

<u>Table of Contents</u>	<u>Page</u>
<u>GENERAL</u>	1.
<u>WHICH COATING TO USE</u>	1.
PANSEAL - 2000PG	1.
ELASTASEAL - 2100EG	1.
PANSEAL PASTE - 2500PG	1.
DX-1100	2.
<u>DYNESIC MIXING INSTRUCTIONS</u>	2.
<u>PREPARATION ACCORDING TO SURFACE TYPE</u>	2.
GENERAL RULE OF THUMB	2.
IMPLEMENTS FOR ABRADING	2.
METAL SURFACES	2.
CONCRETE	3.
COPPER, BRASS AND OTHER COPPER ALLOY	3.
FERROUS ALLOYS OTHER THAN STAINLESS	3.
STAINLESS STEEL, CHROMIUM	3.
WOOD	3.
PLASTIC	3.
<u>REASONS WHY EPOXY MAY NOT CURE</u>	3.
MIXING	3.
LOW AMBIANT TEMPERARES	3.
HIGH HUMIDITY, MOISTURE CONDENSATION, STAGNENT AIR	4.
REMAINING OILS, GREASES OR CHEMICALS ON THE SURFACE	4.
REMAINING CLEANSERS ON THE SURFACE	4.
REMAINING ACIDS ON THE SURFACE	4.
<u>HOW TO PREVENT BUBBLING EFFECT</u>	4.
TEST METHODS FOR DETERMINATION OF SALT CONTAMINATION	4.
<u>DYNESIC PRODUCT FAQs</u>	5.
CAN PANSEAL BE APPLIED ON WET SURFACES?	5.
ARE PRIMERS REQUIRED?	5.
CAN DYNESIC PRODUCTS BE APPLIED OVER OTHER COATINGS?	5.
ARE 2ND COATS REQUIRED?	5.
CAN DYNESIC PRODUCTS BE SPRAYED?	5.
CAN DYNESIC PRODUCTS BE THINNED?	5.
CAN DYNESIC PRODUCTS BE THICKENED?	5.
<u>COLD WEATHER TIPS & RECOMMENDATIONS</u>	6.
COATINGS WILL THICKEN IN COLD TEMPERATURES	6.
SHORTEN CURE TIMES IN COLD TEMPERATURES	6.
COLD WEATHER APPLICATION POINTS TO CONSIDER	6.
HOW LONG DOES IT TAKE TO CURE?	6.
WHAT IS THE SHELF LIFE?	6.
<u>CLEANUP</u>	6.
SCOTT'S TITANIUM ADVICE ON PATENTED COATING TECHNIQUE	6.
<u>WHY DYNESIC PRODUCTS</u>	
WHY DYNESIC PRODUCTS?	7.
<u>DISCLAIMER</u>	7.

DYNESIC, EPOXY APPLICATION GUIDE

1.

GENERAL

Dynesic epoxy sealants and coating systems are comprised of two parts that are mixed prior to application. The two parts consist of a Part A (resin) which cross-links with the co-reactant or Part B (hardener). Dynesic epoxy coatings are formulated based upon the performance requirements for the cured product. When properly catalyzed and applied, Dynesic systems produce a high strength, chemical and solvent resistant finish. They are typically used on metal, steel and concrete surfaces to repair leaks and protect against future corrosion, harsh environments and chemical attack.

It is the specific selection and combination of the epoxy component and the hardener component that determines the final characteristics and suitability of the epoxy coating for a given environment.

WHICH COATING TO USE

PANSEAL – 2000PG - *All Purpose, Adhesive and Coating with Abrasion Properties*

PANSEAL has some flexibility (8% elongation), but is designed as an abrasion proof barrier and is most ideal for solid surfaces. PANSEAL has the viscosity of honey, but cures as a hard finish.

PANSEAL has NO VOCs, very minimal odor, an exceptional 2,750 PSI adhesion strength and a complete list of chemical resistance properties. PANSEAL works vertically and can be applied with a brush, roller or sprayer (see tech data) and is self-levelling.

