

Guide to Using Top-Cast® Surface Retarder

Guidelines for mix designs, placing and finishing exposed aggregate concrete

Top-Cast surface retarder is designed to expose a wide range of aggregate sizes on the surface of horizontal concrete.

With 12 different degrees, or depth of surface paste retardation, a contractor, architect or owner can achieve a whole range of exposed looks, depending on their choice of aggregates, mix designs, integral color, finishing techniques, and level of Top-Cast.

Typically, the first decision would be to decide what you really want to see on the surface of your concrete. Next, the concrete mix should be designed with the desired amount, color and size of aggregate you wish to see on the final surface.

It is recommended that you consult with your local ready mix company for assistance, as they generally have the most knowledge of available aggregates in their markets. They also have the best understanding of designing the appropriate mixes to best achieve the end result look you might desire.

Once the mix design has been properly designed, then the concrete placing and finishing contractor must understand how to finish the concrete in a manner that will ensure that the aggregate that you wish to see on the surface is at the desired location within the concrete matrix in order to be adequately exposed.

Lastly, the right level of Top-Cast must be selected in order to remove the desired amount of surface paste to expose the aggregate.

It is recommended that the ready mix producer consult with their local Dayton Superior Sales Professional for specific procedures, when working with Top-Cast applications.

Note: When using Top-Cast, a 6 sack mix (564 lbs./256 kg cement) should always be used to achieve correct etch. Mixes with more or less cement may yield different results.

Always install a mock up to ensure desired results.

Product	Aggregate Size to Expose
01 White	Very Light Acid Etch Finish
03 Violet	Acid Etch Finish
05 Light Blue	Sandblast Finish
15 Yellow	Up to ¼" (6.55 mm)
25 Beige	1/8" - 1/4" (3 mm -6.5 mm)
50 Canary Green	1/8" - 3/8" (3 mm -9.5 mm)
75 Blue	1/8" - 3/8" (3 mm -9.5 mm)
100 Gray	3/8" - ½" (9.5 mm- 13 mm)
125 Pink	3/8" - 5/8" (9.5 mm- 16 mm)
150 Green	3/8" - 5/8" (9.5 mm- 16 mm)
200 Salmon	5/8" - 1" (16 mm -25 mm)
250 Orange	1" - 1½" (25 mm -38 mm)

Top Cast will cover approximately 200-300 sq. ft. gal (4.9-7.4 sq m /L)
All products come in 5 gallon pails, quart size samples are available

Placing and Preparing Concrete for Top-Cast

- § Place concrete at a 4 inch – 5-inch maximum slump (100mm to 125mm).
- § Screed FLAT, this is very important particularly for the Micro Finishes (03–15).
- § Bull float with a wooden bull float in both directions.
- § Roller Tamp or Jitterbug in both directions. For Micro Finishes Only (01-05).
- § Bull float a second time.
- § Wait until the bleed water has left before you do anything further.
- § Do all your edge work next, edge the slab with a metal edger then break the surface again with a wood float.
- § Begin the finish of the slab as you would with a mag float.

At this point, you need to decide how you want the final surface, additional passes with a steel trowel compacts the final surface or tightens the surface.

The big point now is to make sure that no “Bird Baths” or dips in the final surface show up. The intention is to get a tightly finished “flat” surface.

If you choose to only make one pass, apply the Top-Cast as soon as the finisher comes off the slab with their skates or kneeboards.



Moisture is needed in the top surface of the slab to react with the Top-Cast. Look for a surface that you can wipe your hand across to feel and see moisture.

This is the key time of the process.

Do not wait too long, early application is far better than too late.

Apply the Top-Cast with a Hudson type sprayer with an adjustable nozzle or a fan type nozzle with a (.3 or .5 GPM). Apply Top-Cast with a sprayer at a rate of approximately 200-300 sq. ft. gal (4.9–7.4 sq m /L).

