



POLYTOP

A coloured/uncoloured, cementitious topping designed for resurfacing and texturing nonmoving concrete floors.

Description and Uses: Polytop is a trowelable, cementitious topping material that cures to create a hard, abrasion-resistant wear surfaces. It provides durable overlays for concrete where imprinting, texturing, or chemical staining of the surface is desired, and is used to restore existing concrete floors or to correct construction errors. Typical applications include exterior or interior commercial, industrial, and residential areas for new or renovation construction.

Polytop offers many advantages compared to most topping materials, including higher strength, excellent moisture and freeze/thaw resistance, and an attractive colour range. The Polytop material effectively performs at depths from $\frac{1}{8}$ " (3 mm) to $\frac{5}{8}$ " (16 mm) and achieves a compressive strength of approximately 4500 psi (31 MPa) in 28 days, allowing heavier loads without damage. Its superior water resistance permits on-grade or below-grade applications.

For an easy-to-maintain, stain-resistant surface, Polytop must be sealed and periodically maintained with either an acrylic concrete sealer or an epoxy sealer.

Limitations: Polytop is designed for use over nonmoving, structurally sound, properly prepared concrete substrates. Not all substrates are suitable for the installation of Polytop, including concrete that is not fully cured. Polytop surfaces are not designed for use in areas subject to metal-wheeled vehicular traffic. Polytop must not be used in areas subject to hydrostatic pressure, active water leaks, or continuous water immersion. Without specific prior testing, Polytop must not be installed in areas subject to harsh chemicals. Polytop should not be applied to vertical or highly sloped surfaces since it will sag. As with most cementitious products, cracks or joints in the substrate will telegraph through the Polytop topping. The existing substrate joints must be extended up through the full depth of the topping by saw cutting, tooling, or forming.

Polytop must be applied in layers that are at least $\frac{1}{8}$ " (3 mm) in thickness, but do not exceed $\frac{5}{8}$ " (16 mm). If the Polytop topping is to be stamped, the thickness of the topping should be twice the depth or profile of the stamping tool.

For areas where additional topping depth is required, Polytop may be placed in two successive lifts, each having a maximum depth of approximately $\frac{5}{8}$ " (16 mm) for a total maximum depth of 1.5" (38 mm). The Polytop topping must be allowed to harden between the placement of lifts, a minimum of 2 - 4 hours.

Polytop installations must take place when ambient and substrate surface temperatures are between 50°F and 90°F (10-32°C). Optimum temperature for installation is approximately 70°F (21°C). If ambient temperature is expected to drop below 50°F (10°C) during placement or before final set is achieved, a minimum of 48 hours, Polytop must not be installed. For adequate work time and proper curing, installations in direct sunlight or during hot, dry, or windy conditions should be avoided.

The volume of resin added to the Polytop mix must be accurately measured. For proper performance, mixing must be uniform, thorough, and consistent. Over "watering" the mix or overworking the surface will cause craze cracking. Proper mixing cannot be achieved by hand.

Composition and Materials: Polytop is a complex, precisely engineered, polymer-modified cementitious formulation produced by a proprietary manufacturing process. It is a two component topping material containing no calcium chloride.

Colors: Polytop is available in Natural Gray (uncoloured) and White. With sufficient prior notification, custom colours can be designed and are manufactured in batch quantities of approximately 35 bags.

If the topping surface is to be stained with Patina Stain or imprinted and antiqued with Antiquing Release, experimentation is required to produce the proper combination of colours to achieve the desired effect. The Polytop topping may be stained after it is sufficiently cured to walk on, approximately 16 to 24 hours after installation, but less color intensity will develop and durability may decrease if the Patina Stain solution is applied earlier than 14 days after the topping is installed. Application of a chemical stain will highlight imperfections in the topping surface. A job site test section must be prepared to verify and approve the Patina Stain application before the general staining procedure is started.

Sizes: Polytop is available in 50 pound (22.7 kg) bags. The Polytop Resin Concentrate is available in 20 L pails.

Seller warrants that the product described on the face hereof has been manufactured of selected raw materials by skilled technicians. Neither seller nor manufacturer shall be responsible for any claims resulting from the failure to utilize the product in the manner in which it was intended and in accordance with instructions provided for use of product. The only obligation of either the seller or manufacturer shall be to replace any quantity of this product which proved to be defective. Neither seller nor manufacture assumes any liability, loss, or damage resulting from use of this product.

Shelf Life: Under normal conditions and when kept out of direct sunlight, dry, and moisture free, the shelf life of Polytop is at least one year from the date of purchase. Storage should be under roof and off the floor. Inventory should be rotated.

