Product Data Sheets

Architectural Specialty Solutions

Interiors + Exteriors

Formglas®

PRODUCT DATA SHEET

EXTERIOR FRP CASTINGS

Stone-Textured FRP Castings

MasterFormat® **06 82 00**

CorniceStone™ by **Formglas®**

For Exteriors

Trade Name

Formglas® CorniceStone™

Common Names

Stone-Textured FRP castings

FRP castings with an aggregate finish

Manufacturer

Formglas Products Ltd.
181 Regina Road
Vaughan, Ontario, Canada L4L 8M3
T: 1.866.635.8030 F: 416.635.6588
Web: formglas.com Email: info@formglas.com

COLUMNS & CORNICES N. CAROLINA RESEARCH CENTER, KANNAPOLIS

Summary

CorniceStone™ is a pre-finished, lightweight and high strength fiber-reinforced polymer (FRP) composite that incorporates natural aggregates and pigments into molded architectural shapes and elements resembling natural limestone. CorniceStone™ is a Class A (or 1) flame-spread rated product that is ideal for use as building ornamentation for exterior applications such as cornices, column cladding, trim details, spandrels and terracotta replacement, in both new construction and building renovation. CorniceStone™ is an outstanding alternative to GFRC, precast or EIFS because of its high strength, light weight, design flexibility, ease of installation and durability.

Detailed Description

CorniceStone™ is a pre-finished glass fiber reinforced composite used to make architectural elements. It is a catalyzed thermoset plastic composite that is durable, chemical resistant and has excellent weathering, flexural and tensile physical properties. This makes it a versatile material that provides cost effective solutions for the construction of buildings and renovation of existing structures. It is also a lightweight material, weighing approximately 2 lb/ft² ⇆ 10 kg/m² which reduces transportation, handling and installation costs.

The CorniceStone™ surface consists of a UV-stabilized polymer gelcoat and aggregates. The back-up laminate consists of layers of glass fiber and polymer resin. Through a unique and proprietary manufacturing process, it achieves a face finish that resembles a limestone texture. The CorniceStone™ composite material has a Class A (or 1) flame-spread rating. When CorniceStone™ is molded into shapes, the geometry of the shape imparts physical properties such as strength and stiffness. For example, the design of CorniceStone™ parts that include recesses, projections, grooves, curves or ornamentation, make the part stronger.

The nominal shell thickness of parts is 3/16" ⇆ 4.5 mm. However, areas of parts that have flat regions are cast thicker by encapsulating core materials into the laminate that provide added strength and stiffness.

CorniceStone™ offers a wide range of advantages for architects and designers including the capability for it to be made into large parts that would otherwise require costly support structures and increased installation cost (as compared to materials such as precast concrete or GFRC).

In most cases, CorniceStone™ molded parts are secured to the building structural framing or light gauge steel substrate with concealed fasteners. Joints between parts should be minimized and advantageously positioned in consideration of part size and design, overall appearance, and installation. CorniceStone™ parts are typically supplied with pre-made corners to minimize field-mitering.

Some typical architectural applications of CorniceStone™ include building ornamentation such as cornices, columns, pediments, storefront entries, moldings and other decorative elements such as friezes and signage, as well as some interior applications subject to applicable building codes.

Most items are custom-made to project design requirements and specifications. Formglas® uses 5-axis CNC technology to machine precision patterns from which molds are produced to make the required parts. In situations involving complicated design elements or projects, Formglas® will work with architects and designers to create a practical plan for the parts and assemblies they envision through 3D modeling and/or scaled or full-size mock-ups. Detailed shop drawings and material samples are prepared for approval prior to manufacture.

Technical Data

Refer to the following standards:

ASTM International (ASTM)

- E84 - Standard Test Method for Surface Burning Characteristics of Building Materials
- D790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics
- D638 - Standard Test Method for Tensile Properties of Plastics
- D256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics
- D2583 - Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol impressor
- D648 - Standard Test Method for Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position
- D696 - Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics
- D570 - Standard Test Method for Water Absorption of Plastics
- D4060 - Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser
- E283 - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
- E331 - Water Penetration of Exterior Windows, Skylights, Doors and Curtain Walls by Uniform Static Air Pressure Difference
- E330 - Standard Test Method for Structural Performance of Exterior Windows, Skylights, Doors and Curtain Walls by Uniform Static Air Pressure Difference (Modified)

Physical and Mechanical Properties

CorniceStone™ is a fiberglass reinforced polymer resin composite with a nominal thickness of 3/16" ⇆ 5 mm. It has 25 to 30% glass fiber content (by weight) in the form of multiple layers of chopped strand mat.

