Final Remedial Action Work Plan for Current Use of Forrest Street and Forrest Street Properties (Soil) Garfield Avenue Group PPG, Jersey City, New Jersey

Appendix J

Product Specifications

SUPERSEAL Dimpled Membrane Product Specification Sheet

Phone: 1-800-571-1877 Fax: 604-576-2458 www.superseal.ca

September 01, 2010 - present

SUPERSEAL Dimpled Foundation Membrane is extremely durable, inexpensive & easy to use. It can be used on all types of foundations and doesn't need any additional coatings.

Properties	Values	Part #	Roll Sizes
Material	High-Denisty Polyethylene (HDPE)	SM36107	3'6" x 65.6' - 230 ft ²
Color	Black or Grey		(1.07 x 20m)
Sheet Thickness (approx)	Sheet Thickness (approx) 0.6 mm (24 mil)		$5'0'' \times 65.6' - 325 \text{ ft}^2$ (1.5 x 20m)
Area Weight (approx)	580 g/m ²	SM60183	$6'0'' \times 65.6' = 393. ft^2$
Dimple Height	8 mm (5/16")	51100105	$(1.83 \times 20m)$
Dimple Spacing (approx)	1860 per m ²	SM67200	6'7" x 65.6' - 431 ft²
Air Gap Between Dimples	5.3 l/m ²		(2 x 20m)
Drainage Capacity (approx)	4.6 l/s/m ²	SM80240	7'11" x 65.6' - 518 ft ²
	276 l/min/m		(2.4 x 20m)
	16,600 l/h/m	SM81127	$8'11'' \times 65.6' - 583 \text{ ft}^2$
	6.6 gal/min/ft	GM01102	(2.7×2011)
Compressive Strength	250kN/m ² (5200 psf)	SM91103	$911^{\circ} \times 65.6 - 648 \text{ ft}^2$ (3 x 20m)
Service Temperature Range	-40° C to + 80° C	SM11635	11'6" x 65.6' - 754 ft ²
Physiological Properties	Can be ordered non-polluting for		(3.5 x 20m)
	drinking water	SM13204	13'2" x 65.6' - 861 ft ²
Fire Resistance Rating	B2 (DIN 4102)		(4 x 20m)

SUPERSEAL Dimpled Foundation Membrane is made from up to 80% recycled plastic and is;

IMPERVIOUS to root penetration and rot proof.

• **RESISTANT to;** fungus and bacterial attack, concentrated acetic acid, alcoholic beverages, ammonia aqueous, diesel fuel, dishwashing soap, fruit juices, hydrofluoric acid up to 20%, Hydrofluoric acid up to 35%, laundry detergents, methanol, milk, motor oil, concentrated potassium hydroxide, silicone oil, soap solution - aqueous, concentrated sodium hydroxide, sulfuric acid up to 40%, vegetable oils & fats, cold water, hot water, saltwater.

CONDITIONALLY RESISTANT to; acetone, benzene, ozone, gasoline (petrol) and toluene.

Areas of Application	Approval & Standards		
 Poured concrete foundations Insulated concrete forms Concrete block foundations Brick Foundations Interior basement walls Subfloor applications Under floor slabs Works with radon gas ventilation systems Under most types or flooring 	 CCMC 13098-R for Drainage CCMC 13099-R for Dampproofing ICC-ESR 3107 Ministers Ruling# 09-29-227 (13099-R) CGSB 36-GP-52m / CGSB 36-GP-56m Meets and has passed all requirements for the International Code Council ICC ESR # 3107 evaluated ICC Evaluated Meets and has passed all requirements for the Canadian Construction Materials Center (CCMC) report # 13098-R / 13099-R This product complies with the International Residential Code (IRC) sections R405 Foundation Drainage / R406 Foundation Dampproofing / Waterproofing 		
Accessories			
SUPERSEAL Membrane Cap SZ81179 Bag of 10 = 40' (12m) SUPERSEAL DimpleGrip Mo SUPERSEAL DimpleGrip Mo SUPERSEAL DimpleGrip Mo	SUPERSEAL SuperPlug SUPERSEAL SuperPlug 78499 SZ79550 (24m) 50 Plugs per bag		

