

D O V E R R A[®]

Frequently Asked Questions

What type of cement may I use? The recommended cement is Portland I, either white or grey. To achieve certain colors the white may be needed.

What type of coloring may I use with Doverra? Any regular color methodology used with standard precast concrete may be used with Doverra. We recommend the use of water-based liquid color. In addition to impregnating the color throughout the mix, you may also paint or stain the material. Staining the material with a traditional water-based wood stain is especially effective when making products that replicate wood.

How may the mix/material be dispersed? Due to its' viscosity, the material may be poured, extruded, sprayed, or tamped.

What kind of molds can I use with Doverra? You may use any molds that would normally be of sufficient strength to be used with standard precast concrete. We have manufacturers who have used molds made of plastic, metal, vinyl, wood, rubber, and foam. As you know, each of these has its' own advantages and disadvantages. Generally speaking, the heavier the material that the mold is made out of the more pulls you will be able to get from that mold. Since one of the advantages of Doverra is its' ability to read detail better than concrete, the better the mold is, the better result you will get. The Doverra mixture reads plastic molds best. However, if you want to use rubber molds (which is acceptable), please refer to the following questions for more detail.

May I use a release on the molds; and, if so, does it matter which ones I use? Yes, in order to assure the best results, you may; and you should, use a release on the molds. These can be the same releases that you normally use on a standard precast concrete mix. However, it's recommended that you use a bio-degradable release; and, generally, that you do not use fat-based or oil-based releases. (We've seen some manufacturers use Crisco as a release and these can work well. However, we would recommend that you not use these if you intend to use a sealer on the piece.) Instead, we recommend releases developed specifically for use in the precast industry. Also, you may use a cooking spray, such as Pam.

If you use rubber molds, you will sometimes you will experience an increase in the number of pin holes compared to using other types of molds. If so, we recommend that you use a release especially designed for rubber molds, such as Cresse T880. This often results in a significant reduction in the amount of pin holes that you get.

Do I need to use vibration of the molds? Generally, Doverra's viscosity allows it to fill the voids of the mold better than standard precast concrete; and, consequently, vibration generally is not necessary. However, if you find that the viscosity of the particular mix is "stiff" (it should not be), vibration will speed up the filling of the molds. Also, if you are not getting the "read" that you desire, vibration may improve your results. However, this should be a gentle to moderate vibration, such as achieved through the use of a vibration table, roller line, sander, or by hand (puddling). It is important that the fibers remain evenly distributed throughout the mix; you do not want the vibration to cause the fibers to "settle" to the bottom of the mix.

How does Doverra cure? Like standard concrete, Doverra is a naturally, self-hydrating cure. No heat is required for this process.

When can the piece be pulled from the mold? If you follow our process and use both of our admixtures, two hours is usually sufficient. However, you should be certain to test the end results over time to verify any possible effects from this strategy.

How should I remove the piece from the mold? As with standard precast concrete, when you remove the product from the mold you should remember that the product is still in a green state and that it should be handled with care. The possibility of damage can be decreased by remembering to remove the mold from the product rather than taking the product out of the mold.

What about handling the product during the curing stage? Once again, as with regular precast concrete, many of the curing issues are the same for Doverra. For example, your local climate and the time of year are factors that will affect the curing time. Specifically, the impact of heat/cold and humidity should be taken into consideration. In colder climates, it may be beneficial to cure the product in an environment in which the humidity and temperature are controlled to both expedite curing and control the hydration process. By contrast, in a hotter climate, it may be beneficial to leave the product indoors to cure for 24 hours (once removed from the mold) prior to exposing the product to the direct sun. Baking in the sun during the heat of the summer while in a green state can and will often lead to cracking. To assist with avoidance of cracking in extremely hot weather (i.e. during the summer) consider plastic wrapping to keep moisture in when drying. This will help control the hydration and further reduce the potential for cracking. Finally, when in doubt, you should exercise the same judgment with product made with the Doverra admixture that you do with other cementitious mixes. Also, remember that if due to the fact that you are able to make thinner pieces with our admixture, you are making product that is thinner and lighter than concrete, you should exercise additional care and consideration of these factors. As always, common sense and practical quality control standards should be exercised.

What is the recommended curing time? The recommended curing time is 28 days; however, similar to concrete, Doverra will continue to strengthen even after this time period.

When and how may the product be shipped? As with all of these questions, the general rule of thumb, if you are not certain of the answer, is to treat the product like concrete. Though the actual time period can be dependant upon what type of product it is, the size and shape of the piece, how it will be shipped, etc. the following provide some guidelines. Generally, the product should not be shipped prior to 14 days. When shipping, make sure product is not strapped down too hard, especially if done during initial green stage. Also, make sure that the pallet is not moving on the truck. If delivering to a job site, make sure that the product is not stacked on top of each other at the job site.