Coverage rate: 160 square feet at 10 mils (recommended minimal thickness)
80 square feet at 20 mils.

Ideal uses: Cooling Tower Basins, Condenser Pans, General Leak Repair, Tank Linings, Flooring, Pipe Line Coating, Secondary Containment Lining, Clarifiers, Collection Systems, Digesters, Lift Stations, Manholes, General Corrosion Protection, Acid Resistant Linings, Abrasion Resistant Linings and Exterior Finishes.

ELASTASEAL – 2100EG - *All Purpose, Flexible Coating*

If the surface is not well supported underneath and there is the possibility of flex while walking on the surface (trampoline effect), ELASTASEAL would be the best choice due to it's high flexibility attributes.

ELASTASEAL is also an all-purpose coating and sealant, but it's greater than 300% elongation make it ideal for areas of unsteady foundation, heavy vibration or areas of expansion/contraction.

ELASTASEAL has NO VOCs, very minimal odor, 1,600 PSI adhesion strength and a complete list of chemical resistance properties. ELASTASEAL works vertically and can be applied with a brush, roller or sprayer (see tech data) and is self-levelling.

Coverage rate: 160 square feet at 10 mils (recommended minimal thickness)
80 square feet at 20 mils.

Ideal uses: Cooling Tower Repair, Condenser Pans, Leak Repair, Tank Linings, Concrete Base Coats, Large Stress Cracks, Concrete and Metal Topcoat, Secondary Containment Structures, Expansion Joints and Waterproofing.

PANSEAL Paste – 2500PG - *All Purpose, Trowable Repair Compound*

PANSEAL Paste is a thick, trowable version of PANSEAL which works great for vertical repairs, ceiling repairs or rebuilding damaged surfaces. Paste can be formed, is ideal for filling voids with enhanced structural strength and can be sanded or machined once cured.

PANSEAL Paste has NO VOCs, very minimal odor, 2,700 psi adhesion strength and a complete list of chemical resistance properties. Paste works vertically and can be applied with a trowel or any suitable tool.

Coverage rate: 2 square feet at 800 mils

Ideal uses: Wastewater and Storage Tanks, Cooling Tower Repair and Structural Metal/Concrete Repair, Balconies, Bridges, Structural Adhesive for Metal Bonding, Resurfacing Damaged Areas.

DYNESIC, EPOXY APPLICATION GUIDE

2.

DX-1100 – *Dynestic Primer for Concrete*

Although Dynestic coating and sealant products are self-priming on most surfaces, DX-1100 is a primer recommended for concrete to prepare the surface for top coatings and sealants. DX-1100's thin viscosity allows it to sink into the pores of the concrete and block hydrostatic pressure from damaging the coating. An additional advantage is that the top coat's adhesion to the surface will be enhanced as DX-1100's chemistry is linked with Dynestic products.

DX-1100 has NO VOCs and very minimal odor. DX-1100 can be applied with a brush, roller or sprayer (see tech data) and is self-levelling.

Coverage rate: 330 to 530 square feet at 3 to 5 mils thickness)

Ideal uses: Primer and sealant for concrete surfaces.

DYNESIC MIXING INSTRUCTIONS

1. *Power mix Part A (resin) as it is 100% solids and contents can settle over time. For this reason, pay close attention to the sides and bottom of the container. Just make a nice metallic milk shake.*
 2. *Combine the Part B (hardener) and power mix together.*
 3. *There is no specific time limit. We are looking for uniform color.*
- *Prior to mixing, have everything in place and ready. Do not go on a lunch break or answer a call from your mother in law. It's not a race, but once mixed, it's game on.*
 - *Keep the product inside or around 80 degrees prior to mixing. The warmer product will allow for an ideal application viscosity. Warm temperatures accelerate cure time and thin viscosity, colder temperatures lengthen cure time and thicken the product.*
 - *Although mixing partial kits may achieve good results, it must be measured accurately according to the mix ratio between the resin and hardener.*