Coverage: The amount of Polytop required will vary depending on depth of installation, substrate surface profile and texture, preparation procedures, specified surface finish, and other conditions. One 50 pound (22.7 kg) bag of Polytop will yield approximately 0.45 ft³ (0.013m³). One bag of Polytop at ¼" thickness will cover approximately 21 ft² (10.5 ft² @ ½") on flat surfaces.

Textures and Slip Resistance: Only uniformly slip resistant finishes, such as broom, sponge float, swirl, light sandblast, or most imprinted finishes should be considered for topping surfaces. When a flat interior floor is required, extra precautions should be taken to insure that the surface is uniformly troweled so that it will not be slippery. A slip-resistant flat-troweled finish is suggested.

Job Site Test Sections: Proper installation and texturing of cement based toppings requires skill and practice. Preparation procedures, ambient and substrate temperatures, mixing, installation, finishing and curing techniques, experience in use of the material, and other factors will each affect the performance of the Polytop topping.

The test section should be of adequate size and configuration to be representative. It should be produced by the same workers who will apply the Polytop material, under the same expected ambient conditions, using the planned surface preparation procedures, mixing, installation, finishing, and curing techniques. Subsequent treatments, such as sandblasting, imprinting, staining, painting, or coating should be tested for suitability under job site conditions.

Substrate Preparation: Surrounding areas and adjacent surfaces should be protected from spills, tracking, and equipment contact. The work area should be roped off and appropriate sections closed to traffic.

The most common cause of topping failure is improper substrate preparation. The concrete substrate must be sound and nonmoving and must be prepared as recommended in International Concrete Repair Institute (ICRI) Guideline Number 03732, Concrete Surface Profile (CSP) between Number 5 and Number 9.

Before installing Polytop, the concrete substrate must be cured fully, a minimum of 28 days. Remove all loose materials, laitance, curing membranes, coatings, floor coverings, dirt, dust, grease, oil, or other contaminants. The cleaning method to be used depends on the condition of the substrate. Failure to remove all contaminants and coatings that impede the adhesion of the Polytop will cause failure of the bond. The use of detergents, soap and water cleaning procedures, or sweeping compounds is not recommended since they leave a film that may cause bonding failure. During cleaning, care should be taken not to damage the appearance of surfaces adjacent to the substrate. The surface of hard troweled or burnished concrete must be roughened by mechanical abrasion.

Priming: Prime concrete floors using the Polytop Resin undiluted and apply at 200 square feet per gallon. Allow primer to dry clear before installing Polytop. Apply within 24 hours of priming. If primer dries hard re-apply primer.

Mix Design: Add 1.75-2 litres of Polytop resin plus 1.75-2 litres of water per 50 pound (22.7 kg) bag of Polytop. The ratio of resin to water is 1 to 1.

Mixing: For measuring, a calibrated container capable of accurate resin and water measurement should be used. To facilitate measurement, the correct amount of mixing liquid per bag can be measured into a plastic bucket. Then a slot can be cut in the bucket at the resulting liquid level, allowing subsequent fillings of the bucket to self adjust to the proper volume.

For mixing on small jobs, Polytop is normally mixed in a 5 gallon (20 L) plastic pail or a 15-30 gallon (60-120 L) plastic container. Proper mixing cannot be achieved by hand. A mixing paddle fitted onto a ½" heavy-duty, drill with a minimum 650 rpm should be used. A rotary mixer with a scraper arm may also be used. For mixing on larger jobs, use a mortar mixer similar to that used for brick mortar.

It is important that the components are added in the same sequence, thoroughly power mixed, and that all mixing procedures continue for the specified time. The mixing liquid must be added to the mixer or mixing container first, then the Polytop material. The dry materials must always be added to the mixing liquid. This process must never be reversed. Adding the mixing liquid to the dry materials may cause lumps, hindering the properties of the mixture.

While mixing, the dry ingredients must be added to the mixing liquid slowly and power-mixed until a smooth, uniform, lump-free consistency is reached, a minimum of four minutes.

When mixing in a container, the paddle should be moved up and down and around the sides of the container, but should always remain below the surface of the mixture so that air will not be trapped, causing bubbles in the installed Polytop topping.

Installation: As with most cementitious products, cracks or joints in the substrate will telegraph through the Polytop topping. Since the substrate and topping should move together, all working joints in the substrate must be reproduced in the topping to reduce cracking. Joints may be formed in the plastic topping or saw cut after the material has set. Joints should be full depth, placed precisely over existing joint positions in the substrate, and be as wide or wider than the old joints.