The Top-Cast will dry on the surface in about 1–2 hours after application depending on ambient temperature and humidity,

The Top-Cast, once dry will resist a light rain. You may also place tarps over the slab to maintain heat in cooler temperatures as well as protect from standing rainwater.

We would advise if you are tarping with insulated tarps, to first cover with plastic to protect from drag marks.

In very hot weather, a water based curing agent may also be used over the Top-Cast to aide in etch retention as well as moisture retention in the surface allowing the retarded matrix to be more easily removed.

You can begin washing the retarded surface off in a little as 4 hours. The concrete surface must be adequately hard to resist the cleaning process.

Generally, wash the slab 12 to 16 hours later, this is totally dependent upon the mix design and ambient temperatures as well as job site conditions and the washing procedures used.

Use a power washer with about 1500 PSI and a 25-degree fan nozzle, do not get too close to the slab as you will leave deeper marks the closer you get. Try washing from about 6 to 10 inches away.

If removing Top-Cast early the surface maybe removed by use a stiff bristle brush/broom and a garden hose. Wash until clear water runs from the surface.

The Top-Cast surface may also be removed using a buffer and scouring pad with a clear water rinse following. This is particularly useful on the lightest grades of Top-Cast.

Placing and finishing guidelines for exposing aggregates larger than 3/8" (10mm)



Top-Cast 150

These mix designs will typically contain approximately a 60/40 ratio of coarse aggregate to fine aggregate

Concrete should be placed between 4 and 5 inches (102 mm to 127 mm) in slump.

Concrete should be finished as little as possible to ensure that the aggregate stays tight and close to the

surface of the concrete. Pushing the aggregate down can result in insufficient exposure of the coarse aggregate.

Concrete surface shall be free of bleed water before placing Top-Cast.

For this level of exposure, one would normally use Top-Cast 75, 100, 125, 150, 200 or 250, depending on aggregate size to be exposed.

Top-Cast shall be applied as soon as finishing procedures are complete and concrete surface still contains high degree of moisture. Look for a surface that you can wipe your hand across to feel and see moisture. This is the key time of the process. **Do not wait too long, early application is far better than too late.**

Apply Top-Cast at a coverage rate of approximately 200-300 sq. ft. gal (4.9–7.4 sq m /L). Full coverage must be achieved.

Apply Top-Cast with commercial grade “Hudson or Chapin” sprayers. Adjustable or fan tip nozzles can be used (.3 or .5 GPM).

The Top-Cast will dry on the surface in about 1–2 hours after application depending on ambient temperature and humidity, Top-Cast provides good protection against intermittent rain.

Once Top-Cast is applied, it is not necessary to cover with plastic unless rainfall is expected before Top-Cast is completely dry or heavy downpours are in the forecast.

You may also place tarps over the slab to maintain heat in cooler temperatures as well as protect from standing rainwater. We would advise if you are tarping with insulated tarps, to first cover with plastic to protect from drag marks.

Top-Cast **must not** be removed before underlying concrete has sufficient set to withstand washing by method used for Top-Cast removal.

Methods used for Top-Cast removal are typically stiff bristle brooms and water hoses, power washers, or commercial floor scrubbers in conjunction with water hoses.

The concrete surface must be adequately hard to resist the cleaning process. Generally, wash the slab 12 to 16 hours later, depending on temperature & humidity.

The slab can be washed up to 16 hours later, however, this is totally dependent upon the concrete mixture and ambient temperatures as well as job site conditions and the washing procedures used.

Use a power washer with about 1500 PSI and a 25-degree fan nozzle, do not get too close to the slab as you will leave deeper marks the closer you get. Try washing from about 6-10 inches (152-254 mm) away.

If removing Top-Cast early the surface maybe removed by use a stiff bristle brush/broom and a garden hose. Wash until clear water runs from the surface.

The Top-Cast surface may also be removed using a buffer and scouring pad with a clear water rinse following. This is particularly useful on the lightest grades of Top-Cast.