PREPARATION ACCORDING TO SURFACE TYPE

General Rule of Thumb - Best Case Scenario

- *The cleaner and more profiled/etched the surface, the greater the adhesive strength.*
- *Epoxy products have a difficult time adhering to slick surfaces such as stainless steel, so the goal is to obtain an etched profile for flag ship results. However, Dynestic products can perform well even if the preparation is less than ideal.*
- *Make sure there are no oils or greases on the surface and always pressure wash or clean the surface prior to coating. Make sure to remove the cleansers remaining on the surface which can be problematic for adhesion.*

The following recommendations are based on optimum surface preparation:

Implements for Abrading

Some common preparation implements are sandblasting, wire brush, grinder, emery cloth, and or sand paper. If the surface allows, we recommend an abrasive preparation on the surface to create an etched profile. A less abrasive preparation may only polish the surface making it more slick and difficult to adhere to.

The idea is if your going to use a grinder, make sure it's HD, not wimpy. Go for the good stuff.

Metal Surfaces

Use grade 80-150 abrasives for steel and materials resistant to scoring. Use 300-600 grade abrasives for light alloys and less resistant materials. Remove all oil, grease, or scale from the surface, and (if sandblasting) go with sharp sand or grit to finish. Use a non-spherical blast medium to give a 2 - 3 mil (50 - 75 micron) profile to achieve the following surface preparation standards or their equivalents:

Non-chemical Service	SSPC-SP 6 Commercial Blast (NACE 3)
Intermittent Splash or Wear	SSPC-SP 10 near White Metal Blast (NACE 2)
Immersion or Abrasive Service	SSPC-SP 5 White Metal Blast (NACE 1)

* *Many Dynestic products can perform well on metal surfaces with minimum preparation such as pressure washing and encapsulate remaining rust. Again, the best adhesion strength would include a profiled surface, so it depends on the surfaces condition and desired outcome.*

DYNESIC, EPOXY APPLICATION GUIDE

3.

Concrete

New concrete must be cured a minimum of 7 days at 75°F (24°C) and 50% relative humidity or equivalent. Prepare surfaces in accordance with ASTM D4258 Surface Cleaning of Concrete and ASTM D4259

DX-1100 Primer/Sealer is recommended to avoid bubbling caused by hydrostatic pressure and to increase the overall strength of the concrete. Once the primer is applied, the top coating should be applied within the re-coat window (usually within 5-24 hours - see product data). The re-coat window is the recommended time for the coating to bond to the primer. If the re-coat window expires, you can re-coat after sanding.

Topcoats: All PANSEAL versions are ideal.

Voids: Voids in concrete may require fortifying with PANSEAL Paste. DX-1100 should be brushed on the surface of the void to fill for enhanced adhesion.

Copper, Brass and other Copper Alloy

Degrease with trichloroethylene, or a degreaser if necessary, sand/score surface and clean/pressure wash.

Ferrous Alloys Other than Stainless

Degrease with trichloroethylene or a degreaser if necessary, sandblast, sand (100 grit) or etch in 15% aqueous hydrochloric acid (equal parts concentrated muriatic acid and water) for 10 minutes. Etched surfaces should be rinsed and dried.

Stainless Steel, Chromium

Degrease with trichloroethylene or a degreaser if necessary. Mechanically abrade surface with a grinder or similar tool and clean. We recommend blasting stainless steel with angular shaped garnet to get a blast profile of 3+ mils to get a decent anchor profile to bond to.

Wood

Sand until clean. Ensure wood is dry (moisture content not higher than 8-12%). If a degreaser is needed, rinse solvents prior to coating.

Plastic

Adhesion varies. If a plastic is impervious to solvents such as acetone, epoxy generally will not bond to it. Soft, flexible plastics such as polyethylene, polypropylene, nylon, Plexiglas and polycarbonate fall into this category. Hard, rigid plastics such as PVC, ABS and styrene provide better adhesion with good surface preparation and adequate bonding area. Sand, clean and apply.

