

GigaCrete Specification BallistiCrete (PlasterMax technology)

BallistiCrete™: Fire Rated Plaster for Direct Application to EPS Geofoam Blocks, Walls typical to GigaPanels Systems and Geofoam Stadium Flooring requiring extreme abuse and ballistic resistant finishes.

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Materials and installation of interior BallistiCrete plaster.

1.02 REFERENCED DOCUMENTS

- A. ASTM Standards:

- NFPA 286 Standard fire test method for evaluating contribution of room fire growth
- ASTM E-84 Standard Test Method for Surface Burning Characteristics of Building Materials
- UBC 26-3 Room fire test standard for interior foam plastic systems.
- ASTM C1929-06 Abuse resistance
- ASTM-C587-04 Bond strength, Impact strength, Joint strength
- ASTM D 4977-03 Abrasion resistance
- ASTM D 5420-04 Impact resistance
- ASTM G21 Fungal contamination resistance
- ASTM C109 Compressive strength
- ASTM E 136 Building materials combustibility

1.03 DESIGN REQUIREMENTS

- B. Joints

1. Provide expansion joints in the BallistiCrete application where building movement is anticipated and at specified locations
2. Control joint spacing shall not exceed 30'

1.04 PERFORMANCE REQUIREMENTS

TEST	METHOD	CRITERIA	RESULT
Corner Room Fire Test	NFPA 286	No flame growth	Pass
Surface Burning Test	ASTM E 84	Flame spread < 25, Smoke < 450	Zero flame spread, Zero smoke
Combustibility Test	ASTM E 136	No combustion	Pass
Fungal Resistance	ASTM G21	Harbor no mold, mildew	Pass

1.05 SUBMITTALS

- A. Manufacturer’s technical data sheet, specifications and Best Practice Guide
- B. Samples for architect’s approval (when specified)

1.06 QUALITY ASSURANCE

- A. Manufacturer
 - 1. All materials manufactured, sold and distributed by GigaCrete, Inc. Las Vegas, NV
 - 2. BallistiCrete product manufactured under Intertek quality control program
- B. Contractor Requirement
 - 1. Contractor must be licensed, insured and engaged in application practices of similar materials to those herein this specification
 - 2. Employ skilled mechanics who are knowledgeable and experienced in similar material applications
 - 3. Contractor must provide proper equipment, manpower and supervision on the jobsite to install the product in accordance with GigaCrete's Best Practice Guide publication.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Delivery
 - 1. Material shall be delivered to the jobsite in their original unopened package
 - 2. Material shall be inspected for damaged packages with damaged packages removed the from the usable stock

B. Storage

1. Product shall be stored indoors in a dry location free of moisture, high humidity, direct sunlight, off the floor and under cover
2. Storage location shall be protected from excessive heat or freezing conditions

C. Handling

1. Do not to throw, drop or mishandle unopened packages using caution to preserve condition of sealed packages
2. Product shall be moved to the installation space and normalized to space ambient conditions at least 24 hours prior to the actual installation

1.08 PROJECT CONDITIONS**A. Ambient and Surface Temperature**

1. Temperature shall be greater than 50°F and lower than 85°F prior to and during the installation and maintained during the initial 7 day cure period
2. Provide temporary heat if ambient temperature is less than 50°F so that the specified temperature range is met as in section 1.08A.1. Provide proper ventilation such that temporary heat source fumes do not accumulate or interact with freshly applied BallistiCrete. Provide means to regulate heat source such that ambient temperatures do not exceed the specified range and that heat is evenly distributed throughout the space.

B. Humidity

1. Relative humidity shall not be below 35%. Measures must be taken to increase and maintain humidity prior to and during the installation and for the 7 day cure period if necessary

PART 2 – PRODUCTS**2.01 MANUFACTURERS**

- A. GigaCrete Inc. Las Vegas, Nevada

2.02 ACCESSORIES *(non metallic - supplied by others. Plastic Components or equal preferred)*

- B. Provide 093 drywall control joints
- C. Provide drywall casing beads for all areas of dissimilar building materials
- D. Provide wide flange outside corner bead
- E. Provide minimum 11 ounce or 15-20 ounce fiberglass mesh

Note: accessory items serve as installation termination points that compensate for potential structural movement. Plastic/vinyl accessories are recommended.

FASTENERS

A. Mechanical

1. Provide 2" roofing nails for accessory item fastening. (temporarily holding in place) Nails are installed hand through the edge flange of the accessory item directly into the EPS substrate avoiding the plastic web fastening strip within the EPS.

A. Chemical

1. Provide low expansion urethane spray foam adhesive to adhere accessory items to the EPS surface at specified locations.

2.04 JOBSITE INGREDIENTS

- B. Clean potable water 50-75°F. Provide means to heat or chill water outside the specified temperature range.