The Polytop material should be installed, as soon as possible after mixing, in depths from ⅛" (3 mm), to a maximum of ⅝" (16 mm). When additional thickness is required, Polytop can be placed in two lifts with a maximum thickness of ⅝" (16 mm) per lift. The first lift should be rough-finished, allowed to cure for approximately 2 - 4 hours, before the second lift is placed.

The Polytop topping must not be retempered. Retempering may cause the cured topping to craze crack. Any topping mixture which has not been installed by the end of its work life must be discarded. Previously mixed material should not be added to newly mixed material.

A sufficient amount of Polytop topping mixture must be used to produce the depth desired after troweling, or screeding, substrate. When using spray application techniques or mixing/pumping units, apply in thin layers and observe the $\frac{5}{8}$ " (16 mm) maximum layer thickness. Use a trowel to level and texture rough areas.

Polytop normally retains sufficient mix water to cure properly under moderate drying conditions. When rapid drying conditions exist, use a fogging spray over the work area during and after installation.

Imprinting: Polytop should be imprinted using a system of mat type imprinting tools such as Texture Mats. Antiquing Release should be used when the imprinted Polytop surface is to have an antiqued appearance. Apply Polytop to a minimum thickness that is at least twice the maximum depth or profile of the stamping tool.

Timing is critical for successful imprinting operations. Polytop mortar should be allowed to stiffen until it is sufficiently rigid to support stamping operations, yet is still plastic enough to imprint properly. Stamping too early will cause the tools to sink too deeply into the Polytop mortar or may cause extrusion of mortar around the tool perimeter. When stamping too late, the diminished plasticity of the Polytop mortar may not provide sufficient detail in the imprinted surface or may cause cracking to occur. Imprinting can normally be done 2-4 hours after placement.

Chemical Staining: If the Polytop surface is to be chemically stained with Patina Stain, experimentation is required to produce the proper combination of colours. The appearance will vary with the time of the Patina Stain application and the Polytop topping color. To achieve the desired effect, lighter Polytop colors are usually preferred. A test section must be prepared to verify and approve suitability and appearance before general staining procedures begin.

The Polytop topping should be sufficiently cured to allow it to become reactive, a minimum of 2 days after installation. If necessary, the surface may be chemically stained as soon as it is sufficiently cured to walk on, approximately 16-24 hours after installation, but colour intensity and durability may be reduced.

Dust, slurry residue, or other contaminants must be removed from the Polytop surface before Patina Stain is applied. Application of the chemical stain will highlight imperfections on the Polytop surface. The chemically stained Polytop surface must be protected from all traffic until it is sealed.

Sealing: Polytop surfaces must be sealed, coated, or painted for ease of maintenance and to protect the surface, using materials that have demonstrated compatibility. Seal or coat as soon as the surface can be walked on, approximately 16-24 hours after installation of the Polytop topping if no acid staining is required.

A two-coat application of acrylic concrete sealer or epoxy sealer should be applied to most Polytop toppings to provide surface protection and improve appearance. Allow a minimum of 72 hours cure time before application of epoxy coating.

Floor Maintenance: Sealed Polytop floors should be maintained by sweeping. Spills should be cleaned up when they occur. Heavily soiled areas may be wet cleaned by mopping or scrubbing with a rotary floor machine equipped with a scrubbing brush and a commercial floor cleaner. For larger areas, walk behind or ride-on scrubbers are efficient and cost effective. For maintaining interior architectural floors or when a higher gloss is desired, use a high gloss non burnishing floor wax and apply as required.

Cautions: Danger! Irritating to eyes and skin. Do not breathe dust. May cause delayed lung injury (silicosis). Contains cement and silica (quartz). Use with adequate ventilation. Wet cement may cause alkali burns. Dust mask (NIOSH/MSHA TC 21 C approved), safety goggles, and gloves are recommended. FIRST AID: Eyes; DO NOT RUB EYES. Immediately flush thoroughly with plenty of water. Skin; Wash thoroughly with soap and water. Remove soiled clothing. Inhalation; Move to fresh air. If symptoms persist or develop, or if ingested, get medical attention. Wash thoroughly immediately after handling. Do not take internally. Keep out of the reach of children. Before using or handling, read the Safety Data Sheet and Warranty.

Warranty: Polytop is warranted to be of uniform quality within manufacturing tolerances. Since the manufacturer has no control over its use, no warranty, expressed or implied is made as to the effect of such use. The sellers and manufacturers obligation under this warranty shall be limited to refunding the purchase price of that portion of the material proven to be defective.