Placing and finishing guidelines for exposing aggregates 1/4" to 3/8" (6mm to 10mm)



Top-Cast 50

These mix designs will typically contain approximately a 50/50 ratio of coarse aggregate to fine aggregate.

Concrete should be placed between 4 inches to 5 inches (102 mm to 127 mm) in slump.

Finishing for this level of exposure should be very similar to broomed concrete.

When surface is smooth, free of bird baths and firm enough to normally be broomed, apply the Top-Cast.

Top-Cast must be applied prior to losing surface moisture; look for a surface that you can wipe your hand across to feel and see moisture. This is the key time of the process. **Do not wait too long, early application is far better than too late.**

Concrete surface must be free of trowel marks or they will show up after surface removal.

Apply Top-Cast approximately 200-300 sq. ft. gal (4.9–7.4 sq m /L). Ensure that full coverage is achieved.

For this level of exposure, one would typically be using Top-Cast 25, 50 or 75 depending on aggregate size and desired look.

Apply Top-Cast with commercial grade “Hudson or Chapin” sprayers. Adjustable or fan tip nozzles can be used (.3 or .5 GPM).

The Top-Cast will dry on the surface in about 1–2 hours after application depending on ambient temperature and humidity, Top-Cast provides good protection against intermittent rain.

Once Top-Cast is applied, it is not necessary to cover with plastic unless rainfall is expected before Top-Cast is completely dry or heavy downpours are in the forecast.

You may also place tarps over the slab to maintain heat in cooler temperatures as well as protect from standing rainwater. We would advise if you are tarping with insulated tarps, to first cover with plastic to protect from drag marks.

Top-Cast **must not** be removed before underlying concrete has sufficient set to withstand washing by method used for Top-Cast removal.

Methods used for Top-Cast removal are typically stiff bristle brooms and water hoses, power washers, or commercial floor scrubbers in conjunction with water hoses.

The concrete surface must be adequately hard to resist the cleaning process. Generally, wash the slab 12 to 16 hours later, depending on temperature & humidity. The slab can be washed up to 16 hours later, this is totally dependent upon the mix design and ambient temperatures as well

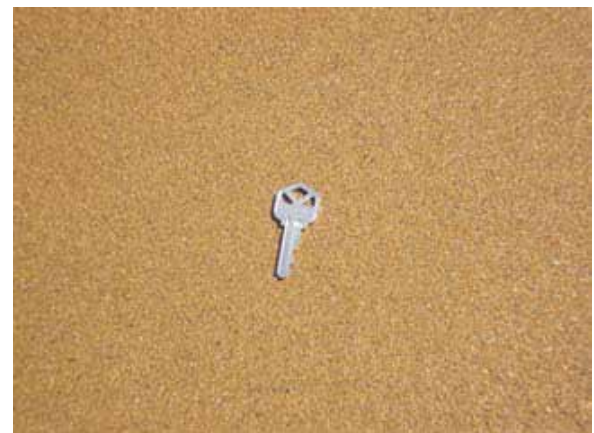
as job site conditions and the washing procedures used.

Use a power washer with about 1500 PSI and a 25-degree fan nozzle, do not get too close to the slab as you will leave deeper marks the closer you get. Try washing from about 6-10 inches (152-254 mm) away.

If removing Top-Cast early the surface maybe removed by use a stiff bristle brush/broom and a garden hose. Wash until clear water runs from the surface.

The Top-Cast surface may also be removed using a buffer and scouring pad with a clear water rinse following. This is particularly useful on the lightest grades of Top-Cast.

Placing and finishing guidelines for exposing aggregates smaller than 1/4" (6mm). These may be referred to as “Micro-Exposed”



Top-Cast 05

Mix designs should be heavy on sand contents (60/40). Coarse aggregate should be 3/4" (19 mm) in size if possible. The larger the aggregate, the easier it is to work the stone down from the surface. Avoid small coarse aggregate if possible.

