



Flexstone: System S

Application Instructions

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Preparing for your Flexstone Installation:

Tools & Materials Checklist:

(Flexstone Tools: https://www.flexstones.ca/flexstone-tools/)

Flexstone Coatings products (ensure you have enough)	A minimum of 3 clean 5-gallon pails to mix base
Seam & Poly tapes for Expansion gaps & drip flashings	Variable / low speed drill & special mixing paddles
V-Notch hand or standing Trowel (3/8"-1/2" works)	SHURGRIP Slip-Resistant additive
Disposable brushes for vertical or tight areas (3-4")	Xylene solvent for cleanup
Roller Cage (9.5"/18") & Roller Sleeves (10mm +18mm)	Disposable Nitrile or gloves

Things to know before you start:

- Surface preparation is very important. Failure to properly prep surface could result in poor adhesion.
- Flexstone base adheres to almost any surface: wood, concrete, fiberglass & more (use #3primer where needed).
- Standard or Select Grade plywood works well & saves money No need for G1S and PTD has chemicals.
- If pressure-treated plywood was used, apply #3 Primer-sealer to ensure good adhesion & prevent off-gassing.
- Base Coat does not adhere well to smooth surfaces. Prime or rough up metal flashings with coarse sandpaper (30-40grit).
- When in doubt, use our #3 primer/sealer first or test for adhesion by applying some base coat on a small area.
- Flexstone Base is a one-of-a-kind solvent-free odorless urethane. Use #3 primer/sealer when adhesion is a concern.
- 1 Gallon of mixed base coat (1 Gallon Base to 1 Quart Water) should coat approximately 30 square feet. Use a sheet of plywood as a loose guide to ensure that you do not install too thick or too thin.

Product Overview: System X and System S

System S - Components (approx. 80 mils)

Flexstone #3 Epoxy Primer/Sealer (only if needed) 2:1 Mix (2 Parts A / 1 Part B)

Flexstone TUFF Base Coat (white) 4:1 Mix (4 Parts Base / 1 Part Water)

Flexstone AL Colour Coat – fade resistant top coat 1 Part Urethane (mix thoroughly before applying)

Add SHURGRIP Slip-resistant additive to AL top coat or spread 20-30 Grit Silica Sand over wet top coat.

Flexstone: System X Diagram

<u>System-S</u> consists of 2 layers – Tuff Base and fade resistant UV stable AL Colour Coat (several colour choices) (2-step application process)



Figure 1: System S Components

^{*} For Large areas: Wider V-Notch Base coat applicators are available along with 18" wide roller cages & sleeves*

Surface Preparation:

Cleaning & Preparing your Surface for Flexstone Application:

- Standard or Select grade plywood is preferred G1S is Ok but costs more money & PTD needs to be primed/sealed.
- Coatings do not adhere as well to smooth surfaces so rougher is better. When I doubt use #3 primer/sealer.
- Ensure that the all surfaces are clean (free of dust, debris, oils) and imperfections have been filled with base coat.
- Plywood surfaces do not require priming coated with a smooth sealer avoid PTD with chemicals that can gas off.
- Smooth concrete & metal flashings should be roughed up or primed. If concrete is on grade with trapped water below priming is recommended to avoid possible blisters.
- Use #3 primer/sealer on smooth or contaminated concrete as well as pressure-treated plywood & all smooth surfaces.

Preparing Plywood Surface (5/8"-3/4" T&G is common):

Where "Tongue & Groove" joints do not exist, leave a 1/16" expansion gap between square edges or butt joints.

Use our special 3" adhesive back seam tape over gaps pressing tape in place using a bit of base overtop pressing into and through tape with flat edge of trowel or spatula.

Do not caulk or fill expansion gaps. They need to open & close so they do not buckle. When closed you may see ridges.

When plywood is glued & screwed T & G joints are tight, seam-taping is not needed. When in doubt use seam tape as expanding T & G joints can cause base to sink into gaps.

Ensure all seams are flat and flush with the surface before moving ahead with the base coat.