SUPERSEAL Tunnel Drainage Product Specification Sheet

Phone: 1-800-571-1877 Fax: 604-576-2458 www.superseal.ca info@superseal.ca

September 01, 2010 - present

Part #	Roll Sizes
SD85431	6'7" x 65.5ft - 431 ft ² - (2.0 x 20m)

Properties	Values
Dimpled Membrane	High-Denisty Polyethylene (HDPE)
Color - Dimpled Sheet	Black
Thickness - Membrane	1.0mm (40 mil)
Area Weight (approx)	1000 g/m ²
Dimple Height	20 mm (0.79")
Dimple Spacing (approx)	400 per m ²
Air Gap Between Dimples	14 l/m ²
Drainage Capacity (approx)	10 l/s/m
	600 l/min/m
	36,000 l/h/m
	15 gal/min/ft
Compressive Strength	150 kN/m² (3200 psf)
Service Temperature Range	-40° C to +80° C
Physiological Properties	Can be ordered non-polluting for drinking water

SUPERSEAL Tunnel Drainage is made from up to 80% recycled plastic and is;

• IMPERVIOUS to root penetration and rot proof.

• **RESISTANT to;** fungus and bacterial attack, concentrated acetic acid, alcoholic beverages, ammonia aqueous, diesel fuel, dishwashing soap, fruit juices, hydrofluoric acid up to 20%, Hydrofluoric acid up to 35%, laundry detergents, methanol, milk, motor oil, concentrated potassium hydroxide, silicone oil, soap solution - aqueous, concentrated sodium hydroxide, sulfuric acid up to 40%, vegetable oils & fats, cold water, hot water, saltwater.

• CONDITIONALLY RESISTANT to; acetone, benzene, ozone, gasoline (petrol) and toluene.

Areas of Application / Benefits

- Land bank stabilization and drainage in conjunction with shotcrete
- Lagging walls
- Tunnels
- Highway construction
- Underfloor slabs
- Subfloor applications

- Plaza decks
- Earth shelters
- Airports, runways
- Redirection of water influx to a collection system
- Permanent shuttering

SUPERSEAL warranties this product for a period of 20 years and is resistant to a wide range of chemicals, resistant to fungus and bacterial attack, impervious to root penetration and rot proof. In the event this product fails to meet these requirements, the said amount of material shall supplied free of charge. There are no warranties beyond this expressed as stated above. **SUPERSEAL** assumes no responsibility for any other losses or damages, labour, materials, punitive, incidental or consequential or otherwise. Proof of purchase must be provided at time of claim.

Dimple membranes are extremely versatile and easy to apply. Here, a crew applies J-Drain to a concrete foundation.

DIMPLE MEMBRANES

Why Dimple Membranes Make Sense

imple membranes are one of the most versatile and effective drainage products on the market. Invented in the mid-1960s, today they are made by more than a dozen different manufacturers, and can be used for nearly every drainage situation imaginable.

"It's just a real good replacement for aggregate drainage layers," says Mike Kreikemeier, president of JDR Enterprises, manufacturer of J-Drain.

Dimpled drain sheets are used on everything from small residential basements to enormous commercial projects extending 50 feet below grade. They can even be used horizontally.

"Our product has been used for green roofs, planters, plaza decks, parking garages, retaining walls, residential foundations, commercial and blindside work," says Kreikemeier.

The key to dimple membranes' versatility lies in their elegant simplicity. Most consist of a polypropylene or highdensity polyethylene (HDPE) sheet, molded into a series of raised knobs, or dimples.

