DURÁVEL®
Products for Professionals

TCO™

Thin Concrete Overlay

BAG MIXES

Technical Data

Durável TCO is a highly flexible micro-topping overlay used for interior and exterior projects. It can be applied to both horizontal and vertical concrete surfaces.

Durável TCO is available in white and grey base formulas. It can be used to create a fresh, flat surface or a unique texture over old, worn, or tired concrete. The material can be integrally colored with Overlay Color Packs, with 25 color options available. Additional color and natural variation can be created with In-Fluence stains.

Durável TCO is a heavy-duty decorative cement overlay system designed to improve the appearance of both old and new concrete. It is engineered for high compressive strength, durability, adhesion, flexibility, and ease of use. Durável TCO is a single-component, add-water-only, Portland-limestone cement-based material. It is self-bonding and can be colored in the field. It is applied with standard concrete tools such as metal squeegees and hand trowels. Textures can be created using trowels, squeegees, brooms, brushes, and sponges.

Finish options include smooth, stenciled, wood finish, Venetian plaster, stippled, slate, and many others. Durável TCO is suitable for residential and light commercial traffic.

Typical Uses:

- **Smooth, Stencil, and Grout Designs**
- **Wood Look and Slate Texture**
- **Venetian Plaster**
- **Fresh Stain-Ready Canvas**

Product Advantages :

- **High Strength, Flexibility, and Bond**
- **Range of Color and Texture Options**
- **Resists Freeze-Thaw Cycling**
- **Interior, Exterior, and Vertical Applications**

40 lb (18.1 kg) bags (approx. 0.40 CF)

White and Gray Formulas

Water Demand 4.0 to 5.5 Qt

Pot Life 30 minutes (70 deg F)
Initial Set 2 to 6 hours
Full Cure 28 days

Application range 45 to 90 deg. F

Coverage:

Durável TCO is designed to be applied in a thin layer. After the concrete has been properly profiled and prepared, any major damage such as spalling, pits, or deep defects should be filled first with a base coat of Durável TRO. Refer to the Durável TRO Technical Data Sheet for more information.

Coverage will vary depending on the final texture. Detailed or heavy texture coats may cover about 100 square feet per bag. Smooth, fine finishes may cover up to 300 square feet per bag.

FOR PROFESSIONAL USE ONLY

Directions for Use:

Substrate Preparation:

SOUND: Concrete that is failing because of poor placement or severe environmental damage should be replaced, not repaired. Cracks and joints should always be considered moving areas. They may continue to move after the overlay or repair mortar is installed, which can cause the repair or overlay to crack.

Expansion and contraction joints must always be honored because they allow movement in the concrete slab. Do not cover or fill them with repair mortar. Large holes and deep divots should be filled in layers, also called lifts. Flexible joint sealant should only be installed after the repair mortar has been placed and fully cured. Before the project begins, explain this to the client so they understand what to expect. When the repair mortar is properly bonded, it will move with the concrete underneath it.

CURED: All concrete must be cured long enough for proper hydration. The recommended cure time is 28 days, depending on temperature and humidity. Concrete may cure faster or slower based on jobsite conditions. Always make sure the concrete is properly cured before applying repair mortar or coatings.

CLEAN: Surfaces must be clean and able to absorb water before they are filled or repaired. Remove all contaminants from the surface, including dust, dirt, oil, grease, paint, glue, sealers, curing compounds, release agents, efflorescence, chemicals, rust, or algae. If grinding is used for surface preparation, clean the concrete first. This helps prevent contaminants from being pushed deeper into the concrete during grinding. After grinding or any other mechanical preparation, clean the surface completely and remove all dust.

PROFILED: Acid etching should not be used on smooth or power-troweled concrete surfaces. Perform a water drop test to make sure the concrete is porous enough. Water should quickly soak into the surface and darken the concrete. If the water beads on the surface for more than 15 seconds, the concrete is not porous enough. It must be mechanically profiled by shot blasting or diamond grinding. For proper bonding, the concrete surface must be prepared to a CSP-2 or CSP-3 profile.

ENVIRONMENTAL CONDITIONS: The substrate temperature during application and curing must be between 45°F and 90°F (7°C and 32°C). Excessive wind and/or direct sun exposure may adversely affect hydration and curing. Schedule exterior applications to protect the mortar from rain for a minimum of two hours after application has been completed.

VERTICAL APPLICATIONS: The same surface preparation requirements used for horizontal concrete also apply to vertical concrete. Before application, the surface must be fully cured, structurally sound, clean, and porous. After cleaning, apply ECP diluted 2:1 with water, rinse thoroughly.

