Buddy Rhodes Vertical Mix™

Flame Rated, Lightweight Carvable Concrete

Product Overview

Buddy Rhodes Vertical Mix™ is a flame rated (E84 – Class A) cement-based overlay that is troweled onto vertical surfaces and carved, sculpted or stamped to create rock, stone, tile and other textures. For interior or exterior areas, this lightweight, zero slump formula is used for a variety of applications including creating themed structures for amusement parks, zoo & aquarium displays*, architectural panels, landscape elements and public sculpture. With Buddy Rhodes' extensive line of color pigments and glazes, the finishing possibilities are endless.

Benefits of Buddy Rhodes Vertical Mix

- **Flame Rated** - certified to the highest ASTM fire rating; E-84 Class A/1**
- **Easy to Use & Versatile** – Mix, apply and texture quickly over a variety of surfaces
- **Economical** – build large, lightweight, thin structures at a fraction of the cost
- **Lightweight** - Up to 30% lighter than other concrete mixes with better coverage per bag.
- **Non-Toxic** – (No VOC's) Water Based, and Animal Friendly
- **Eco-Friendly Mix** – Uses post-consumer recycled ingredients
- **Use in Public Spaces Indoors or Outdoors**
- **High Build Thickness** – Can be packed onto vertical walls up to 4" (10 cm) thick in one application.
- **Fiber Reinforced** – Pre-blended with an innovative short fiber for crack control, workability and strength.
- **High Bonding Strength** – Bonds to most substrates using RAMP™ Adhesion and Cure Promoter.
- **Easy to Color** – Achieve a variety of colors and effects with Buddy Rhodes pigments and glazes
- **Strong, Durable and Long Lasting**
- **Highly Water, Weather (freeze/thaw) and UV Resistant**

Product Specifications

Color: Light Grey

Coverage: 8 ft² at 0.75" thick per bag (0.75 m² at 19 mm thick)

Total Cementitious Binder: 27.5 lb (12.5 kg) per bag

Density: 85-95 pcf (1,360 - 1,520 kg/m³)

Compressive Strength (ASTM C-109)

1 day - 2,414 psi (16.64 MPa)
7 day - 4,704 psi (32.43 MPa)
28 day - 5,616 psi (38.72 MPa)

Flexural Strength (ASTM C-947)

1 day - 663 psi (4.57 MPa)
7 day - 868 psi (5.99 MPa)
28 day - 904 psi (6.23 MPa)

Cured Useful Temperature Range†
-40°F/-40°C to 200°F/93°C

Test samples should be prepared to ensure the product is suitable for the intended use. This will also familiarize you with the material.

*See pg. 3 of this data sheet for more details on using Vertical Mix in Aquariums.

****Note:** This product is not intended for use in constant, direct flame contact.

†See pg. 3 of this data sheet for more details about Useful Temperature Range.

Surface Preparation Quick Reference Guide

Wire Lath	Lath provides a uniform surface that Vertical Mix will mechanically bond to. It can be fastened directly to most substrates to increase adhesion or to bridge unstable areas of an otherwise sound surface. Lath can be combined with structural elements to create large scale armatures. **Wire lath should always be used when applying Vertical Mix in exterior freeze-thaw environments to ensure longterm stability.**
Wood Surfaces	Wood should be painted or sealed prior to priming with Buddy Rhodes RAMP and applying Vertical Mix. Optionally, tar paper followed by wire lath can be fastened to provide mechanical bond.
Painted Surfaces, Interior	Sand surfaces to create mechanical tooth, then prime before applying Buddy Rhodes Vertical Mix. Optionally, wire lath can be fastened to provide mechanical bond.
Foam (EPS) Surfaces, Interior	Remove any loose foam and prime all surfaces before applying Buddy Rhodes Vertical Mix.

Surface Preparation Quick Reference Guide (Continued)

Drywall	Clean and prime surfaces before applying Buddy Rhodes Vertical Mix. Optionally, wire lath can be fastened to provide mechanical bond.
Cured Concrete	Clean all surfaces thoroughly. Acid etching or abrasion may be necessary on smooth surfaces. Prime all surfaces before applying Buddy Rhodes Vertical Mix. Wire lath should be applied over exterior surfaces in freeze-thaw environments.

Surface Preparation

Vertical Mix can be applied to a variety of surfaces, provided the surface is clean and stable. Any loose material should be repaired or removed prior to surface preparation.

Priming Surfaces with Buddy Rhodes RAMP: Buddy Rhodes RAMP™ is an economical bonding primer and cure promoter. Add 100 parts of clean water to 100 parts RAMP (50/50) into a spray bottle, pump sprayer, or similar. Shake vigorously. Spray an even, thin coating of primer on all surfaces and allow to become tacky (partially dry, sticky to the touch) before applying Vertical Mix. If primer dries completely, reapply and wait until tacky before proceeding.

Standard Recipe for Buddy Rhodes Vertical Mix

	Buddy Rhodes Vertical Mix	Buddy Rhodes RAMP	Water
By Weight	34 lb (15.4 kg)	3 lb (1.36 kg)	7.5 lb (3.4 kg)
	[100 Parts]	[8.82 Parts]	[22.06 Parts]
By Volume	1 Bag of Vertical Mix	42 fluid oz. (1.24 l)	115 fluid oz (3.4 l)

Preparation – Getting Ready to Mix

Have all ingredients assembled before you start. Wear vinyl or nitrile gloves, protective eye wear and a dust mask. Use an accurate scale for weighing components. Use materials between 50°F and 90°F (10°C - 32°C). Colder temperatures will slow the reaction and warmer temperatures will accelerate it. Preparations should be made to ensure that the applied material is not exposed to rain or temperatures below 50°F/10°C for the first 48 hours.