For knot-holes, large splinters, deep screw holes & recessed areas. Pre-mix a small amount of base coat and smooth over imperfections with a flat trowel or spatula.

Preparing over Concrete, Smooth or Old Coatings:

Ensure that old membranes are well adhered to surface and scrape or grind off loose or peeling areas. For smooth surfaces like concrete or substrates you are not sure of use #3 Primer/Sealer just to be safe. (see specs)

If fiberglass is not stuck down well in some areas, use small ring nails to flatten and secure to the surface. Exterior tiles must be clean & dry. Use #3 Primer/Sealer on smooth tiles to ensure adhesion and to seal grout lines.

Vinyl often shrinks at walls and curls up on lower vertical edge of flashings. Cut up walls and replace outside perimeter drip flashings with new (31 Gauge is OK to use). With thick vinyl where high seams exist, grind them down a bit to minimize their visibility.

When coating over old urethanes, lightly wipe the surface with 'Xylene' soaked rag. This gently dissolves & softens the top layer slightly to ensure good adhesion of new urethane coat.

Preparing the Perimeter IMPORTANT

PREP WORK: Drip Flashings on Outside Perimeter – You only need to coat over the TOP LIP of When water drains off the edge of the deck, install a $2" \times 2"$ drip-edge flashing (30 gauge at most lumber yards).

- Secure Flashings with small flat-head ring nails (like drywall nails) keeping nails 4" 5" apart to prevent flexing in hot sun. Water should drain freely over the drip edge and using a router is not needed as Base coat is thicker than flashings.
- Rough/Scuff up the top of the drip-edge with 30-40 Grit sandpaper to ensure good adhesion of the base coat.
- Once the colour coat, chips and clear coat is applied you do not see where the base coat stopped on top Lip of flashings.

PREP WORK: Seal Vertical Surfaces (walls, posts) - Use brush to push Base up wall if needed (ok if thinner on verticals)

- Flexstone base coat can be thickened with fine powdered rubber or sand for vertical surfaces or filling low spots
- You can also allow base coat to thicken naturally: mix base and wait several minutes until it thickens.
- At vertical surfaces, apply the thickened base-coat up walls under stucco or siding using a brush or trowel. If spaces exist
 at the wall, you can use adhesive seam tape to bridge the gaps. Other coatings are so thin Engineers prefer reinforcing
 at walls even though with Flexstone it is usually not needed. We suggest using the seam tape when inspections are involved.
- Building codes require the membrane to be applied up the wall 6-8" (use of seam tape is preferred as it adds strength)

PREP WORK: Building a Tape-Wall around the Outside Edge

• You want to prevent coating from running over the edges. Use our special strong & easy-release Red Poly perimeter tape (2"x180'). Leave a lip of around 1" above the deck surface as a barrier to prevent materials from leaking over edges.



Preparing your Seams / Installing Seam Tape (plywood applications):

Seam taping is usually Step #1 as it allows base & tape to cure sufficiently so base application can be done later the same day. All wood structures absorb moisture in damp climates and plywood decks all require 1/16" gaps at square edges or butt ends. Before spreading of base coat prepare the expansion gaps with special adhesive backed Flexstone Seam tape preventing product from flowing into the expansion gaps. Properly prepared seams will prevent visible plywood seams (either sunken or proud) from forming on your new deck surface. Expansion gaps allow expansion and contraction of plywood preventing buckling at butt joints.

If the plywood was not glued and screwed to the surface it is recommended you use also seam tape over the T&G joints as they may move and open up causing a recessed trough causing membrane to sink and look different. (Purely a cosmetic issue)

Standard Plywood Seams (includes all Butt-Ends of Tongue & Groove Plywood):

Non-T&G expansion gaps should be taped. Using a combination of one of our approved white seam tapes in conjunction with our base coat, you can effectively bridge gaps and ensure that product will not depress or get pushed out of the seams.

