Trade Name

Formglas® Woodgrane™

Common Names

Molded Wood Grain GFRG
Wood Grain Textured GFRG
Wood-Textured Glass Fiber Reinforced Gypsum

Manufacturer

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CURVED FEATURE WALL ST. JOSPEH'S REGIONAL MEDICAL CENTER, NEW JERSEY

Summary

Formglas Woodgrane™ is an exciting pre-finished alpha gypsum based material that replicates varieties of wood including oak, mahogany, walnut, teak and pine. Factory-finishing is performed by a unique method of applying low VOC stains and washes that accentuate the textural detail and depth of the molded grain. Non-combustible Woodgrane™ components may be cast in a wide range of shapes allowing for design possibilities that may not be practical when using real wood.

Detailed Description

Woodgrane™ is a material based on Formglas Glass Fiber Reinforced Gypsum (GFRG). GFRG is a composite of high density, white gypsum cement material and glass fiber for reinforcement that is molded into architectural elements used for interior applications. Woodgrane™ parts weigh approximately 2 lb/ft^2 ⇆ 10 kg/m^2, depending on the depth of grain and profile. Composites have enhanced physical properties such as high surface hardness and flexural strength.

Woodgrane™ fabrications are installed with less supportive framing and a finished installation is almost always faster than a comparable installation of natural wood elements by finish carpenters. This provides measurable cost benefits and minimizes disruption, particularly when Woodgrane™ components are chosen for renovation of existing spaces. From an environmental perspective, the choice of Woodgrane™ protects our forests, embodies post-consumer and industrial recycled content, and yields other benefits in support of sustainable construction.

Woodgrane™ is commonly used to make ceiling beams, bulkheads, coffers, vaults, feature walls and cornice moldings. These elements can be fabricated into larger shapes more quickly than elements built by finish carpenters. The ability to make large curved components and options for a vast range of wood grain simulations and colors provides tremendous design flexibility.

Light weight Woodgrane™ ceiling elements are usually wire suspended. Other parts are attached with concealed fastening in order to provide a superior finished appearance. Between parts, joints are finished with a closely matching caulk or are designed to conceal joints. Moldings can be supplied with pre-made corners to streamline installation. Woodgrane™ parts are factory pre-finished to match the control sample approved by the architect and designer. There may be situations where it is desireable for Woodgrane™ components to be provided unfinished such as when components need to be field finished to match existing wood pieces at the job site.

Woodgrane™ components are custom made to project design requirements and specifications. Formglas uses a combination of 5-axis CNC technology, in-house sculpting, and expert pattern making skills to make authentic and precision master models from which molds are produced to make the required parts. In situations involving complex design elements or projects, Formglas will work with architects and designers to develop 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)
- C1381-2008 Standard for Molded Glass Fiber Reinforced Gypsum Parts
- C1467-2006 Standard for the Installation of Molded Glass Fiber Reinforced Gypsum Parts
- C1355-2006 Standard for Glass Fiber Reinforced Gypsum Composites

International Standards Organization (ISO)
- ISO 1182:2010 Reaction to fire tests of products - Non combustibility Test
- ISO 1716:2010 Reaction to fire tests for products - Determination of the gross heat of combustion (calorific value)

European Standards (EN)
- EN 13501-1 Fire classification of construction products and building elements: classification using test data from reaction to fire tests

International Maritime Organization (IMO)
- FTP Code (IMO resolution MSC 61/67)

Physical and Mechanical Properties

Formglas uses alpha gypsum materials that are mined and processed in the USA from some of the world's purest deposits (over 99% purity of $CaSO4{\cdot}2H2O$). Throughout the fabrication process, the gypsum material is subjected to strict inspections and testing to guarantee its high level of quality. Our prominent gypsum suppliers certify the raw materials are in compliance with the ASTM C1355 Standard.

Matrix:	Alpha Gypsum Cement
Finish:	Standard and custom factory applied finishes available.
Surface:	Standard replication of oak, mahogany, walnut, teak and pine. Custom wood finishes available.
Density:	~105 lb/ft³ ⇆ 1675 kg/m³
Weight:	1½ -2 lb/ft² ⇆ 7-10 kg/m² *
Shell thickness:	3/16" ⇆ 5 mm nominal **
Edge thickness:	3/4" ⇆ 19 mm typical
Embedments:	Galvanized steel or wood (if required)
Glass Fiber:	5% typical
Max. length moldings:	12' ⇆ 3.6 m
Max. size molded parts:	40 ft² ⇆ 3.7 m²

* Typical weights: parts with deep surface relief or required added thickness (for acoustical mass) will weigh more. Please submit drawings for a more accurate estimate.

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

ASTM C1355 and ISO Test Results

Flexural Strength **Ultimate strength:** **Yield strength:**	 4700 psi ⇆ 32 MPa 1875 psi ⇆ 13 MPa
Flame Spread:	0
Smoke Development:	0
Behavior at 750°C:	Pass
Coefficient of Linear Thermal Expansion:	5.5x10-6 in/in/°F ⇆ 9.9 x10-6 mm/mm/°C
Humidified Deflection:	1/8" ⇆ 3 mm
Nail Pull Resistance:	176 lbf ⇆ 782 N
Impact Resistance:	6.5 ft.lb/in. ⇆ 8.8 j
Barcol Hardness:	60
Rockwell Hardness:	72 M scale
ISO Reaction to Fire Tests **Mass Loss:** **Temperature Difference:** **Duration of Ignition > 5 sec:**	 20% 7°F ⇆ 4°C 0
Gross Heat of Combustion:	300 Btu/lb ⇆ 0.7 MJ/kg

Manufacturing Tolerances

Shell Thickness:	± 1/16" ⇆ 1.5 mm
Dimensional (all directions): **Parts 8' to 16':**	± 1/8" ⇆ 3.2 mm ± 3/16" ⇆ 5 mm
Warpage or Bowing:	± 1/16"/ft. ⇆ 1.5 mm / 300 mm

LEED®

MR Credit 4: Recycled Content

Woodgrane™ parts are supplied with a minimum of 10% recycled content. The actual amount varies depending on the individual part design and type of reinforcement used. For more information, visit the LEED® information page on the formglas.com website.