The temperature of the Vertical Mix is also important and will affect the outcome. Once the temperature of the mix reaches 70°F/21°C, the reaction begins to accelerate. Using a laser thermometer to monitor, keeping the temperature of the mix near 60° F/15° C. In warm environments, substitute up to 50% by weight of the water with ice. Vertical Mix has a shelf life of 1 year after purchase if kept in a dry, moisture free environment. Once opened, the material should be used as soon as possible.

Mixing Instructions

Use clean, potable water and clean mixing vessels. Use a handheld mortar mixer to blend. If mixing on a regular basis or for a large project, investing in a larger mortar mixer may be justified.

Measuring and Mixing: Combine water and RAMP into a clean mixing container. If you are adding a Buddy Rhodes color pigment, disperse the pigment into the liquid at this time. Slowly add the Vertical Mix into the liquid and blend with a mechanical mixer until homogenous. Use a margin trowel to scrape the sides of the pail to ensure there is no dry, unmixed material remaining. Continue mixing, adding up to
16 fluid oz. (475 ml) of additional water per bag to reach desired consistency.

Applying: Spread the blended Vertical Mix onto the chosen surface. Material can be applied by hand, by trowel, or with a mortar sprayer. To ensure the strongest bond it is often best to spread a thin layer onto the surface first, followed immediately by a thicker build. Maintain a minimum thickness of 0.75" (19 mm).

Stamping/Texturing: While the mix is in the plastic state, it can be easily stamped with texture mats or rollers. A liquid release should be applied to the mat or roller to avoid sticking of the material.

Carving/Sculpting: When used at room temperature (73°F/23°C), Vertical Mix will reach initial set in 1-2 hours (depending on environmental conditions). The material will continue to get firmer as time passes. Various techniques can be used to carve and detail the design using plastic, wood or metal sculpting tools. Note: If the entire mass of the newly applied material moves excessively while tooling, stop and allow for longer cure before proceeding.

Post texturing/Coloring: Allow the material to cure for at least 16 hours. Cured Vertical Mix may be topically colored with acid stains or water-based color stains such as Buddy Rhodes Glazes. The most realistic coloring will be achieved with various layers of multiple colors and concentrations. Allow all topical colors to completely dry before applying any concrete sealer.

Sealing

Concrete is an inherently porous material and should be sealed for particular environments and uses. Allow the concrete to cure for at least 7 days before sealing. Choose the sealer that best fits the needs of the finished piece and the skill level of the person applying it. Exposures to excessive sun and water will determine the best sealer suitable for the application. Buddy Rhodes offers a variety of sealer options, which can be found on our website.

Cast Recipe for Buddy Rhodes Vertical Mix

	Vertical Mix	RAMP	Water	Water Reducer	Reinforcement
Cast Recipe	34 lb (15.4 kg)	3 lb (1.36 kg)	7.5-8.5 lb (3.4-3.85 kg)	4-5 fl oz (120-150 ml) Water Reducer 555	1.25 - 1.5 lb (0.56 - 0.68 kg) Alkali Resistant Glass Fiber (Backer/Structural Mix Only)

Cast Technique

Because it is so lightweight, Vertical Mix is also a great option for casting objects that are up to 30% lighter than those made with other mixes. Use for casting art and sculpture, countertops and more. This recipe is made flowable by the addition of Water Reducer 555. AR Glass Fibers can be added to the mix as a reinforcing backer layer for improved strengths. After initial blending, slowly add the fiber to the mix. Blend until homogeneous.

**Use of Buddy Rhodes Vertical Mix Under Water in Aquarium Displays

Cured Buddy Rhodes Vertical Mix is durable for use underwater on a long term basis. However, like any other Portland cement based material, freshly cured Vertical Mix will cause a spike in the water's pH level. This change in pH may affect the health of wildlife in the water, and steps may be necessary to reduce risk.

Reducing Risk: Users report that pH values are easier to control if Vertical Mix is allowed to cure for at least 28 days before submerging. This is typically followed by multiple full water changes to soak and flush the Vertical Mix. Regular monitoring and adjustment of pH (and other water quality factors) are necessary to ensure a healthy habitat. Testing should be performed to determine suitability for your particular needs.

†Useful Temperature Range of Cured Vertical Mix

Fully cured, Buddy Rhodes Vertical Mix has a useful temperature range of -40°F/-40°C to 200°F/93°C. Vertical Mix has excellent freeze/thaw resistance. Applying a sealer is recommended to further reduce water penetration and enhance durability in freeze/thaw environments.

Although Vertical Mix is flame rated, certified to E-84/Class A, the rules for heat resistance are generally the same as other Portland Cement based concrete materials. If the concrete is rapidly exposed to heat above 93°C/200°F, the moisture trapped in the concrete may quickly expand and crack or spall the surface. We do not recommend Vertical Mix for direct flame contact for extended periods for this reason.

Safety Keep Out Of Reach Of Children

Avoid prolonged exposure to dust created while mixing. Use a NIOSH approved respirator if threshold limit values are unsafe. Dust collection systems are recommended to maintain a safe working environment. Wear nitrile or vinyl gloves and safety eye protection while handling the material. Follow all safety instructions from mixing equipment manufacturer.