Adhesive Back Seam-Tape (3" x 108')

- Flexstone adhesive back seam tape is a thin absorbent fabric material with an adhesive on one side. This tape is pressed over expansion gaps on clean dust-free plywood. (tape strength not important)
- 2. Once secured pour a small stream of mixed base coat over top of the tape. Use a putty knife or flat edge of the trowel to push the base on to and into the seam tape to ensure that it sticks well to the plywood.
- *Start prep work with seam taping to give the base coat as much time as possible to cure sufficiently before spreading your base coat over the surface and expansion gaps using your V-Notch trowel.



Figure 2: Installing Seam Tape

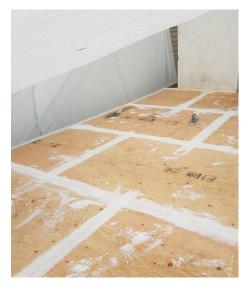


Figure 3: Finished Seam Tape

- 4. Tongue-and-Groove Joints: Tight Tongue and groove plywood joints when Glued & Screwed are designed to accommodate typical expansion and contraction on a deck surface and seam tape is normally not needed. If some joints are not tight you can skim coat some pre-mixed base coat over them with a trowel or putty knife. Allow seams to cure a couple of hours before installing base overtop.
- 5. Seam Taping Wall Transitions: Some projects require reinforcing fabric or scrim on transitions between deck-surfaces and exterior walls. The adhesive-back seam tape can easily be pressed into the vertical and horizontal sections you want to reinforce. Follow the same instructions to ensure that the tape is properly bonded to the plywood on both the wall and deck surface.

This step is not always required – The Base coat is so thick & flexible reinforcing fabric is not essential but it does help to cover large gaps at walls. Most engineers prefer to see reinforcing tape when jobs are inspected.

It is important to ensure that the installed seam-tape is as flush with the deck-surface as possible. If there is excess base coat on or around the seams after the tape has been secured; spread it away from the seam as thin as possible to avoid any lumps or elevated areas.



Mixing the Base Coat (Quick-setting)

Pre-Mixing the Base Coat

New Pails of Flexstone Base coat <u>must</u> be mixed thoroughly (approximately 5 minutes), prior to use. This helps to blend in the resins, clays & polymers that settle at the bottom of the pail so the entire mix is the same consistency when it comes time to add the water.

* If a little sediment is left at bottom this will not really affect the performance of the product.

Flexstone's unique solvent-free Base coat (Water Catalyzed Urethane-WCU) is much thicker than all other urethanes and requires water to make it cure. If you apply base coat without water, it will not cure and would likely have to be removed.

Catalyst Vials (optional): Use vials during colder temperatures

A Small Vial of Green catalyst is available for each pail of Base coat to help it reach a full cure quicker.



Figure 4: Base Coat Pail

Mixing Base Coat - Precautions

- When mixing the water (1 part) in with the base coat (4 parts), the two components need to be mixed thoroughly at a slow medium speed with a variable-speed drill and special mortar-style mixing paddle. Mix only a few minutes until the base has absorbed all the water then pour and spread ASAP. (Mixing too fast can create air-bubbles which may show up on surface)
- <u>Do not increase amount of water added</u>. Base Coat rejects excess water and it will work against you speeding up the setup time. However you can use a bit less water (say 5 to 1) when dampness exists in new plywood as the base will absorb this.
- Once the base coat has been thoroughly pre-mixed and then mixed with water (Reminder: 4 Parts Base / 1 Part Water), it is designed to set up quickly to resist damage from rain (after 4-6 hrs). Pour and spread mix immediately and <u>fast as possible</u> with Flexstone 3/8" V-Notched trowels to ensure all of it self-levels (see 'Spreading Base' section).
- Mix base and water into your first pail then pour the mixture on surface scraping out as much as possible from inside the pail. Then leave the pail upside down to drain on the next section you spread base.
 *Do not add water to the next mix until prior mix has been spread as you want as much time as possible before it starts to set up.