Matrix:	ISO/PNG Polymer Resin
Finish:	Standard and custom colors available.
Surface:	Fine and medium textures available.
Density:	~110 lb/ft³ ⇆ 1760 kg/m³
Weight:	1.75-2.25 lbs/ft² ⇆ 8.5-11 kg/m²*
Shell thickness:	3/16" ⇆ 5 mm nominal**
Embedments:	Core mat or other reinforcement as profile, shape or design requires
Glass Fiber:	25-30% typical
Reveals/setbacks:	3º draft minimum
All outside corners:	1/16"-1/8" ⇆ 1.5-3 mm radius
Max. length moldings:	16' ⇆ 4.8 m
Max. size molded parts:	70 ft² ⇆ 6.5 m²

* Typical weights – parts with deep surface relief, etc. may weigh more. Please submit drawings for a more accurate estimate.

** Subject to manufacturing tolerances. Weight and measurement conversions may be rounded.

ASTM Standard and ISO Test Results

Flame Spread:	≤25 (Class A)
Smoke Development:	≤450 (Class A)
Flexural Strength:	32,100 psi ⇆ 221 MPa
Tensile Strength:	15,950 psi ⇆ 110 MPa
Modulus of Elasticity:	1,080,000 PSI (7.45 Gpa)
Compressive Strength:	33,100 psi ⇆ 228 MPa
Impact Resistance:	12 ft-lb/in ⇆ 643 J/m
Barcol Hardness:	44
Heat Deflection:	> 513ºF ⇆ 285ºC
Coefficient of Linear Thermal Expansion:	2.73 x 10^{-5} in/in/ºF ⇆ 1.5 x 10^{-6} mm/mm/ºC
Water Absorption:	0.3%
Nail push-through:	1050 lb force ⇆ 4,670 N
FRP Wall Assemblies	
Air Leakage	0.02 cfm/ft²
Water Penetration	Nil
Structural Test (90 mph x 1141 Pa x 1.5 safety factor)	Pass

Manufacturing Tolerances

Dimensional (all directions):	± 1/8", 0-10 ft ⇆ 3 mm in 3 m
Thickness:	± 1/8" ⇆ 3 mm
Variation from square:	± 1/8", 0-10 ft ⇆ 3 mm in 3 m
Bowing, out of plane	± 1/16"/ft ⇆ 3 mm/300 mm

LEED®

Formglas® products contribute toward LEED® credits, and have been used in LEED® projects worldwide. Since Formglas® products are usually custom-made to project specifications, their contribution to credits may vary. Contact Formglas® with specific details of your project and to clarify the version of LEED® rating system applicable.

Delivery, Storage and Handling

CorniceStone™ parts shall be transported and handled in a manner that avoids damage or excessive stress. Packaging or components showing signs of damage should be marked as such on freight documents, inspected immediately and claimed for any damage due to shipping with the freight carrier. Advise the carrier and Formglas® of any damage immediately. CorniceStone™ parts shall be protected from rain, snow, sunlight, excessive weather conditions, high levels of humidity, and job site damage. Place non-staining resilient spacers between parts and support parts during shipment and subsequent unloading and storage. Protect parts from

dirt and damage during handling, transport and storage. Store unpackaged parts indoors on firm, level and smooth surfaces with part identification labels clearly visible.

Preparatory Work

Site Conditions:

The site conditions are to be reviewed for compliance with Formglas' requirements relating to installation tolerances and any other conditions that may affect the installation and performance of CorniceStone™ parts. Any unsatisfactory conditions are to be corrected prior to installation. Field measurements are to be taken to verify the dimensions, including those not shown on the drawings, and provide specific details of any changes for inclusion into Formglas® shop drawings prior to it commencing the manufacture of custom molds and CorniceStone™ parts. Formglas® will produce parts in accordance with the approved shop drawings only, and is NOT responsible for any deviations between the site conditions and the approved drawings. It is the Installing contractor's responsibility to order the correct quantities of parts including a waste allowance, if applicable.

Substrates:

The framing and/or substrates to accept CorniceStone™ parts shall be constructed with suitable materials according to applicable codes and installed straight and true within 1/8" in 8 linear ft. ⇆ 3 mm in 2500 mm. The substrate shall be free of obstructions and interference that prevents the correct positioning and attachment of the CorniceStone™ parts. Structural framing and substrate materials shall be of the proper size and design for the intended use and shall be sufficient to properly support the installed CorniceStone™ parts.