NON-POROUS VERTICAL SURFACES, NON-CONCRETE VERTICAL SUBSTRATES, AND WALLS WITH SEAMS: These surfaces must be prepared with a liquid-applied, bonded waterproofing and crack-isolation membrane before applying TCO. The membrane must meet ANSI A118.10 and ANSI A118.12, such as Custom RedGard®. Perform a bond test with the selected membrane material and TCO before beginning the project.

This applies to drywall, cement backer board, existing tile, and previously painted or coated walls.

Painted or coated walls must be sound, with no peeling, flaking, or loose material. Sand the entire surface to degloss it, then clean thoroughly to remove all dust and residue before applying the membrane.

Refer to the membrane manufacturer's Technical Data Sheet to confirm the correct surface preparation requirements before coating.

Reinforcing fabric is required at all board seams, inside corners, changes of plane, and cracks, even if the membrane manufacturer lists fabric as optional. This helps stabilize the TCO and reduces cracking along seams.

Use an alkali-resistant fiberglass reinforcing fabric that is at least 6 inches wide and is the type recommended by the membrane manufacturer.

Do not bridge expansion joints, control joints, or other movement joints. These joints must continue through the membrane and the TCO finish. Seal them with an appropriate flexible sealant.

1. Apply a coat of membrane over each seam, corner, or crack.

2. Embed the reinforcing fabric into the wet membrane and press it firmly into place with a trowel.

3. After the seams are dry, roll two thin, even coats of membrane over the entire surface to be coated. For added adhesion, kiln-dried sand, 20/40 mesh, may be broadcast into the final coat while it is still wet. Once dry, brush off any loose sand.

4. Allow the membrane to dry completely, following the manufacturer's instructions, before applying TCO.

Mixing Instructions:

Mix one bag at a time in a clean 5-gallon pail using a helical mixing blade. Add 4.0 to 5.5 quarts of water per bag. Water demand may change depending on temperature, humidity, and application method.

For best results and longest working time, use clean, cold water. Run hot water out of hoses before use, or fill buckets at the beginning of the day so all mixes are the same temperature. Keep bags cool and out of direct sunlight. Always measure the water into the mixing pail first so each batch is consistent. When using an Overlay Color Pack, add the color pack to the water first and mix it thoroughly before adding the bagged material.

While mixing slowly, add the bag contents into the pail. Blend until the material is smooth and free of lumps. As you mix, scrape the sides and bottom of the pail to make sure all dry material is fully blended in. Once all powder is wet, continue mixing for 2 minutes to fully blend the product.

Apply the mixed material promptly. When possible, keep it out of direct sunlight to help extend working time. If the product stiffens in the bucket, mix it again with the drill and mixing blade. Do not add more water. If mixing it again does not make it workable, discard the material.

Tinting Instructions:

Durável TCO is available in both white and gray base formulas. The Standard Color Chart shows colors based on using Durável TCO-W, the white base.

When using an Overlay Color Pack, add one color pack to the mix water and blend thoroughly before adding the bagged mix material.

Application Instructions:

Pre-wet the concrete surface to Saturated Surface Damp, also called SSD. This means the concrete should be damp, but there should not be standing water on the surface. Continue wetting the surface as needed during application so it does not dry out too quickly.

Pour the mixed Durável TCO directly onto the prepared concrete in ribbons across the immediate work area. Spread it evenly using trowels and/or squeegees. Under normal conditions, the mixed material has about a 30-minute pot life, so the entire bucket does not need to be poured out at once.

Do not use Durável TCO in areas that will stay permanently underwater.

Vertical Application:

Mix TCO according to the Mixing Instructions above.

For vertical applications, start at the low end of the water range listed on the bag, 4 quarts per bag, and add more water only as needed to reach the desired working consistency.

Concrete wall surfaces must be Saturated Surface Damp (SSD) at the time of application. The surface should be damp, but with no standing water.

Walls that have been treated with a liquid-applied membrane do not need to be dampened.

Apply TCO with a hawk and trowel. Small amounts may also be loaded onto the trowel with a putty knife.

Begin at the top of the wall and at one side edge. Work down and across the surface. Use firm trowel pressure to create a flat, uniform base coat.

Allow the base coat to dry completely. Before applying the texture coat, dampen the base coat to SSD.

Texture techniques will vary depending on the desired look and finish. For an organic, variegated appearance, mist In-Fluence stains onto the surface as the texture coat is nearly complete, then trowel the stains into the surface.

After the surface is completely dry, sealing is required.

Tips and Precautions:

Staging Area – Set up a staging area next to the work space. Use this area to change into clean shoes or spike shoes before walking on the prepared surface. This helps prevent dirt, dust, or other contaminants from being tracked onto the clean concrete.