Other credits may be available including:

LEED® MR Credit 2.1 and 2.2: Construction Waste Management
LEED® MR Credit 5.1 and 5.2: Regional Materials
LEED® EQ Credit 4.2 Low Emitting Materials: Paints and Coatings

Classifications and Approvals

In addition to the ASTM and ISO Testing, Woodgrane™, a derivative of Formglas GFRG, is classified as "A1" in accordance with the European Standard EN 13501-1. This standard provides the reaction to fire classification procedures for all construction products, including products incorporated within building elements. A1 is the highest classification possible. Class A1 products will not contribute in any stage of the fire including the fully developed fire.

As a derivative of Formglas GFRG, Woodgrane™ is approved for use on Cruise ships with Module "B" and "F" Certificates of Approval in accordance with the International Maritime Organization (IMO) and Marine Equipment Directive (MED) regulations.

Delivery, Storage and Handling

As a pre-finished product supplied, Woodgrane™ parts shall be transported and handled in a manner that avoids damage to the finished surface 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. Woodgrane™ parts shall be protected from rain, snow, sunlight, excessive weather conditions, high levels of humidity, and job site damage. To prevent distortion, warping, and other physical damage, Woodgrane™ parts shall be kept clean and stored on a dry surface, ideally in the originally factory packaging until parts are ready to be installed, and not stacked or leaned on each other.

Preparatory Work

Do not deliver or install Woodgrane™ parts until the building is enclosed and weatherproof, wet work is complete, and the HVAC system maintains temperature and humidity at normal occupancy levels. Acclimatize Woodgrane™ parts for a minimum of 48 hours to the ambient temperature and humidity levels of spaces in which they are to be installed. It is the Installing contractor's responsibility to order the correct material quantities (including a waste allowance) and verify the field dimensions and conditions for inclusion into the shop drawings.

Site Conditions:

Review the site conditions for compliance with Formglas' requirements relating to environmental conditions, installation tolerances and other conditions affecting the installation and performance of Woodgrane™ 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 Woodgrane™ 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.

Substrates:

The substrates to accept Woodgrane™ parts shall be installed straight and true within 1/8" in 8 linear ft. ⇆ 3 mm in 2500 mm and shall be free of obstructions and interference that prevents the correct positioning and attachment of the Woodgrane™ parts. Metal framing members shall be of the proper size and design for the intended use and shall be sufficient to properly support the installed Woodgrane™ parts. Metal framing members shall be installed in accordance with ASTM Standards C754 or C1007, as required. The location and incorporation of control joints is determined by archiect.

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 MSDS 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

Install Woodgrane™ parts as indicated on approved shop drawings, other recommendations and the contract requirements. Comply with ASTM C1467 Standard for the Installation of Molded Glass Fiber Reinforced Gypsum Parts, as applicable. Woodgrane™ parts shall be carefully lifted into place using suitable devices and installed securely. The installing contractor is to supply and install all brackets and shims as required for the installation and proper alignment of the Woodgrane™ parts with adjacent parts and materials.

Attach Woodgrane™ parts to substrates and framing following the directions provided on the shop drawings. Where screws are required, they are to be countersunk and holes shall be patched and touched up with the factory-supplied stain. Where Woodgrane™ parts are suspended, use all suspension points indicated on the shop drawings or on the back of Woodgrane™ parts, as a minimum requirement. Use additional support(s) if required. Install control joints beween Woodgrane parts as determined by architect.

Finishing

Woodgrane™ components are commonly factory-finished. Joints are normally caulked with a closely matching caulk as recommended by Formglas, or have been concealed through the design of parts. Where patching or touch up is required, careful application of drywall compound that is applied to simulate the finished grain texture and factory-supplied wash/stain is required. Technical support from Formglas is always available to the installing contractor.

Applications

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

CURVED FEATURE CEILING COMPONENTS — REFLECTIONS CAFE, NEW JERSEY

FAUX CEILING BEAMS & TRIM DETAILS — DIAMOND JO CASINO, IOWA

Samples Available

Below are five samples Formglas offers to demonstrate Woodgrane™. We maintain an inventory of these, and samples can be requested by e-mail to either your local Formglas representative, or directly to samples@formglas.com.

Formglas is able to **custom fabricate** Woodgrane™ to match a number of wood grains and colors. Please contact your local sales representative to learn more or discuss custom requirements for a specific project.

Formglas Woodgrane™
Finish: Danish Walnut Stain
Surface: Flat Bamboo
Sample Size: 3" x 3"
Sample Code: 98111

Formglas Woodgrane™
Finish: Walnut Stain
Surface: Oak Grain
Sample Size: 3" x 3"
Sample Code: 98112

Formglas Woodgrane™
Finish: Teak Stain
Surface: Pine Grain
Sample Size: 4" x 5"
Sample Code: 98131

Formglas Woodgrane™
Finish: Danish Walnut Stain
Surface: Oak Grain
Sample Size: 4" x 5"
Sample Code: 98132

Formglas Woodgrane™
Finish: Red Mahogany Stain
Surface: Mahogany Grain
Sample Size: 4" x 5"
Sample Code: 98133

Please note that colors shown on your display or printer output may NOT be an accurate representation of the actual product.