

PERVIOUS CONCRETE

Pre-Blended Permeable Paving Product

CONCRETE
PERVIOUS

MANUFACTURER:

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PRODUCT DESCRIPTION:

EMPIRE BLENDED PERVIOUS CONCRETE is a performance engineered concrete made with controlled amounts of Portland cement, coarse aggregates and admixtures which when mixed with water creates a concrete with a pore structure containing many voids that allow water and air to pass through. It is the perfect material for the environmentally conscious property owner. With its environmental and safety benefits, *EMPIRE BLENDED PERVIOUS CONCRETE* can provide a low maintenance and durable paving material that will assist in gaining the highly regarded LEED certification.

USES:

- ▶ Alternative to complex drainage systems and water retention areas
- ▶ Can be used to pave lots, driveways, sidewalks, streets and road shoulders
- ▶ Ideal for light traffic areas
- ▶ Patios, tennis courts, swimming pool decks, golf cart pathways, greenhouse floors
- ▶ Zoo areas, animal barns
- ▶ Nature trails, walkways
- ▶ Drain spouts
- ▶ Garden paths, walkways, recreation areas, riverside paths
- ▶ Ideal patching material for existing pervious concrete pavements

ADVANTAGES:

- ▶ Significantly reduces storm water runoff
- ▶ Contributes to several LEED Green Building Rating Systems credits
- ▶ Acts as a natural filter removing unwanted materials such as oil, grease and other harmful pollutants
- ▶ Waterway friendly as it allows water to return to the soil, filters gross pollutants and greatly reduces water contamination
- ▶ Easily installed and can be used in place of or in conjunction with traditional paving products such as asphalt, cement, brick, pavers, etc
- ▶ Ready to use, just add water
- ▶ Excellent freeze thaw resistance
- ▶ Durable, extremely low life-cycle cost

INSTALLATION:

Surface Preparation:

EMPIRE BLENDED PERVIOUS CONCRETE must be placed on a well compacted permeable surface. Generally a layer of uniformly sized stone is recommended. Uniformity of subgrade support is a key criterion for placing pervious pavement. All irregularities must be smoothed and compacted prior to placement. The subgrade must be moist prior to placement in order to prevent water from being removed from the lower portion of the pavement too soon.

Mixing:

EMPIRE BLENDED PERVIOUS CONCRETE needs to be mixed to a low slump consistency. Each 55 lb. bag should be mixed with 2 quarts of clean water. **Be careful not to overwater as additional water will have a more drastic impact than that experienced in conventional concrete applications. IT IS IMPORTANT TO ALWAYS MIX IN FULL BAG BATCHES.**

Placement:

EMPIRE BLENDED PERVIOUS CONCRETE cannot be pumped. We recommend that it be placed with a minimum thickness of 2 inches. Placement should be continuous, and strikeoff should be rapid. Conventional formwork is used. Mechanical (vibrating) and manual screeds are commonly used, although manual screeds can cause tears in the surface if the mixture is too stiff. Other devices, such as laser screeds could also be used. For pavements it is recommended to strike off about $\frac{1}{2}$ to $\frac{3}{4}$ inch above the forms to allow for compaction. One technique for accomplishing this is to attach a temporary wood strip above the top form to bring it to the desired height. After strikeoff, the strips are removed and the concrete is consolidated to the height of the form. Special height adjusting vibrating screeds have also been used to provide the extra height. With vibrating screeds, care should be taken that the frequency of vibration is reduced to avoid over-compaction or closing off of the surface, resulting in blocked voids. Edges near forms are compacted using a 1 x 1 foot steel tamp (like those used in decorative stamped concrete), a float, or another similar device, to prevent raveling of the edges.

Consolidation is generally accomplished by rolling over the concrete with a steel roller which compacts the concrete to the height of the forms. Because of rapid hardening and high evaporation rates, delays in consolidation can cause problems; generally it is recommended that consolidation be completed within 15 minutes of placement.

Control joints should be placed if prevention of random cracking of the pavement is desired, although the joint spacing is usually larger than for conventional concrete pavements because pervious concrete tends to shrink much less. Recommended joint spacings of 20 feet are suggested.

Because setting time and shrinkage are accelerated in pervious concrete construction, joint installation should be soon after consolidation, with a rolling joint tool. Another technique, suitable for small sections, is to drive a steel straightedge to the required depth with a hammer. Saw cutting joints is also possible, but is not preferred because slurry from sawing operations may block some of the voids, and excessive raveling of the joints often results. Removing covers to allow sawing also slows curing, and it is recommended that the surfaces be re-wet before the covering is replaced.

Finishing:

Typically, pervious concrete pavements are not finished in the same way as conventional concrete pavements. Normal floating and troweling operations tend to close up the top surface of the voids, which defeats the purpose (for most applications) of pervious concrete. For the majority of pervious pavements, the "finishing" step is the compaction. This leaves a rougher surface, but can improve traction.

Curing:

The open structure and relatively rough surface of pervious concrete exposes more surface area of the cement paste to evaporation, making curing even more essential than in conventional concreting. Water is needed for the chemical reactions of the cement, and it is critical for *EMPIRE BLENDED PERVIOUS CONCRETE* to be cured promptly. Care must be taken to ensure that the pavement does not dry out prematurely. After placement, fog misting followed by plastic sheeting is the recommended curing procedure, and sheeting should remain in place for at least 7 days. Using sand or dirt to hold plastic sheeting in place is not recommended because clogging of the voids could result from spillage on removal. Instead, it is recommended to secure plastic sheeting with lumber, rebar, stakes or other methods.

Curing should be started as soon as practical after placing, compacting and jointing. Best practice calls for curing to begin within a maximum of 20 minutes after these procedures. High ambient temperatures and windy conditions will have more pronounced effects relative to conventional pavements and should be taken into account.

Coverage:

One 55 pound bag of *EMPIRE BLENDED PERVIOUS CONCRETE* will yield approximately 0.45 cubic feet.

Packaging:

Available in 55 pound multiwall paper bag with moisture barrier.

Color:

Light gray. *EMPIRE BLENDED RAINBOW CEMENT COLORS* may be added to achieve a colored finish at a rate of 1 pound per 55 pound bag.

TECHNICAL DATA:

Compressive Strength: (ASTM C-39):

1 Day	1,400 psi
3 Days	1,550 psi
7 Days	2,250 psi
28 Days	3,100 psi

Flow rates through *EMPIRE BLENDED PERVIOUS CONCRETE* are typically around 480 inches per hour.

Unit weight: Approximately between 115 lb. per cu. ft. and 125 lbs. per cu. ft.

LIMITATIONS:

Do not apply to frozen surfaces or if temperature will fall below 40°F within 24 hours.

CAUTION:

Contains Portland Cement CAS # 65997-15-1. Freshly mixed cement products may cause skin injury. Avoid contact with skin where possible and wash exposed areas promptly with water. If any product gets into the eye, rinse immediately and repeatedly with water. If ingested, **do not** induce vomiting and get prompt medical attention. Also contains Sand CAS # 14808-60-7. Avoid breathing dust. Prolonged exposure to dust may cause delayed lung injury (silicosis) or cancer IARC Class 2A. Wear NIOSH approved mask for silica dust. **Keep Out Of Reach Of Children.**

WARRANTY:

Due to the use of this product beyond our control, we assume no liability for damages of any kind, and the user accepts the product "as is" and without warranties, expressed or implied, from either Empire Blended Products or its agents. The suitability of the product for an intended use shall be solely up to the user. Our only obligation shall be to replace or pay for any material proved defective, with our liability limited to the purchase price of materials supplied by us.