** Downloadable Product Data Sheets and MSDS are available on the website. Please feel free to Email or call us for further questions. www.dynesic.com*

REASONS WHY EPOXY MAY NOT CURE

Mixing

It is recommended to 1st mix Part A (resin) by itself as it contains solid contents that can settle toward the bottom of the container over time. Add Part B (hardener) and mix A & B to obtain a uniform color while paying attention to the sides and bottom of the container.

- *You can get a well-mixed product with a mixing stick, but a mechanical mixer is quicker and more effective.*
- *The goal is to get all the hardener distributed equally within the resin. Any resin without the infusion of hardener can remain uncured, however mixing is easy and shouldn't take longer than 3 minutes or so.*

Low Ambient Temperatures

Dynesic epoxies are formulated for curing at temperatures above 40°F. Temperatures below 40°F will decrease the rate of the chemical reaction between the resin and the hardener. The product can be applied under 40°F, but will remain dormant until the ambient temperature rises above 40°F. The product will continue to cure, however the cure time is slower in cold temperatures. Heat can be brought in to speed up cure time and is well recommended in cold temperature settings. Dynesic products will also thicken in cold temperatures. Get a tarp and a heater - Job Done -

DYNESIC, EPOXY APPLICATION GUIDE

4.

- In cold temperatures, we recommend heating Part A and Part B components in a warm (80°F or so) environment such as a room or car to reach an ideal viscosity prior to mixing and applying.
- You can get a well-mixed product with a mixing stick, but a mechanical mixer is quicker and more effective.
- The goal is to get all of the hardener distributed equally within the resin. Any resin without the infusion of hardener can remain uncured, however mixing is easy and shouldn't take longer than 3 minutes or so.

High Humidity, Moisture Condensation, Stagnant Air

High humidity can slow cure times, but otherwise will not affect the performance of Dynesic products.

Remaining Oils, Greases on the Surface

The surface must be free of oils, greases for products to adhere. These areas can be cleaned with trichloroethylene, or any optimum degreasing agent then washed thoroughly.

Remaining Cleansers on the Surface

Trichlorethylene, degreasers or cleansers that remain on the surface will minimize adhesion, so the surface should be cleared of remaining chemicals. Pressure wash if possible.

Remaining Acids On the Surface

The surface must be free acids for Dynesic products to perform. These areas can be neutralized with baking soda.

HOW TO PREVENT BUBBLING EFFECT FOR EPOXY SYSTEMS

- *There are only a few times in 20 years have I had this come up, so just in case:*

The reason why bubbling effects can occur in epoxy coating systems is that there is a presence of ion or salt contamination on the surface. If it is determined that the surface contains these contaminates, you can neutralize with baking soda and pressure wash the surface.

Test Methods for Determination of Salt Contamination on Surfaces

Surfaces should be tested for ion or salt contamination. This contamination, if left on the surface can cause dis-bonding of the coating. Steel surfaces should be checked for ion contamination prior to the application.

For previously used tanks, it is advisable to test for acidity using narrow range pH indicating paper and distilled or deionized water. Establish the pH reading of the water being used. Wet the surface to be tested, using a minimum amount of water. Press the pH paper onto the wet surface, remove it, and read the measured pH; If the pH of the surface is more than 2 pH units lower than the water reading or less than 4.0, the surface should be washed and neutralized. This can be done with high-pressure water and dilute tri-sodium phosphate or ammonium hydroxide. If the pH of the surface is greater than 2 pH units higher than the water reading, consult Dynesic technical support.

To determine the presence of chlorides, sulfates, and nitrates, qualitative test paper and quantitative test kits should be used. These kits are available through K.A. Tator or S.G. Pinney.