Mixing Base Coat - Important Tips:

- Have a minimum of 3 clean empty 5-gallon pails; one for holding water and 2 for mixing Flexstone base.
- Avoid mixing more than 2 gals of base at a time due to the fast cure process.
- Person mixing Base must not add water to a new batch until the previous batch has been completely spread.
- Prior to adding new base into a used pail scrape/clean base residue from your previous batch. Leave the pail upside down over the next section you coat as this helps ensure that residue drains and is empty for the next batch. Excess residue from previous batches, if not scraped out, may form chunks in your next batch.
- Hot temperatures & hot surfaces will cause the base-coat to set up faster. Start early when cool and add ice blocks to pail with mixing water and keeping pails of base cool prior to installation.
- One person is fine but on larger jobs it's easier with two people. One preparing and mixing batches in small quantities (max 2 gallons) and another to spread the material. Flexstone Standing trowel is available for large jobs.
- *You should cover at least **30 square feet with each mixed pail of base (1 sheet of plywood)**. You may want to start with a small mix (1 Gal base & 1 Qt water) to ensure you are getting full coverage then move to 2 gal mixes?
- Save plastic base pails for future jobs and also to store leftover product if it doesn't have a pour spout. Cured base can be easily peeled out and used for samples. Do not stack used pails with wet base in them, they will bond together.



Installing the Flexstone Base Coat - First Steps:

- Plan your coating strategy before you start. Choose sections according to the size of your mixture (2 Gallon mix = 60 square feet or 2 sheets of plywood). Ensure that you work your way towards an exit.
- Start with seam-tape: Smooth out the adhesive back seam tape over all plywood seams. Ensure that there are no creases, wrinkles or air bubbles trapped under the tape.
- Mix a small amount of base coat with water (4:1 mix). Using the flat edge of your trowel or a putty-knife spread a thin layer of base coat over the seam tape. Only you as much as you need to keep the tape in place – it will absorb the base creating a permanent bond to your plywood.
- Using the same mixed base use your trowel or putty knife to fill any knot holes, deep screw holes, splintered plywood or any other depressed sections of the deck. Remove or smooth out any excess base coat so you are not creating humps.



Figure 5 - Installing Red Poly Perimeter tape



Figure 6 - Waterproofing verticals (door sill)

Drip Flashing Tips

- *Drip Flashings thickness: Regular 30 Gauge is ok (thicker if custom colour). No need to router down outside edge as is needed with Vinyl. Flexstone Base is thicker than flashings and the coating is thinner on Flashings than on plywood so no trapped water exists along edges.
- Drip edge flashing should be scuffed up on the top-side to ensure good adhesion. Sander or grinder works well.
- Install strong red 2" poly tape around the outside perimeter sticking up 1" to prevent coating from dripping over the edge.
- Pour a small stream of mixed base in front of flashing and use flat edge
 of your trowel to push the base coat on top about half way (1"). Then
 use flat edge again gently pulling base coat back toward yourself about
 2" past drip flashing lip and flatten or feather out termination base on
 Ply.
- TIP To use Base coat on vertical areas you can allow Base coat to set up & thicken for a few minutes. Then when it feels right apply the material up walls thinner than on flat areas. Use a flat trowel, brush, spatula or even a roller sleeve.
- Rule of thumb: It's a good idea feathering all edges during application.

Installing the Flexstone Base Coat - Floating out the Membrane:

Quick Facts: Flexstone WCU Urethane is stronger and longer lasting than Epoxies and Vinyl coatings

- You must move quick when applying the base once water is absorbed to keep it in self level mode
- Base coat should self-level to 64 Mils (1/16") thickness (this is thicker than most Vinyl coatings)
- Flexstone's System X should total = 90 100mils thickness (this is twice the thickness of other seamless coatings)
- Min temperature: 5-7 degrees Celsius during application and a few hours afterwards. Base gets a skin in 4-6 hrs.

