM C177): Not more than 1.2 Btu/(ft² × h × °F) (2.08 W/(m × k)).
 - g. Flamespread (ASTM E84): Not more than 25.
 - h. Flammability - Average Time of Burning (ASTM D635): Not more than 3 seconds.
 - i. Flammability - Average Extent of Burning (ASTM D635): Not more than 0.75 inch (19.1 mm).
 - j. Flammability - Building Code Classification (ASTM D635): CC1 or C1.
- C. Fire Rated (FR):
- 1. Material Standard: Comply with ASTM D3841.
 - 2. Weight: [8 oz/ft² (2441 g/m²)] [12 oz/ft² (3662 g/m²)].
 - 3. Nominal Glass Content: 25% by weight.

Specifier Note: The first 3 profiles below are standard; the last 5 are nonstandard. Custom profiles are available.

- 4. Profile: [4.2 inches × 1 1/16 inches (107 × 27 mm)] [7.2 inches × 1 1/2 inches (183 × 38 mm)] [5.33 inches × 1 3/4 inches (135 × 44 mm)] [2.67 inches × 7/8 inch (68 × 22.2 mm)] [2.5 inches × 1/2 inch (64 × 12.7 mm)] [7 inches × 1 1/2 inches (178 × 38 mm)] [4 inches × 1 inch (102 × 25.4 mm)] [13.3 inches × 1 7/8 inches (338 × 48 mm)].

Specifier Note: The first 2 colors below are translucent; the second 2 are opaque.

5. Color: [White (405)] [Clear (502)] [Stone White (945)] [Gray (675)].

Specifier Note: Gel-Coat and Tedlar are available where higher quality smooth finishes are required.

6. Surface: Smooth.
7. Physical Properties:
 - a. Barcol Hardness (ASTM D2583): 40, nominal.
 - b. Flexural Strength (ASTM D790): 30,000 psi (207 MPa), nominal.
 - c. Flexural Modulus (ASTM D790): 1,000,000 psi (6900 MPa), nominal.
 - d. Tensile Strength (ASTM D638): 15,000 psi (104 MPa), nominal.
 - e. Coefficient of Expansion (ASTM D696): 1.6×10^{-5} in/in°F.
 - f. Conductivity (k-factor) (ASTM C177): Not more than 1.2 Btu/(ft² × h × °F) (2.08 W/(m × k)).
 - g. Flamespread (ASTM E84): Not more than 25.
 - h. Flammability - Average Time of Burning (ASTM D635): Not more than 5 seconds.
 - i. Flammability - Average Extent of Burning (ASTM D635): Not more than 1 inch (25.4 mm).
 - j. Flammability - Building Code Classification (ASTM D635): CC1 or C1.

D. Fire Rated (FR) High Strength:

1. Material Standard: Comply with ASTM D3841.
2. Weight: [8 oz/ft² (2441 g/m²)] [12 oz/ft² (3662 g/m²)].
3. Nominal Glass Content: 40% by weight.

Specifier Note: The first 3 profiles below are standard; the last 5 are nonstandard. Custom profiles are available.

4. Profile: [4.2 inches × 1 1/16 inches (107 × 27 mm)] [7.2 inches × 1 1/2 inches (183 × 38 mm)] [5.33 inches × 1 3/4 inches (135 × 44 mm)] [2.67 inches × 7/8 inch (68 × 22.2 mm)] [2.5 inches × 1/2 inch (64 × 12.7 mm)] [7 inches × 1 1/2 inches (178 × 38 mm)] [4 inches × 1 inch (102 × 25.4 mm)] [13.3 inches × 1 7/8 inches (338 × 48 mm)].

Specifier Note: The first 2 colors below are translucent; the second 2 are opaque.

5. Color: [White (405)] [Clear (502)] [Stone White (945)] [Gray (675)].

Specifier Note: Gel-Coat and Tedlar are available where higher quality smooth finishes are required.

6. Surface: Smooth.
7. Physical Properties:
 - a. Barcol Hardness (ASTM D2583): 40, nominal.
 - b. Flexural Strength (ASTM D790): 32,000 psi (221 MPa), nominal.
 - c. Flexural Modulus (ASTM D790): 1,000,000 psi (6900 MPa), nominal.
 - d. Tensile Strength (ASTM D638): 20,000 psi (138 MPa), nominal.
 - e. Coefficient of Expansion (ASTM D696): 1.6×10^{-5} in/in°F.
 - f. Conductivity (k-factor) (ASTM C177): Not more than 1.2 Btu/(ft² × h × °F) (2.08 W/(m × k)).
 - g. Flamespread (ASTM E84): Not more than 25.
 - h. Flammability - Average Time of Burning (ASTM D635): Not more than 5 seconds.
 - i. Flammability - Average Extent of Burning (ASTM D635): Not more than 0.5 inch (12.7 mm).
 - j. Flammability - Building Code Classification (ASTM D635): CC1 or C1.

E. DURALITE Non-Fire Rated:

1. Material Standard: Comply with ASTM D3841.

2. Weight: [8 oz/ft² (2441 g/m²)] [12 oz/ft² (3662 g/m²)] [16 oz/ft² (4883 g/m²)].
3. Nominal Glass Content: 25% by weight.