- *Chlor-Rid offers a test kit for all three types of ions. If chloride is present on the surface at concentrations above 2 micrograms per sq. cm (20 mg per square meter), the surface should be cleaned with high-pressure water and re-checked. Chlor-Rid® or dilute baking soda (sodium bicarbonate) which has been found to be very effective in removing chloride contamination.*
- *If sulfates are present at concentrations above 5 micrograms per sq. cm or nitrates present at concentrations above 2.5 micrograms, the surface should be treated with a Chlor-Rid high pressure wash.*
- *Re-test for contamination after cleaning and repeat cleaning if necessary. After cleanliness is verified proceed with appropriate surface preparation.*

DYNESIC PRODUCT FAQs

Can PANSEAL be Applied On Wet Surfaces?

PANSEAL does not mix with water, so it can be applied on wet surfaces and will even cure under standing water. It's easier to apply on a dry surface but if options are limited PANSEAL will seal leaks and cure underwater. It makes sense that a thicker viscosity product such as DURAPATCH or PANSEAL Paste thrive as under water coatings because they are of more solid viscosity. Thinner viscosity products such as PANSEAL and ELASTASEAL could separate due to water currents and direct water pressure.

Are Primers Required?

Dynesic products are self-priming on all surfaces other than concrete. DX-1100 primer/sealant is recommended for concrete applications to enhance the products ability to sink into the pores of the concrete preventing hydrostatic pressure which can aggravate the top coat. Once the primer is applied, the re-coat window ranges from once the initial coating is tacky (4-8 hours) to a couple of days after initial application. * See *DX-1100 Tech Data*. The re-coat window is the best scenario for the coating to bond to the primer. Once the primer cures past the re-coat window, it will have a slick finish and would need to be sanded before the re-coat could be applied.

Can Dynesic Products be Applied Over Other Coatings?

There are circumstances where a pre-existing coating is remaining on the surface and is difficult to remove. This may be due to the area where the coating exists is hard to reach or the coating is stubborn to remove in some areas while it fails in other areas. Although Dynesic products are well suited to work on most surfaces and may perform well over another coating, the newly applied coating is subject to the pre-existing, failing coating. For this reason, the application over an existing coating cannot be considered under warranty. If the previous coating cannot be removed, a sanded or profiled surface is recommended to allow adhesion.

- *It's the M & M effect - The outer layer tries to cover and seal the mushy chocolate inner layer.*
- *It's unlikely that the client would even know what the original (failing) material is. Also, we have not tested every product on the market. Although Dynesic products perform well even if the prep is underwhelming, it's still a risk.*
- *Our best advice is to grind the previous coating off in all areas of access. If the application is for a drain pan, adhesive strength is often less of an issue than surfaces that are impacted by harsh environments, heavy vibration, abrasion issues or chemical attack. In these situations, preparation is more of a necessity. Do your best to remove.*

Are 2nd Coats Required?

In most applications, one coat is sufficient. In more extreme situations such as harsh environments, heavy vibration, abrasion issues and chemical attack, a 2nd coat may be recommended.

Once the first coating is applied, the re-coat window ranges from once the initial coating is tacky (4-8 hours) to 2 days after application. This is the best scenario for the coatings to bond together. Once the first coat cures, it will have a slick finish and would otherwise need to be sanded before the recoat could be applied.

Can Dynesic Products be Sprayed?

Dynesic epoxy can be applied with a brush, roller or sprayer (depending on the viscosity or thickness of the coating). You can add Acetone or Xylene up to 8 ounces per gallon and obtain a thinner viscosity for spraying. Due to the thick consistency of the products, an HD sprayer must be used (listed examples on the product's tech data).

- *See the product data for further information on spraying details according to product.*

Can Dynesic Products be Thinned?

Dynesic epoxy can be applied with a brush, roller or sprayer (in most cases). You can thin Dynesic products with Acetone or Xylene up to 8 ounces per gallon to obtain a thin viscosity.

Can Dynesic Products be Thickened?

Thickening Dynesic products can allow for better vertical installation. You can use cab-O-sil for this purpose. You can also add sands and silica gels for desired textures such as anti-slip textures.