The dimple height, sheet thickness, and compressive strength varies between manufacturers. Many have a non-woven geotextile bonded to the dimple side of the membrane that acts as a soil filter, and it's common for them to be perforated, or "needle punched," to allow moisture to penetrate.

Air Gap Membranes

Membranes that have not been needle punched function differently

than pervious dimpled sheets, and are often called "air gap membranes." These membranes typically don't have a geotextile bonded to them, and can function as a waterproofing barrier. Photo Courtesy Ryan Hatrack/J-DI

Products of this type include FlexSheet by DMX Plastics, Delta-MS by Cosella-Dorken and Platon by Armtec. Delta MS and Platon have been certified by the ICC as a stand-alone waterproofing barrier.

Air gap membranes have many advantages over other waterproofing materials.

Versatility: For starters, they can easily be installed over virtually any foundation type: poured concrete, concrete block (CMU), insulated concrete form (ICF) or preserved wood foundations (PWF). In addition to exterior foundation work, air gap membranes can be used for subfloors, retaining walls, built-up flower beds, around culverts, and other applications.

Durability: Membranes are incredibly tough, and will not be damaged during normal backfilling. Additionally, they have an expected lifespan of at least 50 years, perhaps greater than the building itself. Tom Fallon, at Cosella, notes that if the foundation shifts or cracks, as most eventually do, dimple membranes will bridge the gap and continue to provide protection.

Construction Speed: You can install air gap membranes as soon as the forms are removed, and backfill almost immediately. Additionally, these products can be applied in any weather.

Sustainable: HDPE is safe and environmentally friendly. It won't leach harmful chemicals into the soil around the home. Installers don't need special breathing and skin protection.

Air gap membranes are installed with the dimples facing the foundation wall. The HDPE sheet is the first line of defense against moisture, directing groundwater towards the footing drain. Any water that gets past the plastic sheet falls freely to the drains. Construction



moisture and water vapor from indoors can also condense and flow down to the perimeter drainage.

Pieter Greidanus at Armtec notes that impermeable dimple membranes are a great choice for retrofitting damp basements, especially when excavating isn't feasible. The dimple membrane is installed on the inside between the foundation wall and the interior furring strips, effectively stopping the moisture.

"Depending on the severity of the issue, interior footing tiles may also need to be installed leading out to daylight or to a sump," he says.

Greidanus notes these products can also be used as an underslab barrier, keeping water vapor and other gasses, such as radon, outside the building envelope.





Permeable Dimple Membranes

Needle-punched dimple membranes are also used in a wide range of applications, and have a number of advantages. The key difference is that they function purely as a drainage layer and need another product to act as the waterproofing course.

In addition to J-Drain by JDR Enterprises, other common brands include Cetco's AquaDrain, American Wick Drain's Amerdrain, Tremco's TremDrain, MiraDrain by Carlisle, and Geomat by Mar-Flex.

These membranes are popular for both vertical and horizontal applications. Unlike air gap membranes, however, perforated drain sheets are installed with the dimples facing away from the concrete. A geotextile bonded to the dimples keeps soil out of the drain space.

Dimple drain boards can move a tremendous amount

of water. Flow rates are usually between 15 to 20 gallons per minute per linear foot of product.

Horizontal Applications: The fact that a thin membrane can move water so efficiently is a major advantage when horizontal drainage is needed. Instead of using inches of gravel, dimpled sheets can perform the same function in a fraction of an inch. For applications such as plaza decks and parking garages, the product is installed over a waterproofing layer dimple side up. Then the final surface is installed over the geotextile. When water penetrates through the pavers or cracks in the concrete deck, the drainage membrane directs the water to floor drains within the slab.

Horizontal applications that involve vegetation are usually installed with the dimples facing down (see Green Roofs on p.14). Installed under golf greens, athletic fields, planters or green





Photo Courtesy Tom Fallon/ Cosella-Dorken

roofs, the dimple "cups" act as a water retention layer during dry spells, while excess moisture falls through the perforations and is channeled to drains. Usually, a separate geotextile is installed over the open dimples to keep soil out.