How may the end product be cut? If you are making product using the Doverra admixture the mix would traditionally consists of cement, sand, and fiber. However, to achieve various colors, textures and designs, you may also be including glass, copper, ground stone, etc. In this circumstance, the material needs to be treated just the way other cementitious materials are treated. Doverra may be cut, ground, and polished using common concrete and stone blades and tools.

If I use Doverra to make a product that is to be installed, when can I first install the piece? Although it is always best to wait until the product is fully cured before installation, the product should cure a minimum of 14 days prior to installation.

On what substrates may products made with Doverra be installed? Due to the weight, products should be installed directly to concrete block or other substrates traditionally considered strong enough to support stone and concrete. If, however, you are using a much thinner piece; and, consequently, the weight of the piece is considerably lighter, you must use your judgment as to the applicability of the specific substrate in question. This provides the manufacturer with the potential ability to greatly expand the product's application and dramatically increases the market potential.

How may product made with Doverra be installed? As discussed previously, since any product made with Doverra has sand and possibly other heavy aggregate in the mix, the material will generally be approximately the weight of concrete and should be treated accordingly. Therefore, normal mechanical installation techniques, such as tapcons, etc. are generally acceptable. (In fact, when in doubt, treat the material as concrete.) However, if due to the thinness of the piece, the resulting weight is somewhat lighter than concrete, you may be able to use methods of installation that may not be normally acceptable for stone and concrete. However, when determining the method of installation, you should use your judgment and experience taking into consideration all relevant factors. For example: the type of substrate on which the product is being installed, the size and thickness of the pieces, the weight of the pieces, the experience of the installer, the potential for harm, etc. (In many instances, the installation method will have been specified by the architect, engineer, and/or designer.) It is recommended that you use thin set or other similar products.

How do I know when the mix is ready? When the chemicals have fully reacted within the mix, you should be able to see that the mix is sticky to the touch and is somewhat "shiny" in its' look and feel. You should also be able to tell by the viscosity of the mix. In other words, there should be no "balls" of the material within the mix.

What is the shelf-life of the admixture? The admixture should be fine for at least six months. However, if you let the admixture sit for long periods of time without use, you should agitate the liquid before using again.

What happens if the admixture freezes? Care should be taken to maintain the admixture above freezing; however, freezing and subsequent thawing should not harm the material if thoroughly agitated. Never agitate the mixture with air or an air lance. However, if you need to agitate the admixture, attempt to ensure that all of the chemicals are thoroughly dispersed throughout the mix. Under extreme conditions in which the admixture remains frozen for long periods of time, or in which the same container of admixture goes through repeated freezing and thawing, we are not certain of the effect. There could be damage to the admixture.

What kind of mixer do I need? You can use any standard concrete or mortar mixer. However, the time that you will need to mix the batch will depend upon the size of the batch relative to the mixer and the speed and efficiency of the mixer. Since one of the important elements in creating a good mix is to allow the Doverra admixture to activate, the mix must run long enough for the chemistry to react. A higher speed mixer will reduce the time that is necessary for this to take place. Of course, just like concrete, you do not want to run the mix

too long either. That's where the science and art meet. Generally, the mix should be in the range of 5 – 10 minutes with a standard mixer, but it could be more or less.

Is this considered to be a “green” material? The composite material consists of the following ingredients, cement, vermiculite, fiber, water, and the admixture. Since the admixture (chemicals) comprises a very small percentage of the overall weight of the mix, the material does generally meet the standard to be considered a green material.

How does the weight and strength of the material compare with concrete? The comparison depends upon the specific formulation of Doverra you are using; however, for a general comparison, please see the following chart.

	Compressive Strength (PSI)	Weight (Lbs. per Cu. Ft.)
D □ V E R R A	10,000-12,000	130-140
Concrete	3,000-7,000	140-150

Is there an issue with the material when used in areas of the world that have freeze-thaw conditions? Material made with the Doverra admixture was submitted to freeze-thaw testing in accordance with ASTM C-666, Procedure “A”, “Test Method for Resistance of Concrete to Rapid Freezing and Thawing” for 300 cycles and received a Relative Durability Factor of 101.61. A factor of 80 is considered to be passing.

What about the tensile and flexural strength of Doverra? The high fiber content aids the material in achieving tensile and flexural strengths of approximately 1,400-1,500 PSI, depending upon what variations of aggregate are included in the mix.