Specifier Note: The first 3 profiles below are standard; the last 5 are nonstandard. Custom profiles are available.

4. Profile: [4.2 inches x 1 1/16 inches (107 x 27 mm)] [7.2 inches x 1 1/2 inches (183 x 38 mm)] [5.33 inches x 1 3/4 inches (135 x 44 mm)] [2.67 inches x 7/8 inch (68 x 22.2 mm)] [2.5 inches x 1/2 inch (64 x 12.7 mm)] [7 inches x 1 1/2 inches (178 x 38 mm)] [4 inches x 1 inch (102 x 25.4 mm)] [13.3 inches x 1 7/8 inches (338 x 48 mm)].

Specifier Note: The first 2 colors below are translucent; the second 2 are opaque.

5. Color: [White (405)] [Clear (502)] [Stone White (945)] [Gray (675)].

Specifier Note: Gel-Coat and Tedlar are available where higher quality smooth finishes are required.

6. Surface: [Embossed] [Smooth].
7. Physical Properties:
 - a. Barcol Hardness (ASTM D2583): 50, nominal.
 - b. Flexural Strength (ASTM D790): 30,000 psi (207 MPa), nominal.
 - c. Flexural Modulus (ASTM D790): 1,000,000 psi (6900 MPa), nominal.
 - d. Tensile Strength (ASTM D638): 15,000 psi (104 MPa), nominal.
 - e. Coefficient of Expansion (ASTM D696): 1.6×10^{-5} in/in°F.
 - f. Conductivity (k-factor) (ASTM C177): Not more than 1.2 Btu/(ft² x h x °F) (2.08 W/(m x k)).
 - g. Flammability - Burning Rate (ASTM D635): Not more than 2.5 inches (64 mm) per minute.
 - h. Flammability - Building Code Classification (ASTM D635): CC2 or C2.

F. DURALITE High Strength:

1. Material Standard: Comply with ASTM D3841.
2. Weight: [8 oz/ft² (2441 g/m²)] [12 oz/ft² (3662 g/m²)] [16 oz/ft² (4883 g/m²)].
3. Nominal Glass Content: 25% by weight.

Specifier Note: The first 3 profiles below are standard; the last 5 are nonstandard. Custom profiles are available.

4. Profile: [4.2 inches x 1 1/16 inches (107 x 27 mm)] [7.2 inches x 1 1/2 inches (183 x 38 mm)] [5.33 inches x 1 3/4 inches (135 x 44 mm)] [2.67 inches x 7/8 inch (68 x 22.2 mm)] [2.5 inches x 1/2 inch (64 x 12.7 mm)] [7 inches x 1 1/2 inches (178 x 38 mm)] [4 inches x 1 inch (102 x 25.4 mm)] [13.3 inches x 1 7/8 inches (338 x 48 mm)].

Specifier Note: The first 2 colors below are translucent; the second 2 are opaque.

5. Color: [White (405)] [Clear (502)] [Stone White (945)] [Gray (675)].

Specifier Note: Gel-Coat and Tedlar are available where higher quality smooth finishes are required.

6. Surface: Smooth.
7. Physical Properties:
 - a. Barcol Hardness (ASTM D2583): 50, nominal.
 - b. Flexural Strength (ASTM D790): 30,000 psi (207 MPa), nominal.
 - c. Flexural Modulus (ASTM D790): 1,100,000 psi (7590 MPa), nominal.
 - d. Tensile Strength (ASTM D638): 25,000 psi (173 MPa), nominal.
 - e. Coefficient of Expansion (ASTM D696): 1.6×10^{-5} in/in°F.
 - f. Conductivity (k-factor) (ASTM C177): Not more than 1.2 Btu/(ft² x h x °F) (2.08 W/(m x k)).

- g. Flammability - Burning Rate (ASTM D635): Not more than 2 inches (51 mm) per minute.
- h. Flammability - Building Code Classification (ASTM D635): CC2 or C2.

2.03 ACCESSORIES

- A. Flashing and Trim: Provide accessories of thickness, dimensions and profile to complete panel installation as recommended by manufacturer.
- B. Structural Fasteners with Sealing Washers: Provide, space and install 300 Series stainless steel fasteners as recommended by manufacturer.
- C. Side Lap Fasteners: Provide and install SB2 side lap fasteners as recommended by manufacturer.
- D. Closures and Sealants: Install the following as recommended by manufacturer:
 - 1. Butyl tape.
 - 2. Clear silicone sealant.
 - 3. EPDM closures with matching profile.

PART 3 EXECUTION

Specifier Note: Paragraph below is an addition to CSI *SectionFormat* and a supplement to MANU-SPEC. Retain or delete paragraph below per project requirements and specifier's practice.

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Compliance: Comply with manufacturer's product data, including product technical bulletins, product catalog installation instructions and product carton instructions for installation.

3.02 EXAMINATION

- A. Site Verification of Conditions: Verify that substrate conditions, which have been previously installed under other sections, are acceptable for product installation in accordance with manufacturer's instructions.

3.03 PREPARATION

- A. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.04 PROTECTION

- A. Protect installed products until completion of project.
- B. Repair or replace damaged products prior to Substantial Completion.

END OF SECTION