

GFRC OVERVIEW

GFRC is both the acronym and industry term for **glass-fiber reinforced concrete**. It is an evolution of “traditional” concrete in which additional ingredients and process modifications synergize to improve upon a number of traditional concrete’s material attributes. Using GFRF enables fabricators to yield objects that display significant improvements in hardness, compression strength, tensile strength, elasticity, flexibility and curing time – all while using less material. The discovery and subsequent widespread utilization of GFRC has led to a global proliferation of artisans who use it as a medium to create durable and creative concrete products.

A key virtue of GFRC is its compression strength. GFRC typically contains a higher ratio of portland cement than traditional concrete, yielding pieces that have compression strengths greater than 6,000 psi. Another key virtue is tensile strength – and the introduction of glass fibers is essential in improving upon this measurement. These glass-fibers are evenly dispersed within the liquid concrete, internally bolstering the pieces once cured. The use of acrylic in the GFRC mixture is another important constituent because it simultaneously reduces the water content and increases flexibility of the cured product. This means that finishes pieces are less prone to cracking. Consequently, fabricators can use GFRC to cast pieces that are thinner – and subsequently lighter. Material efficiency is therefore another (albeit indirect) advantage that GFRC has over traditional concrete.

GFRC COMPOSITION

Trueform Concrete’s GFRC mixture (HB7) is a proprietary blend of the following: Portland Cement, select fine aggregate (sand), water, acrylic polymer, glass-fibers, de-foaming agents, pozzalanic material, super water reducers, pigments and mix additives that increase the workability and overall strength.

COMMON APPLICATIONS

Standard uses for GFRC include countertops, table tops & other surfaces, sinks, wall cladding, floor and field tile. Suitable for commercial and residential applications in both indoor and outdoor environments.

DATA SUMMARY

- Compressive Strength: 10,910 PSI *
- Flexural Strength (without reinforcement): 1,800 PSI *
- Yield & Weight: 0.42 cu ft of mix = 5 sqft at 1” thick. Total weight of 10 lbs /sqft at 1” thick
- Water:Cement Ratio: 0.3
- All our concrete is fire-resistant

* More results on Page 3

PROCESS

- Trueform Concrete's products are all handcrafted in the USA by skilled artisans.
 - Each product is subjected to a thorough quality control check prior to leaving our facility.
 - Products are either templated and installed locally or "built-to-spec" and shipped nationally or internationally.
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SEALER

- All of our concrete is treated with 3 coats of a proprietary, industrial-grade topical sealer which form a protective layer while enhancing the color of the product.
- Trueform uses 2 types of coatings to seal all products, whereby one of the sealers is UV-stable and is used for protecting outdoor products.
- Our sealers are 100% reactive and is VOC compliant.

It's important to note that most sealers are vulnerable to acids. Coatings provide superior protection, but they are prone to scratching. Once scratched, the underlying concrete becomes vulnerable to staining. Proper maintenance and care is important, and so acids from common foods and beverages (lemon juice, wine, vinegar, etc.) should be removed quickly from concrete surfaces because they will chemically "etch" the sealers. Fortunately, coatings can be repaired, and entire concrete surfaces can be re-sealed if the sealer becomes compromised.

SUSTAINABILITY

We believe that how we make is just as important as what we make, and our team is dedicated to creating eco-friendly products that help sustain a healthy and long-lasting environment. Our state-of-the-art processes maximize the materials that we can re-use, re-purpose, and recycle.

- All of the water used during the fabrication process is recycled back into a closed loop system for production casting and post-cast grinding
- All of our concrete waste is recycled back into aggregate and used for creating asphalt
- All of our casting materials are reused as crating and shipping materials
- Unlike other manufactured materials such as porcelain, quartz, or solid surface - which require enormous expenditures of energy in the form of furnaces and other industrial equipment - GFRC objects cure on their own thanks to matters of chemistry. The majority of the energy required to make our products is from human beings.

GFRC TECHNICAL INFORMATION: TEST RESULTS



Data for unsealed concrete samples cast with our HB7 GFRC mix and tested in accordance with select ASTM test methods are as follows:

ASTM Tests	7 Day Result (Average)	28 Day Result (Average)
Compressive Strength ¹	9,400 psi	10,910 psi
Flexural Properties ²	1,635 psi	1,800 psi
Tensile/Bond Strength ³	N/A	429 psi

ASTM Test	Bulk S.G	% Loss	Index of Abrasion Resistance
Abrasion Resistance ⁴	1.96	0.74	43.28

ASTM Tests	
Density, Absorption & Voids ⁵	Average
Oven Dry Weight (g)	755.9
SSD after 48 hour Soak (g)	774.9
SSD after 5 hour Boil (g)	789.8
Suspended after Soak and Boil	404.0
Absorption after 48 hour Soak (%)	2.5%
Absorption after 5 hour Boil (%)	4.5%
Bulk Density Dry	1.96
Bulk Density after Immersion	2.10
Bulk Density after Boiling	2.05
Apparent Density	2.15
Percent Permeable Yields	8.8

All tests performed by SGS Tech Services / ISO 17025 Accredited Laboratory / Report 27-February-2023

ASTM Test Legend

¹ ASTM C109-21: Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50mm] Cube Specimens)

² ASTM C947-21: Standard Test Method for Flexural Properties of Thin-Section Glass-Fiber-Reinforced Concrete (Using Simple Beam with Third-Point Loading)

³ ASTM C1583-20: Standard Test Method for Tensile Strength of Concrete Surfaces and the Bond Strength or Tensile Strength of Concrete Repair and Overlay Materials by Direct Tention (Pull-off Method)

⁴ ASTM C1353-20: Standard Test Method for Abrasion Resistance of Dimension Stone Subjected to Foot Traffic using a Rotary Platform Abraser

⁵ ASTM C642-21: Standard Test Method for Density, Absorption, and Voids in Hardened Concrete