Vertical Applications: Perforated drain sheets share many of the same advantages air gap membranes enjoy. They're versatile, durable, environmentally-friendly, and easy-toinstall.

Perforated dimple sheets are commonly used for blindside work and tunnels, where gravel isn't an option, and for heavyduty commercial applications where flow rates and compressive strengths exceed the capabilities of air gap membranes.

J-Drain, which has some of the deepest dimples on the market—a full inch deep—also has a remarkable compressive strength of more than 40,000 psf. Kreikemeier, president of the company, says it has been used on projects more than 50 feet below grade.

Conclusion

Whether they're perforated geo-mats or simple air gap membranes, dimpled drain sheets are one of the most versatile and effective drainage products on the market today. Both types of products have been used for projects ranging from small residential basements to complex garden roof assemblies.

They typically come in rolls; four feet by 50 feet is the most common size, but some products can be ordered in rolls up to 12 feet wide, and in increments to match common basement heights.

Air gap membranes typically cost less per square foot than perforated dimple sheets, since they don't have the added expense of the bonded geotextile, but both types are proven, cost-effective performers.

You're likely to see one on your project in the future.



SUPERSEAL DIMPLED MEMBRANE Interior French Drain Application

In many homes across North America, foundations have cracked or old waterproofing has failed and it can be extremely costly to excavate these homes to repair the walls properly. It 's very hard to stop waterflow for long periods of time, but you can control it.

Installing **SUPERSEAL** Dimpled Membrane as a part of a French Drain system, permanently diverts water and moisture to your sump pump. Not only does this keep water out of your home it also protects your insulation from getting wet. Just 7% moisture in your insulation can reduce the thermal effiency of your insulation by up to 70% in that area.



For Illustration Purposes only, not to scale

Installation of SUPERSEAL

(see reverse for detailed pictures)

Ensure you have enough SUPERSEAL Dimpled membrane to go all the way up the wall and to cover 6"-8" of the drain stone

- Unroll the membrane at your marked height keeping it tight against the wall. Ideally the top of the wall or 3" to 6" above the exterior grade height (Where the dirt comes to)
- Using Small Plugs or Super Plugs, install a row of plugs at the top of the membrane. Space them 5 to 6 feet apart using 1¹/₄" concrete nails or tap con screws.
- Install a row of plugs at the bottom of the membrane just before you fold it onto the drain stone. (Note: For rolls over 6'7, add a row of plugs at the middle of the membrane as well.
- (Optional) Use Membrane Cap to cap the sides and top of the membrane.



SUPERSEAL DIMPLED MEMBRANE Interior French Drain Application

STEP 1

Dig / Jackhammer a trench around the perimeter and install a drain pipe and a sump pump. Ensure that your pump drains properly



STEP 2 Fill the trench with good quality stone and install SUPERSEAL Dimpled Membrane to the top of the wall. Fold 6-12 inches onto the stone.



STEP 3

Fill in with concrete and let cure. Frame your walls as you require.





SMART

- DRIcore® promotes good indoor air quality by allowing your concrete to breathe which in turn reduces the potential for mold and mildew.
- DRIcore® dramatically improves the quality of your living environment through cold and dampness protection.
- DRIcore® keeps your family warm and dry, while protecting furniture, flooring and electronics from basement moisture.

EASY

- DRIcore[®] panels provide an easy ready-to-use wood subfloor to add your favorite finished floor.
- A typical 500 square foot room installs in an afternoon so you can spend more time with your family.
- DRIcore[®] Subfloor panels are the fastest, easiest way to add additional value to your largest financial investment.