Flexstone Base Coat Mixing & Application

- Add 1part water to 4 parts Flexstone Base. (You get 6.25 gals
 of mixed base per 5 Gallon pail of Flexstone Base). Mix the
 base coat and water together as per instructions on page 5.
 - Start by mixing 1 Quart of water in to 1 Gallon of base to get the feel to achieve full coverage. Trowel out the batch quickly and allow it to self-level (avoid working with the base coat once it has been spread).
 - *You should cover 30 square feet of per gal. Unless you are experienced, we do not recommend mixing more than 2 Gallons of base per batch.
- Stir the base / water mixture on medium speed for a few minutes. Once water has absorbed into the base. Pour out the entire mix in an area. Spread it quickly and as evenly as possible. Move fast in order to keep the base in self-level mode.



Figure 7: Spreading Base Coat



Figure 8: Mixing Base Coat

- Try to maintain a wet edge for the next batch to flow into and it is always a good idea to always feather out all edges when you run out of mix. This allows you to leave & return. When overlapping New mix over Old use flat edge of your trowel pushing New on to Old and then bring it back. This prevents leaving marks.
- Spread the mix by grounding Deep V-Notched (3/8" -1/2" trowel) and angle it down as much as possible to get full coverage of 30 SF/gal). Spread the base as quick as you can so it always remains in self level mode.
- If you are using a smaller 3/16" V-notch trowel you need to adjust your pressure to get proper coverage. Putting base on thicker does not make it better.
- For larger areas we have a custom 16" metal 3/8" V notch Standing Trowel you
 can attach a pole to. For extra large jobs we have 24" EPDM 3/8" V-Squeegees.
- While spreading the mix, do not interrupt the self-levelling process by "playing" with base after it is spread as it will usually fix itself. Minor imperfections can be fixed once the base fully cures and hardens by doing a bit of grinding or sanding.

Base Application - Helpful Tips

- The base coat can also be thickened with powdered rubber or fine sand to fill low spots and apply up vertical surfaces
- Mixing tip To measure the mix quickly you can use a thin wood stick or dowel. Cut notches up the stick to maintain the 4 to 1 ratio of base to water (cut upwards 5.5" for 2 gallons of base and again at 7" for 2 quarts of water).
- Even if the base coat is tacky the following day you can still apply the finish coats as long as you are not sticking to the base coat. After the finish coat(s) has (have) been applied wait until they are no longer tacky before walking on it.

Working Time using Tuff Base Coat

The working time between when the Flexstone base coat has absorbed the water and when it becomes too thick to self-level depends on temperature and how hot the surface is. Working time can be less than 10 minutes in extremely hot weather and when the deck surface is really hot. It's best to start early and cover exposed plywood to keep it from getting too hot. In cooler temperatures, you should have 15-20 minutes to spread each batch and maintain self-level mode.

Extending the Working Time - Important Tips

The base coat sets up slower pace when the components and surfaces are cooler. To help buy yourself more time here are some tips.

- On real hot days, add a block of ice to your mixing water as this gives you more time to spread the base coat. You should also cover the surface to keep it cooler as hot plywood also causes coatings to cure faster.
- Pre-stir all the base-coat pails and keep in the shade prior to use to avoid wasting time during the application.
- In cold temperatures keep pails in a warm place prior to starting your project.
- * Make certain you never add water to the next batch unless the previous batch has been applied or spread.
- Start early in hot weather and keep surface covered so it does not become scorching hot.
- Do not mix more base-coat than needed once it has started to thicken, you have a short window when it can be applied.

Flexstone Base - Cure Time

The cure-time for the Flexstone Base coat is generally around 24 hours on a typical warm summer day before you can walk on it. This time varies depending on the temperature and humidity levels. Once the membrane has solidified, it may remain tacky for several hours but if you do not stick into it you can apply your finish coat(s).

When weather gets cooler and moisture content goes up the base may take 48 hours to cure allowing traffic.

Colour coat and/or coloured flake installation can be done when you can walk on the deck surface even if it is still tacky. Rolling the colour top coat(s) over a sticky surface will not affect the bond on interrupt the curing of either component.

Repairing the Flexstone Base Coat

Before rolling out your top coat and/or distributing the blended acrylic chips, take your time conducting touch-ups (if there are any) to the base coat. For minor marks the colour flakes help to hide them but may will not hide everything.



