CEMSTONE®

CURING & SEALING GUIDELINES

THE BENEFITS OF PROPERLY CURED CONCRETE ARE SIGNIFICANT - CURING IS CRITICAL

Curing is a critical process that directly enhances the surface durability and lifespan of concrete.
According to the American Concrete Institute (ACI) 308 Curing of Concrete Guide, curing involves maintaining adequate moisture and temperature in freshly placed concrete to support proper hydration.

EFFECTIVE CURING ENSURES:

- **Maximized hydration:** Adequate moisture supports optimal cementitious material hydration, improving strength, abrasion resistance, and overall density.
- **Improved durability and service life:** Proper curing increases surface durability and helps concrete withstand environmental stresses.
- **Lower permeability:** Well-cured concrete resists water penetration and chemical intrusion.

CURING IMPACTS AND CONSEQUENCES:

- **Proper curing:** Protects concrete from low humidity, drying winds, and temperature fluctuations.
- **Improper curing:** May lead to shrinkage cracking, scaling, mortar flaking, and other surface defects.
- **Weather and environment affect curing:** Consult Cemstone's Cold Weather and Hot Weather Guides for additional curing information.

THERE ARE TWO STAGES OF CURING

Curing is necessary from placement through final finishing and is carried out in two distinct phases: initial/intermediate curing and final curing.

STAGE 1: INITIAL/INTERMEDIATE CURING

According to ACI, curing measures, including both initial/intermediate curing, should **begin as soon as the concrete is at risk of drying** in a way that could damage the surface or hinder the development of required properties.

During this stage, **maintaining adequate moisture and temperature ensures that hydration continues**, supporting early strength development and preventing surface drying. Initial and intermediate curing become especially important in conditions that promote rapid evaporation, such as high temperatures, low humidity, or strong winds.

WHY THIS STAGE MATTERS

- **Moisture retention:** Prevents surface drying needed for hydration.
- **Strength:** Supports long-term strength and durability.

INITIAL AND INTERMEDIATE CURING METHODS

- **Evaporation retarders:** Are monomolecular films used to reduce rapid moisture loss of fresh concrete.
- **Fogging:** Continuously sprinkle water on the concrete surface to sustain moisture levels.

CAUTION - Evaporation retarders and water from fogging are NOT to be finished into the concrete and not considered final curing.

STAGE 2: FINAL CURING - OCCURS AFTER FINAL FINISHING

The American Concrete Institute defines final curing as a deliberate action taken between final finishing and termination of curing to reduce the loss of water from the surface of the concrete and control the temperature of the concrete. Ideally this is accomplished with wet curing. When wet curing isn't practical, use a film-forming compound to stop moisture loss so cementitious material hydration can continue.

FINAL CURING METHODS:

Wet curing guidelines:

- Use new wet curing blankets
- Use fresh, clean water.
- Water temperature should be within 20° F of the concrete temperature.
- Avoid wet and dry cycles.

Film-forming compound curing guidelines:

- Use products that meet ASTM C309 or C1315.
- Do not use where new concrete or other materials must bond to the concrete.
- Apply immediately after final finishing.
- Use clean spray nozzles and keep them close for an even film and correct application rate.

Single use wet curing blanket used during final curing

INCREASE SURFACE WORKABILITY

TENON® TROWEL ICE FINISHING AID

Tenon Trowel Ice is a reactive, colloidal silicate densifier that lubricates freshly placed concrete, prolonging workability in adverse conditions, such as high wind, low humidity, or high ambient temperatures. Trowel Ice should be applied evenly across the concrete surface and immediately followed by surface finishing.

Learn more about working in high ambient temperatures in Cemstone's Hot Weather Concrete Guide at Cemstone.com.

Always consult the manufacturer's instructions

28 DAYS AFTER THE CONCRETE IS CURED, WE RECOMMEND SEALING

Concrete should be sealed after it has cured for a minimum of 28 days. A quality sealer protects appearance and durability by blocking moisture and contaminants such as deicing chemicals from entering the concrete. Because sealers wear down from traffic and weather, exterior surfaces like driveways, patios, walkways, and pool decks should be resealed according to the manufacturer's instructions to maintain long-term performance and curb appeal.

WHAT TYPE OF SEALER DO I NEED?

Before choosing a sealer, confirm if anything was applied during curing or if the concrete has any prior sealing. Sealers aren't always compatible.

FILM-FORMING SEALERS

Film-forming (also known as membrane-forming) concrete sealers **form a protective film** on the surface. Each product provides a different finish and surface effect.