How many DRIcore® panels and leveling kits do I need? Use this simple formula to estimate the number of panels and leveling kits required for your project.			
Room square footage3.3=Number of panels requiredTypically one leveling kit is used for every 60 panels.			
ROOM SIZE	AREA (SQ. FT.)	# OF PANELS REQUIRED	LEVELING KITS
10' X 10'	100	31	1
14' X 16'	224	68	2
16' X 20'	320	97	2
20' X 24'	480	146	3



25 YEARS OF SOLID PROTECTION

A comfortable subfloor that also provides peace of mind for many years to come.

For complete warranty details visit www.**dricore**.com



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The Foundation for Better Living

TOUGH ON MOISTURE SOFT ON FEET

DRICORE" SUBFLOOR IS A SIMPLE SOLUTION TO HELP YOU CREATE A Warm, Dry, comfortable basement.



Install 500 sq ft. in an Afternoon!

www.dricore.com



WHY DRICORE[®] SUBFLOOR?

DRIcore® is the first and most important step towards creating a new living space as warm and comfortable as any other space in your home. DRIcore® is the one-step engineered subfloor solution that is specifically designed for basements. The raised moisture barrier covers cold, damp concrete to protect, insulate and cushion your finished floors.

How the DRIcore[®] Subfloor technology works

Concrete continually releases moisture. DRIcore* Subfloor panels have been designed with air gap technology to keep basement floors dry, comfortable and cozy throughout the entire year. The air gap encourages constant air flow and evaporation/ reabsorption of surface moisture emitted from your basement concrete floor.



FINISHING LAYERS (DRIcore® is ideal under carpet, laminate, engineered hardwood, tile or vinyl) - Construction ------ Air Gap

CONCRETE

Help create the best living environment possible for your family

You will be warm and dry in your new basement space with finished floors that are up to 3.2 °C (6 °F) warmer. A DRIcore[®] Subfloor helps to create a **healthy environment** for you and your family by limiting moisture that can lead to mold.

DRIcore® Subfloor panels are strong enough to stand up to heavy home furnishings, like home gym equipment, pianos, pool tables, etc. Add your favorite finished floor – think enginereed hardwood, laminate, carpet, vinyl or ceramic tile.

Another option is to leave the DRIcore® as is. Thousands of homeowners have chosen to simply apply a few coats of polyurethane to create a great storage area or place for the kids to play! With a DRIcore® Subfloor you can have a strong, clean and stable subfloor that you can count on.



IMPORTANT HEALTH PROTECTION INFORMATION

PERSONAL PROTECTIVE EQUIPMENT

Wear goggles or safety glasses, work gloves and an approved dust mask when cutting panels. Use an approved respirator in dusty or enclosed spaces.

VENTILATE YOUR WORK SPACE

Accumulated wood dust can contaminate your home and be a food source for mold. To prevent in-home dust concentrations, clean up dust and cut panels outside or in a well-ventilated garage. For the DRIcore® Material Safety Data Sheet see the Healthy Home section at www.dricore.com or call DRIcore® customer service.

TOOLS REQUIRED

- Pencil
 Wood tapping block
- Level
 Large carpenter's square
- Pull bar
 Circular, jig or hand saw
- Tape measure
 Rubber mallet or hammer

PLAN YOUR DRIcore® SUBFLOOR

EXPANSION GAP

To allow for airflow and some expansion and contraction, it is recommended that panels have ¼" space from all perimeter walls and room obstacles, such as support posts and stairs. (See <u>u</u> in Figure 1). A lumber department will have ¼" strapping off cut stock or other inexpensive ¼" dimensional lumber for use as spacer material.

FASTENING PANELS TO CONCRETE

DRIcore® is installed as a modular floating floor normally requiring no fastening of the tongue and groove seams. However, in some instances, such as installing walls on top of DRIcore® or the stretching of wall-to-wall carpets, we recommend fastening the panels to the concrete surface.