2.03 JOBSITE MIXING

- A. **B3 Activator Solution**- Identify the package labeled B3. In a suitably sized vessel place the dry concentrate of the B3 bag and add cool potable water at a ratio of 50 lbs of dry concentrate to 8 gallons 16 ounces of water. Stir well and allow to fully dissolve overnight. Store out of direct sunlight in a cool area. Cover to avoid evaporation and to keep out contaminants. Prevent solution temperature from warming higher than 70°F.
- B. **BallistiCrete** - Pour 4.5 quarts of aged B3 Activator into a mixing bucket and mix in the contents of the BallistiCrete bag. Mix 4 to 5 minutes until a smooth lump free consistency is met. Add small amounts of additional B3 Activator Solution if needed for workability.
- C. **Glass Fibers** – Add slowly during mixing until all fibers supplied in the separate bag have been blended evenly into the mix. Do NOT empty the bag all at once into the mix, this will only create a large clump of unmixed fibers rendering the mix useless.

PART 3 – EXECUTION

- A. Installers must qualify under the Quality Assurance requirement in this specification (section 1.06)

3.01 EXAMINATION

A. Inspect EPS surface for:

1. Dirt, form oil, dust, grease, paint, laitance, UV damage, concrete spatter or any other foreign material that may act as a bond breaker.
2. Moisture on the surface. Ensure that the EPS is dry before the application.

3. Wall areas must be plumb, square and straight within ¼" in 10". Identify and mark problematic wall areas.
- B. Report any deviations from the specification requirements or any other conditions that may adversely affect the BallistiCrete installation to the general contractor.

3.02 SURFACE PREPARATION

- A. Rasp the substrate to remove potential bond breakers listed in section 3.01A.1 and to ensure good adhesion.
- B. Identify and layout all specified accessory locations (control joints, casing beads, outside corner beads and inside corner beads).
- C. Fasten accessory items using optional fastening methods in section 2.03

3.03 INSTALLATION

Apply BallistiCrete material between any two accessory items without interruption to create a monolithic panel without cold joints. At no part of the installation shall wet BallistiCrete abut set BallistiCrete. Accessory item shall serve as termination points for each monolithically placed panel. Apply a thin coat of BallistiCrete by hand or spray equipment to the prepared EPS substrate and work flat. Hang pre cut mesh to the thin coat and work BallistiCrete through the mesh avoiding mesh wrinkles. Immediately re apply BallistiCrete over the embedded mesh to the specified depth and trowel flat or create desired textures. General awareness of ambient conditions is critical. Do not install BallistiCrete in ambient outside of conditions spelled out in this specification. Do not install BallistiCrete on wet or moist EPS or if the installation space is susceptible to moisture, rain or overnight condensation. Adjustments in application, scheduling and curing must be made if hot, dry, moist or freezing conditions exist or may occur during any part of the installation or cure. The installation shall be true, plumb and square. Material must be removed from control joint centers, if filled, before the BallistiCrete sets.

- A. Accessory Items – Non Metallic/Non Rigid, UV rated Plastic preferred.
 1. BallistiCrete must not touch dissimilar materials such as metal frames; therefore the use of plastic accessories is necessary as termination points.
 2. BallistiCrete must not be applied over any surface where there is water trapped behind or within the substrate being coated. Test all walls for trapped water prior to coating.
 3. Casing Beads – Install casing beads at all BallistiCrete termination points such as doors, windows, floors, ceilings or any other intersection point of dissimilar construction. Install casing beads back-to-back to form a two part expansion joint at areas of anticipated structural movement. Back-to-back void spacing is based upon the level of anticipated movement. Refer to architectural drawings for specified space width.

4. Control Joints – Install control joints by removing EPS location by hot knife or saw where specified on the architect's drawings. Place the 093 into the voided area ensuring that the joint flange has sufficient support on either side of the void for fastening.
5. Outside Corner Beads – Install outside corner beads such that the edge bead is revealed at the specified BallistiCrete thickness in each direction.
6. Door and Window corners – Install additional mesh tape typically found in a bandage type roll 3 to 4" wide abutting all corners minimum 12" horizontally and 12" vertically with another piece 12" long starting at the corner of the frames and extending diagonally outwards at 45 degrees. This is additional reinforcement for the most common areas where cracking can occur.

Note: Accessory end cuts must be square and undamaged when abutting end to end. Use a straight edge to align end to end accessories before fastening.

B. Finishes

1. Smooth – Apply specified skim coat material to set imbedded mesh and build up layers 3/8" at a time until ideal thickness is attained. Finish with steel trowel for a smooth finish following common plastering techniques.
2. Textured – use a urethane texturing roller or similar tool to emboss a design into the BallistiCrete surface. Lightly mist the tool and wall with liquid release agent to prevent sticking. BallistiCrete is ready to emboss shortly after its initial set. Additionally, spray textures creating rough or knockdown finishes typical to stucco can also be created.

Note: Initial set time depends on material viscosity and ambient conditions. BallistiCrete installation should be installed true, plumb, square and free of irregularities regardless of aesthetic intention.

3.04 PROTECTION

- A. Provide protection of installed BallistiCrete from excessive heat, cold, water, wind and other trade activity.
- B. Provide protection of stored material from excessive heat, cold, high humidity and water and other trade activity.