COLD WEATHER TIPS & RECOMMENDATIONS

Coatings Will Thicken In Cold Temperatures

You can obtain a thinner viscosity by:

- 1- *Store the products in a warm environment indoors or in a car prior to mixing and applying.*
- 2- *You can use a thinner such as Acetone or Xylene up to 8 ounces per gallon.*

Shorten Cure Times In Cold Temperatures

- 1- *If the coating environment can be tarp covered and heated, then an optimum viscosity and cure time will be achieved.*
- 2- *1- Adding Dynesic Accelerator up to 1 to 2 ounces per gallon to speed up the hardener and cure time.*

Cold Weather Application Points to Consider

- *Dynesic coatings and sealants start to cure at 40 degrees plus. They can be applied in colder temperatures, but will begin to cross-link as the ambient temperature climbs to 40 degrees or above. At 40 degrees we generally estimate a 12 hour cure time. The cure time increases to 6 hours in 80 degree temperatures.*
- *If the weather is expected to climb, the coatings will cure and if the weather drops the leaks will still remain sealed and the curing process will continue as the ambient temperature climbs again.*

How Long does It Take to Cure?

The cure time varies due to the product's design and environmental situations such as ambient temperature and humidity. Although it's not an exact science, the product's tech data will show approximate cure times. PANSEAL and ELASTASEAL cure within about 6-8 hours at 80 degrees. Keep in mind that the product will continue to cross-link for 72 hours, while it transforms to reveal all of it's strength and chemical resistance.

- *The unit can be powered back into service the moment the surface is coated, as long as there is no water pressure, or currents. 2-part Dynesic products do not mix with water and their 100% Solids properties along with product weight will allow the product to flow to the bottom of a wet surface, self-level and cure.*

What is the Shelf Life?

Dynesic products don't really have a known shelf life. Dynesic resins and hardeners can be stored for many years as there are no materials that expire. It is recommended to 1st mix Part A (resin) by itself in order to address solid contents that may have displaced over time. Then add the Part B (hardener). Mix part A and B together paying attention to the sides and bottom of the container to obtain uniform color.

CLEANUP

Use MEK, Xylene or Acetone. In case of spillage, absorb and dispose of in accordance with local applicable regulations.

Scott's Titanium Advice on Patented Coating Technique

Do not dip a paint brush or roller into the bucket. This will take too long and we are creating a problematic situation called exotherm. Exotherm occurs when the product is contained (mixed) in bulk and as a result it heats up and kicks off at high speed which leads to premature curing.

Instead, pour the product onto the surface and move the material where it needs to go. It will self level and never corrode wherever the product covers.

DYNESIC, EPOXY APPLICATION GUIDE

7.

WHY DYNESIC PRODUCTS?

- Unmatched Adhesion Strength - Quick and easy applications with industrial strength products
- 2 Part Products - *1 part products are at a disadvantage as they deteriorate over time and do not hold up to water, moisture, chemicals, weather conditions and lack adhesion strength.*
- NO VOCs - NO fumes - NO vapors - No Deteriorating
- Very Minimal Odor - *Safe to apply, ideal for hospitals, schools*
- Coverage - *100 square feet per gallon*
- Can be Applied Vertically - *You don't need to order a separate product for vertical repairs.*
- Does not Diminish Over Time - *Permanent repair*
- Works on Metal, Stainless Steel, Concrete, Wood, Plastic and Fiberglass
- Eco-Friendly Products - *Safe, natural materials that are designed to strengthen and repair structures*
Less Land Fill
- Anti-Microbial - *Wipes clean with water*
- NO Fire Hazard
- NO Shipping Restrictions

Disclaimer

The information provided in this Application Guide is a general guideline designed to answer questions and educate customers and contractors. The specific information according to each individual product (tech data) is downloadable on the Dynesic website **www.dynesic.com**, as is the SDS. It is important to refer to the tech data and SDS per product prior to application.

- *See tech data prior to using Dynesic products.*
- *Call 972-692-0962 for further technical and application questions.*



www.dynesic.com
972-692-0962