ROOM VENTILATION

Maintaining a consistent temperature of approximately 21 °C/70 °F and a relative humidity of 30% to 50% in the room where DR(core® will be installed are a few key steps that will help ensure a reliable finished flooring installation. During times of high humidity, run a dehumidifier appropriate to the room(s) size. Leave a clearance between trimwork and finished floor for an unobstructed perimeter edge air space.

FLOOR DRAINS

Access to functioning floor drains/clean-outs should be maintained and not restricted. (See 2 in Figure 1). When installing DRIcore® over a drain/clean-out, make sure to create an easy to lift access opening through the finished floor. Check with your local building code authority for recommendations prior to installation.

HOW MANY PANELS ARE REQUIRED?

Refer to back page to find out how many DRIcore® panels and leveling kits are required for your project.

SAMPLE FLOOR PLAN



¼" space from all perimeter walls and room obstacles
 Floor drain

CONCRETE FLOOR PREPARATION

 Sweep, vacuum and remove any debris, dirt, bumps or ridges on the concrete surface that may interfere with the seating of DRIcore® panels. A perfectly clean concrete floor is mandatory for a successful installation.

 Any dips or low spots in the concrete surface greater than ¼" should be troweled level with a Portland cement compound or leveled with a self-leveling compound to ensure a successful installation.

 Instances where the concrete has an existing subfloor and/or a floor covering that may trap, block or absorb moisture, we recommend it be removed before installing DRIcore® panels. Check with DRIcore® customer service for advice on removing existing flooring.

DRIcore® LEVELING KITS

The leveling shims have been designed to slide under DRIcore® panels, to adjust for uneven areas on your concrete floors that are less than ¼". Leveling squares can be installed between two DRIcore® panels and, if necessary can be cut in half to fit.



BEGINNING THE INSTALLATION

 Measure the length and width of the room from a selected starting corner to ensure the last panel in each row measures greater than 3°. Trim the side of the first panel or the tops of the starting row, if necessary, to account for the row end pieces. Or, loosely lay the panels down to dry-fit a test row.

2. Check starting corner for square-ness. If the starting corner is greater than a 90° angle, then the wall edge of your first row of panels will need to be cut to maintain a ¼" gap along the wall.

3. In the selected starting corner, lay the first panel with the tongue side flat against the ¼" spacer material.

4. Slide the next panel against the starting panel by press-fitting the tongue of the second panel into the groove of the first panel. Use a tapping block and hammer to ensure the panels fit snugly. Repeat until each row is complete.

5. Cut the last panel of each row to fit into place allowing for the ¼". Use a pull bar to pull the last panel into place.

6. Check each completed row for leveling and use leveling squares as required. Stagger panel seams of alternating rows by using off-cuts from a previous row as the starting panel. (See Figure 1).

7. Row #3 looks just like Row #1. Starting Row #3 with a full-size panel will create the natural seam offset. Row #4 would be staggered again as in Row #2.

8. The first three rows are the most critical to a successful DRIcore[®] Subfloor. To prevent any seam separation, take your time and install tightly. Working with more than two rows at a time makes leveling and moving panels more difficult.

9. Continue the floor installation. Work from one side of the room to the other, one row at a time pressing panels together to ensure a snug fit.

10. When you reach the last row and the last panel, it may become necessary to cut the panel(s) to fit. Measure for fit, allowing for the additional ¼" expansion space from the wall. Cut and press into place with a pull bar.

11. When all panels are in place and the finished floor is installed, remove the spacers around the perimeter of the room.



HAVE MORE QUESTIONS? Contact DRIcore® customer service at 1-866-767-6374 (9am-5pm ET - Monday to Friday) or visit www.dricore.com

INSTALLATION OF STUD WALLS

DRLcore® panels can be installed where there is an existing wall frame or a concrete foundation wall. Where only a concrete foundation exists, it is best to install wall framing directly on top of DRLcore® panels to elevate the floor and wall framing away from direct contact of potentially damp concrete. Whether framing currently exists or will be installed on top of DRLcore® panels, be sure to use the temporary ¼' spacer between DRLcore® panels and the existing wall structure to allow for expansion and air circulation.