- Available in solvent- or water-based formulas.
- Ideal for decorative stamped or colored concrete and pool decks.
- Enhances the concrete color.
- Easy to apply with a sprayer or roller.

PENETRATING SEALERS

Penetrating sealers **create a barrier** on the concrete. They saturate and absorb into the surface providing lasting protection against moisture and deicing chemicals.

- Available in solvent- or water-based formulas.
- Best for broom-finished concrete (driveways, sidewalks, patios).
- Chemically bond within the pores for long-term protection against deicers, water, and freeze-thaw damage.
- These recommended penetrating sealers are breathable, and result in a non-yellowing, natural finish.
- Easy to apply with a sprayer and a roller.

NOTE: Penetrating sealers are not be used when a film-forming curing compound or if a sealer is still present on the concrete surface.

Water beading effect of Siloxane Sealer and Salt Barrier

WE RECOMMEND THESE SEALERS

FILM-FORMING SEALERS

Cure & Seal:
- Can be used for both curing concrete and sealing concrete in separate applications.
- Satin finish.

Super Clear Coat:
- A good choice for sealing decorative concrete.
- Clear gloss finish.

Super Diamond Glaze LV:
- Color enhancing, non-yellowing.
- Easy spray or roller application.
- High gloss "wet look" finish.

Cure & Seal

Super Clear Coat

Super Diamond Glaze LV

CURING & SEALING COMPOUND SELECTION GUIDE

Click here

PENETRATING SEALERS

Siloxane Sealer:
- Offers increased protection against freeze-thaw cycles.
- Has a water beading effect.
- Vertical application.
- Matte finish.

Siloxane Final Seal:
- Compatible with cured surfaces and previous sealer application.
- Offers increased protection against freeze-thaw cycles.
- Has a water beading effect.
- Matte finish.

100% Silane Sealer:
- Penetrates deep into the surface.
- Natural matte finish.

Salt Barrier:
- Protects against areas prone to salt damage.
- Has a water beading effect.
- Horizontal application.
- Clear sheen finish.

Siloxane Sealer

Siloxane Final Seal

100% Silane Sealer

Salt Barrier

Always consult the manufacturer's instructions

COMMONLY ASKED CURING & SEALING QUESTIONS

WHY SHOULD I CURE?

Because of how modern concrete mixtures behave, each curing phase—initial/intermediate and final—plays a critical role in concrete performance. See page 2 for more information.

DOES IT MATTER WHEN I APPLY A CURING COMPOUND?

Yes. Curing compounds should be applied immediately after final finishing/brooming. Applying a curing compound too late (when the surface has dried out) is ineffective.

ARE CURING AND SEALING THE SAME THING?

No. Curing and sealing are two distinct steps.

- **Curing occurs during placement and immediately after finishing.** Its purpose is to maintain adequate moisture in the concrete so it can properly hydrate, gain strength, and minimize cracking.
- **Sealing typically takes place at least 28 days after curing**, once the concrete has reached sufficient strength. Sealing helps protect the surface from moisture, stains, and wear.
- **Note:** If a Cure & Seal compound was used to cure the concrete, a separate application will need to be reapplied at least 28 days after placement to seal the concrete.

HOW SHOULD I PREPARE MY CONCRETE SURFACE?

- In most cases, concrete can be cleaned with mild soapy water and a brush.
- For heavily soiled areas you may need to use a pressure washer and concrete cleaner.
- Sealer performs best when applied to a clean and dry surface.
- Apply sealer when the surface temperature is between 50°F and 80°F.
- Drastic changes in the ambient temperature or application in direct sunlight may cause sealer to bubble.

HOW DO I DETERMINE HOW MUCH SEALER TO USE?

- Calculate the area of the concrete by multiplying the length by the width.
- Film-forming sealers cover 300-500 ft^2 per gallon (per coat).
- Penetrating sealers cover 150-200 ft^2 per gallon (per coat).
- Refer to the manufacturers recommendations for best practices.

WILL A SEALER AFFECT THE APPEARANCE OF MY CONCRETE?

Sealer may alter the appearance of concrete.

- For more information, see page 5, visit a Cemstone Supply location, or contact your local Cemstone Supply representative (see back).
- Always test sealer on a small inconspicuous area before application.