Installer Safety

Installers are to wear appropriate personal protection equipment when handling or installing Formglas® materials. This should include eye protection, gloves and dust masks. Please adhere to local regulations and rules established at the job site. Before handling and installing Formglas® materials, installers are responsible for reviewing SDS information which is readily available at www.formglas.com, or included with the crate(s) used to ship Formglas® materials, or by calling Formglas® at 1.866.635.8030.

Installation

General:

Install CorniceStone™ parts as indicated on the approved shop drawings, instructions and the contract documents. The installing contractor is to supply and install all brackets, shims, other hardware and adhesives as required for the installation and proper alignment of the CorniceStone™ parts with adjacent parts and materials. Part thicknesses may vary within the manufacturing tolerances. Allow for shim spaces between the CorniceStone™ and the substrate. Attach the CorniceStone™ parts using corrosion-resistant screws, bolts or other fasteners as shown on the shop drawings. Additional bracing, fastening points etc. not shown on the drawings, may be required to ensure a proper installation. Do not over-torque screws otherwise damage to material flanges may occur.

Cutting:

When cutting parts is required, use the most suitable cutting method listed below. Always wear goggles and a dust mask.

- A reciprocating type saw with a medium grit composite type blade.
- A mini grinder with 4" ⇆ 100 mm medium grit composite blade or diamond blade.
- A chop saw with a diamond blade for smaller moldings etc.
- Formglas® to supply 1 ½" batten strips for field cut parts. Refer to Formglas® shop drawings for more information.

Attachment:

Wherever possible, CorniceStone™ parts are to be installed with concealed fastening methods such as beneath flashings or behind caulked joints. Parts should have pre-drilled oversize clearance holes for fasteners and neoprene shims (or equivalent) installed behind the panel edges being fastened to facilitate movement due to expansion and contraction. A bond breaker tape should be applied inside the joint over the top of the fasteners prior to caulking the joint. Do not over-torque screws otherwise damage to material flanges may occur.

Joint Treatments:

- All joints must be caulked
- Formglas® does not supply caulk for joints but can recommend a type and specific brand for use with CorniceStone™.
- A paintable, one-compound elastomeric low modulus urethane sealant is recommended. (e.g. Sonolastic® Ultra or equivalent)
- Use spacers to maintain a uniform gap between parts and install a bond breaker tape inside the joint over top of the fasteners.
- Apply low tack masking tape on either side of the joint and avoid smearing caulk beyond the joint and remove any excess immediately.
- Do NOT attempt a monolithic look - joints cannot be hidden.

For more details, refer to the installation instructions and project drawings.

Cleaning and Maintenance

Periodic cleaning is recommended to avoid any build up of dirt and/or acidic pollutants which may affect the color or UV performance of CorniceStone™ parts. Clean soiled surfaces with water and a mild household dish detergent. Surfaces may require light scrubbing with a soft-bristled brush. To avoid surface damage including etching, use of a pressure washer is not recommended.

Samples Available

Formglas® maintains an inventory of four standard samples to demonstrate this material. Due to the limitations on the color palette of sand, Formglas® is unable to custom-formulate CorniceStone™ to match specific colors. Refer to our Standard Color Table for available color options. To request a sample, contact samples@formglas.com or your local Formglas® representative to discuss your specific project requirements.

Please note that images and their color(s) are for general reference and may not be accurately rendered on screen or in print.

Formglas® CorniceStone™
Color: Coffee
Surface: Medium Sandblasted
Sample Size: 4" x 5"
Sample Code: 98125

Formglas® CorniceStone™
Color: Cream
Surface: Fine Sandblasted
Sample Size: 4" x 5"
Sample Code: 98126

Formglas® CorniceStone™
Color: Wafer
Surface: Fine Sandblasted
Sample Size: 4" x 5"
Sample Code: 98189

Formglas® CorniceStone™
Color: Bone
Surface: Fine Sandblasted
Sample Size: 4" x 5"
Sample Code: 98188

Applications

To view photos of Formglas® CorniceStone™ applications, or to contact a local Formglas® representative, visit www.formglas.com.

COLUMNS & CORNICES — N. CAROLINA RESEARCH CENTER, KANNAPOLIS

Project: UNCC Student Union, Charlotte | **Design:** Creech & Associates Architectural Design | **Material:** CorniceStone™

CorniceStone™

Project: Lynden City Hall, Lynden | **Design:** Zervas | **Material:** CorniceStone™

Shaping Possibilities™

formglas.com

North America Toll Free
+1.866.635.8030

International
+1.416.635.8030

Formglas®