FINISHED FLOOR OPTIONS

NOTE: If panels are to remain unfinished for a period of 2 weeks or longer it is recommended to seal DRIcore® panels with two coats of polyurethane to protect from moisture.

ENGINEERED HARDWOOD: Follow the wood manufacturer's guidelines as to what can be installed at or above grade and below grade. Before installing glue-down or nail-down floors a %² plywood underlayment should be fastened to DRIcore[®] using 18 gauge ¼" or 7/8' narrow crown staples. When installing nail-down floors test a piece of the finished floor to make sure the fastener does not puncture the plastic membrane. Remove the ¼" wall spacers after the wood flooring has been installed. NOTE: Do not glue engineered hardwood floors directly to DRIcore[®] panels.

CARPET: To prevent panel uplift when stretching carpet, fasten DRIcore[®] panels to the concrete floor with flat head $V_{4}^{u} \times 2$ V_{4}^{u} or 2 $\frac{3}{4}^{u}$ concrete fasteners every other panel at perimeter edges and one in the panel in the centre of the room. Use a $\frac{3}{46}^{u} \times 4$ $\frac{1}{2}^{u}$ drill bit to bore the holes. Install tack strips on top of the DRIcore[®] panels around the perimeter of the room, to hold the carpet down. Install pad and carpet. Do not glue the underpad or carpet directly to the DRIcore[®] panels.

LAMINATE: Install the floor manufacturer's foam pad and finished flooring on top of the DRIcore® panels. The installation of a continuous vapour barrier on top of DRIcore® is permitted as long as it is not sealed to the perimeter wall. Only remove the ¼" wall spacers after the laminate floor has been installed.

TILE: Fasten each Dictore® panel with five, flat head and countersunk, concrete fasteners to the concrete floor to prevent movement or shifting of the finished ceramic tile floor. We recommend one in each of the four corners and one in the centre of the panel. Use flat head $Va' \times 2 Va' or 2 Va' concrete fasteners and a <math>3va' \times 4V'$ drill bit to bore the holes. Next install an approved tile underlayment over DRicore® making sure you follow their installation guidelines for installing over a wood subfloor. NOTE: DRicore® must lay perfectly stable. A sound recommendation would be to have one person walk the floor. Step heavy or bounce, with another looking for vertical movement of panels. If there is noticeable movement, mark the areas in question with an X and insert another concrete fasteners.

VINYL SHEETS AND VINYL TILES: A ¼° plywood underlayment approved for use with sheet vinyl or adhesive-backed vinyl tiles should be fastened to the DRIcore® panels. We do not recommend lauan plywood as an underlayment. Use ¾' flooring fasteners that do not penetrate the moisture barrier on the underside of the DRIcore® panels. Do not glue the plywood underlayment to DRIcore® panels. Do not glue adhesive-backed vinyl tiles directly to DRIcore® panels. Glue the vinyl floor to the plywood underlayment according to the vinyl manufacturer's installation instructions. Only remove the ¼' wall spacers after the vinyl floor has been installed.





SCENARIOS

If Pump 1 fails: Pump 2 takes over!

If Pump 1 can't keep up: Both pumps 1 and 2 operate a total of 6,200 gallons per hour!

If Power fails: Pump 3, a battery operated "UltraSump", takes over!

Pump 3-UltraSump® Battery

Back-up Pumping System

Pump 3 is a DC operated

pump, which means if your power or circuit breakers fail, this pump operates off battery power to get the

water out, completing your protection. (Battery and

automatic charging system

are included)





Pump 2-Zoeller M-98 1/2 hp High Volume Pump Pump 2 operates when either pump 1 fails, or if pump 1 can not keep up with a heavy flow of water in a hard fast rain – then pumps 1 & 2 operate at the same time. Because they are on separate discharge pipes, they will remove up to 6200 gallons per hour out of your basement! And, pump 2 is bigger, giving you that "turbo boost" when you need it.