Mixing Location – Set up the mixing station in a shaded area whenever possible. This is better for both the product and the installer. Keep bags out of direct sunlight so they do not get too hot. Hot material can cause the same problems as using hot water, such as reduced working time. Use shade from trees, buildings, or a pop-up tent when available. Do not mix in the middle of a hot concrete or asphalt surface. In cooler weather, the bags may be placed in the sun before mixing to help warm the material. This can help the product dry faster after it is placed on the concrete.

Surface Temperatures – Working on the correct concrete temperature is critical for a successful installation. Most

overlays and repair mortars should be applied when the substrate temperature is between 50°F and 90°F. This means the temperature of the concrete, not the air. These products need time to soak into the porous concrete surface and create a strong chemical and mechanical bond. When the concrete surface is above 90°F, the product can set and dry too quickly. If it dries too fast, it may not have enough time to bond properly, which can lead to early failure. On hot days, start work early and stop when the concrete becomes too hot. In cooler weather, the concrete temperature can drop below 50°F. Cold concrete can hold too much moisture and may prevent the overlay or repair mortar from soaking in and bonding properly. If the product does not fully dry before the sun sets, freezing temperatures or frost can cause the coating to freeze and fail. When working in cooler temperatures, wait until the concrete temperature is rising above 50°F. Stop work early enough so the product can fully dry before the air temperature drops below freezing.

Water Temperature – Consistent water temperature is important for a successful installation. One common mistake is using water from a hose that has been sitting in the sun. The water inside the hose can become very hot. Hot water will greatly reduce working time and may cause the product to start setting up in the bucket. Before using hose water, run the water for about 60 seconds to help bring it to a consistent temperature. A good practice is to fill several clean buckets with water before the installation begins. This helps avoid using hot hose water during the job. Using bucket water that is all near the same temperature helps keep each mix consistent.

Measure Water Accurately – Use a graduated measuring container to make sure the same amount of water is used in every batch. Consistent water measurement helps keep the mix and color consistent from batch to batch. Measure the water on a level surface. A bucket turned upside down can work as a flat surface if needed. Measure in the same place and in the same way each time. For even better consistency, make a dedicated measuring pail. Cut a drain hole in the side of a 5-gallon pail at the correct water level. This makes it much harder to add too much water to the mix.

Proper Mixing – The best tool for mixing cement overlays and repair mortars is a helical mixing paddle attached to a 1/2-inch drill or a two-handled mortar mixer. Always add the measured water to the mixing bucket first. If an Overlay Color Pack is being used, add it to the water and blend it before adding the bagged mix. A strong mixer should be able to wet out a full bag in less than one minute. Once the powder is fully wet, scrape the sides and bottom of the bucket with the mixing paddle or a margin trowel. This helps loosen any dry material stuck to the bucket. After that, continue mixing for 2 more minutes to make sure all components are fully blended.

SSD Means Saturated, Surface Damp – When applying a mix with a trowel or squeegee, the concrete surface must be SSD. This means the concrete should be damp and saturated, but there should not be puddles on the surface. If the surface looks shiny, it is too wet. If the surface starts to lighten in color, it is too dry and more water should be applied. A good practice is to fully wet the concrete with a hose and spray nozzle before applying the product. If puddles form, use a squeegee to spread the water out. Keep a pump sprayer nearby during the installation and continue to dampen the surface as needed. Maintaining SSD helps the coating bond properly. It also helps prevent the mix from drying too quickly or balling up under the tools.

Do Not Add Water – After the mix is blended and you have started placing it on the surface, do not add more water if it becomes stiff in the bucket. Adding water after the chemical reaction has started can speed up hardening and may weaken the product. If you mix a bag and immediately see that more water is needed, that is the correct time to add it. Do not wait until the product has already been used for a while. If the mix starts to stiffen in the bucket, spin it again with the mixing paddle. This may loosen the material and give you a little more working time. If the mix stays stiff, discard it and mix a new bag. Do not force material that has started to set onto the surface.

Application – Only pour out what can be used on the surface within 2 to 3 minutes. Unlike epoxy, cement overlay products can stay in the mixing bucket while you work. You do not need to pour the entire bucket out at once. Putting too much material on the ground at one time can cause it to be worked too much. As the wet overlay or repair mortar is pulled

across the surface, it begins to soak into the concrete. If too much material is placed at once, it may get moved back and forth too many times. When this happens, the mix can turn into a paste that is mostly aggregate. If this occurs, remove the paste from the surface. Do not add water!