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9525 - 63 Avenue, Edmonton, Alberta T6E 0G2

Ph: (780) 437-6136 ☎ Fax (780) 437-5242

www.conspecindustries.com

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STEP BY STEP MANUAL

SURFACE PREPARATION

Overview: The surface to be coated must be structurally sound and clean. As a rule, always repair unsound substrates before applying materials. The surface must be thoroughly cleaned of oil, grease, dirt, paint, and any loose material or other foreign matter.



A thorough chemical or degreasing may be necessary to remove any carpet or tile adhesives from the floor. After the initial chemical cleaning, a thorough shot blasting or mechanical means of cleaning the floor is highly recommended.

CRACK PREPARATION

Overview: "Vee" out cracks, then fill with an epoxy and chopped fibre. Apply a dry fine sand to saturation over the slightly tacky resin to create a chemical and mechanical bond.



"Vee" out crack $\frac{3}{4}$ " wide by $1\frac{1}{2}$ " deep as a minimum. Pressure wash crack with a high powered pressure washer with tip at bottom of the vee to ensure that the crack is clean and washed to the bottom of the concrete slab. Torch crack to allow faster drying. Use a low modulus epoxy to fill the crack and add chopped fibre. Do not apply to a wet surface. The Concrete **must** be dry for proper adhesion to take place. Seed a fine dry silica sand over the tacky surface to saturation. After drying sweep off excess sand.

PRIMING

Overview: Prime the floor using undiluted Polytop Resin, apply at 200 ft²/gallon. Allow material to dry clear before the application of the Polytop. Do not allow to dry hard. If primer dries reapply primer.



Before application of the Polytop apply primer uniformly over the substrate allow to dry clear.

MIXING

Overview: Add 1.75-2 liters of Polytop Resin Concentrate plus an equal amount of water into the mixing container, then slowly add one 50 lb bag of Polytop to the mix. Thoroughly mix the material to a smooth, uniform, lump-free consistency, for a minimum of 4 minutes. If adding colour, carefully measure each colour to ensure uniform amount of colour is incorporated into each batch of Polytop. Even small variations in colour may cause colour variations in the finished product.



For small jobs Polytop is normally mixed in a 5 gallon plastic pail for one bag at a time or a 15-30 gallon drum where 3 - 4 bags may be mixed at a time. A mixing paddle with a 1/2" heavy duty electric drill with low speed 650 rpm is normally used.

PLACEMENT

Overview: The Polytop should be placed as soon as possible after mixing, in depths from 1/8" (3mm) to a maximum of 5/8" (16mm). If additional thickness is required; then Polytop can be placed in two or more lifts, with each lift being a maximum of 5/8" (16mm) thick.



Polytop should be poured onto the surface and each subsequent pour should be placed in the wet edge to continue the flow of the material on the floor.



Polytop can be placed using a trowel or gauge rake to spread the material over the surface. A spiked roller can be used to remove any minor air bubbles that were created in the mixing of the product. A fresno trowel can be used to lightly finish the surface if desired.

STAMPING

Overview: Polytop can be stamped with texture mats. A concrete release must be used to prevent the mats from sticking to the fresh Polytop. A liquid or power release or combination of both can be used.



ACID STAINING

Overview: Polytop can be acid stained. The Polytop should be sufficiently cured to allow it to become reactive, a minimum of two days after installation. All dust, slurry, and any excess polymer must be scrubbed off the surface prior to staining. The application of the acid stain will highlight imperfections on the Polytop surface. The acid stained surface must be protected from all traffic until it is sealed.



The acid stain may be applied by scrub brush, spray or any other means. Allow the stain to dry completely before scrubbing off and sealing.

SEALING

Overview: Polytop surfaces must be sealed, coated or painted for ease of maintenance and to protect the surface. Sealing or coating of the surface will depend upon the type of sealer used. Acrylic sealers can be installed 16-24 hours after application of the Polytop. Epoxy or urethane coatings may require 3 days cure before application. It is recommended that a floor maintenance finish coat be applied to the sealed surface to enhance and improve the daily maintenance of the new floor.



Epoxy or urethane sealers are normally used for indoor applications. Apply at 100 - 160 square feet per gallon using a low nap roller. Allow to cure for 3 days before application of the floor finish coat.



Polytop can be intergally coloured and/or acid stained. Sawcut can be made to simulate a tile look.



Polytop stamped with a seamless texture mat, sawcut then acid stained.