Figure 9: Grinding Disc

If there deeper visible trowel marks, lumps or high-spots in your base coat, they can be taken down using a 40-grit angle-grinder or belt-sander. The base coat should be hardened and no longer tacky before grinding. Locate high-spots and 'feather-grind' so that they level.

For low-spots where water sits and pools, or you have lower grooves from deep trowel marks, simply mix a small amount of base coat (4-parts base 1-part water) and allow it to thicken a bit to a soft-putty consistency. Using a flat-squeegee, flat trowel, or putty knife – fill the low spots so that they are flush with the deck surface.



System S - Installing the UV Stable Standard AL Colour Coat Finish:

The Standard System uses 2 thin coats of a rugged 1-part AL (aliphatic) coloured urethane top-coat. Flexstone UV stable top coats are superior, as they will not to fade, crack, or peel like paints and many other urethane top coats.

- Stir the pail of AL (aliphatic) Colour Top-Coat a bit before use. (See instructions on the pail)
- Pour some AL Colour Top-Coat into the roller tray and roll it out with a 10mm roller sleeve evenly over the surface.
- For slip-resistance use Flexstone's SHURGRIP additive to obtain a consistent slip-resistant surface. (16 oz bottle)
- Allow the AL Colour coat to fully cure which is usually a full day or less in warmer weather.
 Once cured, roll on a second coat to eliminate 'fish-eyes' or bald spots (use SHURGRIP in final coat as well) and allow to cure

System S - Helpful Tips

- If the applied base-coat has been exposed for an extended period of time, it can harden and become smooth making it difficult for finish coat(s) to adhere. This depends on time-frame and temperature (generally over 2 weeks).
- Wipe the surface with a small amount of Xylene on a rag to soften the base. This will slightly dissolve and soften the surface, which ensures good adhesion of the top coat on the base.
- In warm temperatures the top-coat usually cures in one full day. Colour Top coat accelerators are available to expedite this process in when you need to use areas sooner.
- Save leftover AL top-coat by pouring into an air-tight plastic Base pail to store for future use & keep in a cool dry place.

Clean-up

- For cleaning up on the job wipe away any drips or excess product with a rag as soon as possible.
- You can also use a small amount of Xylene on your rag to help remove any product from flashing, concrete, or siding. Cleaning immediately is easiest.
- Clean tools with Xylene at the end of the job.
 Dispose of brushes and roller sleeves.
- Save the plastic Base pails to use on your next job. Store any leftover colour and clear coats in plastic pails as the lids with O-rings.

Cleaning & Maintenance

- The simplest method is to simply mix a general-purpose cleaner (at full strength mix) with hot water. Using a stiff bristle brush or broom, scrub the surface with the cleaning solution. Leave it for 15 minutes, then rinse thoroughly.
- If preferred, using a pressure washer at low-moderate pressure is an efficient way to clean your surface. Hold the nozzle approximately 10" from the deck surface to clean dirt, algae and other debris off your surface.
- Moving Heavy Objects or Furniture: Moving furniture or heavy objects (i.e. planters) around your Flexstone deck should not damage the surface; however, if there are jagged or sharp feet on any heavy objects, lift before moving sharp objects nay scratch the surface causing cosmetic issues. * Avoid the use of rubber mats the surface needs to breathe.
- Snow and Ice Removal: Removing snow and ice off a Flexstone deck is simple. You can use a snow-shovel or snow blower to remove snow from the surface. To remove ice, road-salt or de-icer can be broadcasted on the surface. Exercise caution when removing ice from the surface. While Flexstone is inherently slip-resistant, ice formed on the surface can be a hazard. Open flame or high-powered heat guns for melting ice could damage the surface coating.

Questions & Contact Info

Call us at (604)222-8453 or 1(866)419-8453. Our staff can walk you through any part of this process. Flexstone Coatings have a Manufacturer's Warranty against defects that protects consumers from faulty products. Failures or deficiencies as a result of improper installation, poor weather conditions, or faulty workmanship, are not covered by the warranty.