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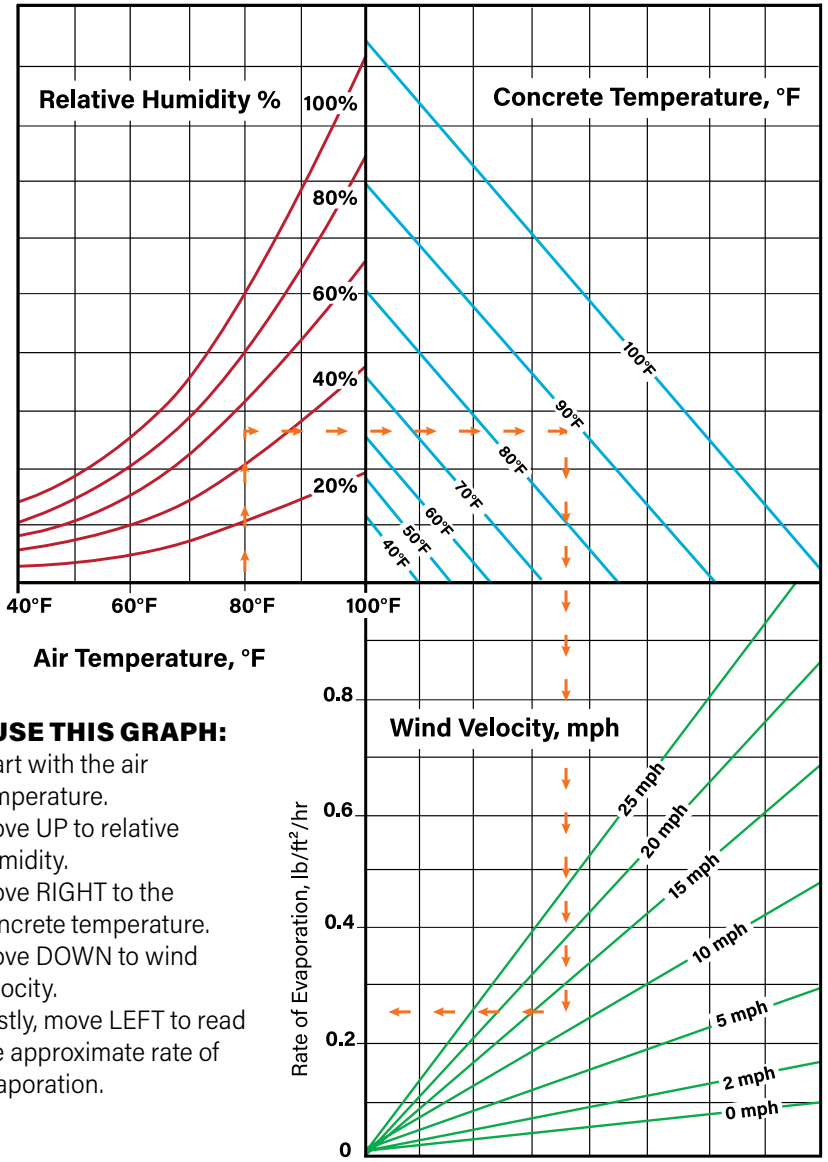
RATE OF EVAPORATION CHART

One or a combination of the following can lead to surface drying and plastic-shrinkage cracking:

High air temperature	High concrete temperature	High wind velocity	Low humidity



TO USE THIS GRAPH:

1. Start with the air temperature.
2. Move UP to relative humidity.
3. Move RIGHT to the concrete temperature.
4. Move DOWN to wind velocity.
5. Lastly, move LEFT to read the approximate rate of evaporation.

If the evaporation rate is 0.2 lb/ft²/hr or greater, take EXTREME CAUTION. An evaporation rate of 0.2 lb/ft²/hr equals the loss of a 1 mm layer of water per 1 ft²/hr.

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CONCRETE - HARDSCAPES - MASONRY
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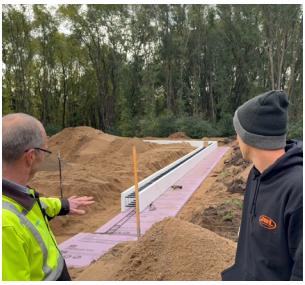
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Find Cemstone Supply Express locations online.

ADDITIONAL INFORMATION

Refer to Cemstone's Hot Weather Concrete Guide and Cold Weather Concrete Guide for recommended best practices during these seasons. Additional resources include:

- **Aggregate and Ready Mix Association of Minnesota (ARM)** | armofmn.com
- **Wisconsin Ready Mixed Concrete Association (WRMCA)** | wrmca.com
- **Iowa Ready Mixed Concrete Association (IRMCA)** | concretestate.org
- **Concrete Network** | concretenetwork.com
- **American Concrete Institute ACI-305 Hot Weather Concreting** | concrete.org
- **CIP12 – Hot Weather Concreting** | nrmca.org
- **American Cement Association** | cement.org