Concrete should be placed between 4.5 inches to 5.5 inches (114 mm to 140 mm) in slump.

Screed FLAT, this is very important particularly for the Micro Finishes (01–05).

Concrete should be rolled with roller tamper to ensure that coarse aggregate is pushed down from the surface.



Rolling with tamper should be immediately followed with bull-floating. If possible, and for best results, concrete should be bull-floated in both directions.

Remember, the objective when finishing this type of concrete is to get the stone down and away from the surface.

There shall be no trowel, edger or jointer ridge marks on the surface. If ridge marks are visible on the surface prior to application of Top-Cast, then they will show on the final surface after Top-Cast removal.

Concrete should be floated and then troweled to level and smooth surface, additional passes with a steel trowel tightens the surface. The big point now is to make sure that no “Bird Baths” or dips in the final surface show up.

Apply Top-Cast approximately 200-300 sq. ft. gal (4.9–7.4 sq m /L). Ensure that full coverage is achieved.

Apply the Top-Cast as soon as the finisher comes off the slab with their skates or kneeboards.

Moisture is needed in the top surface of the slab to react with the Top-Cast. Look for a surface that you can wipe your hand across to feel and see moisture. This is the key time of the process. **Do not wait too long, early application is far better than too late.**

For this level of exposure, one would normally be using either Top-Cast 01, 03 or 05 depending on desired look. (See Top-Cast brochure for chart.)

Top-Cast **must not** be removed before underlying concrete has sufficient set to withstand washing by method used for Top-Cast removal.

Methods used for Top-Cast removal are typically stiff bristle brooms and water hoses, power washers, or commercial floor scrubbers in conjunction with water hoses.

You can begin washing the retarded surface off in a little as 4 hours, depending on temperature & humidity. The concrete surface must be adequately hard to resist the cleaning process. Generally, wash the slab 12 to 16 hours later. The slab can be washed up to 16 hours later, this is totally dependent upon the mix design and ambient temperatures as well as job site conditions and the washing procedures used.

Use a power washer with about 1500 PSI and a 25-degree fan nozzle, do not get too close to the slab as you will leave deeper marks the closer you get. Try washing from about 6 to 10 inches (152-254 mm) away.

If removing Top-Cast early the surface maybe removed by use a stiff bristle brush/broom and a garden hose. Wash until clear water runs from the surface.

The Top-Cast surface may also be removed using a buffer and scouring pad with a clear water rinse following. This is particularly useful on the lightest grades of Top-Cast.

Common mistakes or issues when using Top-Cast:

Applying the product too late without sufficient surface moisture being present.

Not achieving full coverage when applying.

Not using the proper sprayers. Cheap is not better or sufficient!

Using wrong mix designs for desired look.

Not having enough finishers to complete necessary finishing work in time to apply Top-Cast at the right time.

Removal issues are commonly caused by late application, not waiting too long to remove.

Waiting too long to wash off in hot weather.

Stones showing on the edges of micro-exposed surfaces. This is normally caused by floating out edger marks with float parallel to the form. After edging the first time, floats should be used to swipe paste back over the edge of the form. This is done by placing float onto concrete surface about 6" to 10" (152-254 mm) out from the form at a 45-degree angle to the form and swiping back to the edge. Float should be kept flat while doing this procedure.

Exposed aggregate concrete looks best when enhanced with integral color, thus showcasing color and aggregate! Great looking exposed aggregate jobs are the result of the right mix design, the right placing and finishing techniques, a high quality surface retarder that will give you a consistent depth of etch, and the amount of detail in washing and cleaning the slab. Information in this document is intended as a guide. Actual mix designs, finishing and job conditions will impact final outcome.

Only "Non-Absorbent" materials shall be used. Absorbent materials such as wood can leave dark spots in the concrete. If impressions are left in fresh concrete by knee boards, impressions should be properly repaired before applying Top-Cast.