Clean Up:

Clean tools and mixing vessels with water. Capture runoff as necessary to protect downstream surfaces. Remove wet material from adjacent surfaces before it dries. Dried material may be loosened with Concrete Eraser or light acids; test an inconspicuous spot to ensure that the surface is not damaged by the cleaning process.

Maintenance:

Durável TCO must be finished and protected with an acrylic sealer, polyurethane, epoxy, or polyaspartic. Follow the maintenance interval instructions for the selected top coat listed on its TDS.

Cured Physical Properties:

The concrete industry switched from Portland Cement to Portland Limestone Cement (ie Type IL) in late 2022. All Durável cementitious mixes are formulated with PLC, and all data listed is from tests performed on current formulas. Use caution when comparing performance data to other products that may be out of date. See https://www.duravel.com/portland-cement-now-portland-limestone-cement-plc/ for more information about PLC.

Initial Set: ASTM C-266, 120 to 150 minutes (varies with temperature)

Final Set: ASTM C-266, 150 to 180 minutes (varies with temperature)

Compressive Strength: ASTM C-109, 4380 psi at 7 days (30,199 kPa)

Flexural Strength: ASTM C-580, 1680 psi at 7 days (11,583 kPa)

Tensile Bond Strength: ASTM C-1583, 298 psi at 7 days (substrate failure)

Abrasion Resistance: ASTM 4060, at 7 days 2.2g loss

Freeze-Thaw Cycling: ASTM C-666M, 50 cycles PASS

Slip Resistance Disclaimer:

Notice: The Occupational Safety and Health Administration (OSHA) and the American Disabilities Act (ADA) have set enforceable standards for slip-fall protection on walking surfaces. The ADA standards are the more stringent and require a minimum coefficient of friction (CoF) on level walking surfaces of 0.6 and on ramped walking surfaces of 0.8. The system applicator/ end user assumes all responsibility to provide a flooring system that meets all current safety standards. Neither Durável nor its selling agents will be responsible for any injury that may be incurred in a slip-fall accident. Furthermore, Durável recommends the use of slip-resistant aggregate in all coatings or floor systems that could possibly be exposed to wet conditions or become contaminated with oils, grease, or other potential lubricants.

Storage:

Store in a well-ventilated place. Keep container tightly closed. Store locked up. Protect from moisture.

Disposal:

Recycle and/or dispose of contents and containers in accordance with local, regional, national, and international regulations.

Shelf Life:

Up to one year from original manufacture date when stored in its original, unopened container at room temperature. May be extended with reasonable care.

Limitations:

This product is not intended for public use and is intended for use by qualified contractors and installers with proper experience and training in the use of these products, and that have read the complete safety data sheet. Apply product only when substrate and ambient temperatures are within the accepted range.

Warranty:

IMPORTANT!

Before using any Durável product, read and understand its accompanying Safety Data Sheet & Application Instructions for important safety information.

STANDARD TERMS AND CONDITIONS OF SALE, INCLUDING STANDARD WARRANTY APPLY – VISIT Durável.com FOR THE LATEST VERSION.

Disclaimer:

The information contained herein is believed to be accurate but is not warranted to be so. Data and calculations are based on information furnished by the manufacturer of the product and manufacturers of the components of the product. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. Durável assumes no responsibility for injury to vendee or third party person proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Furthermore, Durável assumes no responsibility for injury caused by abnormal use of this material even if reasonable safety precautions are followed.

Safety Instructions:

For Professional Use Only

Keep Out of Reach of Children and Animals

Causes severe skin burns and eye damage. May cause an allergic skin reaction. Causes serious eye damage. May cause respiratory irritation. May cause cancer by inhalation. Causes damage to lungs through prolonged or repeated exposure by inhalation.

Obtain, read and follow all safety instructions before use. Do not breathe dust/ fume/ gas/ mist/ vapors/ spray. Avoid breathing dust/fume/gas/mist/vapors/spray. Wash hands and exposed skin thoroughly after handling. Wash hands thoroughly after handling. Do not touch eyes. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves/ protective clothing/ eye protection/ face protection.

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN: wash with plenty of water and soap. IF ON SKIN: Take off Immediately all contaminated clothing. Immediately rinse with water for several minutes. If skin irritation or rash occurs: Get medical help. Take off immediately all contaminated clothing and wash it before reuse. Wash contaminated clothing before reuse. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Get emergency medical help immediately. Get medical help if you feel unwell. IF IN EYES: Immediately rinse with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. Get emergency medical help.

PROP65 WARNING: This product contains chemicals known to the state of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov

Always Review SDS & Technical Data Prior to Use