> Pump 3 operating range Pump 2 operating range Pump 1

operating range

Pump 1-Zoeller M-53 1/3 hp Pump

Pump 1 does the pumping most of the time. It is a reliable, efficient, smooth running 1/3 hp cast iron pump. The on and off switching on all 3 pumps is automatic.

The sump pump is at the heart of most basement waterproofing systems. If the heart stops, your basement gets flooded.

The TripleSafe[™] Sump Pump System has three pumps to give you complete protection. If your first pump fails, the second one takes over. If your first pump can't keep up, then it and a more powerful second pump run at the same time—more than doubling capacity. And, if your power goes out, an UltraSump[®] Battery Back-up Pump takes over— and it's all automatic!





TripleSafe™ is protected by multiple patents and patents pending

SCENARIOS

If Pump 1 fails: Pump 2 takes over

If Pump 1 can't keep up: Both Pumps 1 and 2 operate a total of 6,200 gallons per hour!

If Power fails: Pump 3, a battery operated "UltraSump", takes over



The unique "figure eight" design allows three sump pumps, two AC and one DC to fit perfectly in the TripleSafe[™] liner.

The innovative liner and lid can accommodate two separate discharge lines, allowing twice the volume of water to be removed from the basement.







A SaniDry" Basement Air System will dry the air in your basement or crawl space and automatically drain the water into the TripleSafe", so you never have to empty it. The SaniDry" System is a great addition for keeping humidity down, so odours go away and mould will not grow.



TripleSafe[™] shown with Basement Systems' award winning engineered WaterGuard[®] Basement Drainage System, and BrightWall[™] Panelling System.



NXT® Vapor Reduction Coating

DS-507.0-1017

Globally Proven Construction Solutions



1. PRODUCT NAME

NXT[®] Vapor Reduction Coating

2. MANUFACTURER

LATICRETE International, Inc. 1 LATICRETE Park North Bethany, CT 06524-3423 USA Telephone: +1.203.393.0010, ext. 235 Toll Free: 1.800.243.4788, ext. 235 Fax: +1.203.393.1684 Website: www.laticrete.com

3. PRODUCT DESCRIPTION

NXT Vapor Reduction Coating is a single-coat, 100% solids, liquid applied 2-part epoxy coating specifically designed for controlling the moisture vapor emission rate from new or existing concrete slabs prior to installing NXT underlayments. NXT Vapor Reduction Coating exceeds ASTM F3010 standard with a perm rating of 0.052 grains/h/ft2/in. Hg (3 ng/h • m2 • Pa) at only 12 mil thickness.

Uses

- Ensures protection of moisture/pH sensitive floor coverings.
- Reduces MVER ≤25 to below 3lbs/1000ft²/24hrs (170 µg/(s m²))
- Use on concrete up to 100% RH / 14 pH.
- Ideal for slab-on-grade construction and elevated slabs.
- Allows for the installation of vinyl, rubber, VCT, carpet, wood, ceramic tile, stone and other moisture sensitive floor coverings and floor adhesives.

Advantages

- Exceeds ASTM F3010 standard
- Component of the LATICRETE[®] System Warranty
- Can be applied over new concrete in as little as 5 days
- Fast cure ability to apply finish floor goods or NXT underlayments in as little as 12 hours
- VOC content (mixed) <75g/L
- UL GREENGÜARD GOLD CERTIFIED
- Low odor

- Easy to use
- Compatible with NXT underlayments as well as non-water based adhesives for hardwood, vinyl, carpet and tile

Suitable Substrates

Concrete slabs (Interior use only)

Packaging

Full Unit Kit*: 6.5 Gal. (24.6 L)

- Part A 2.2 Gal. (8.3 L) packaged in a steel pail
- Part B 4.3 Gal. (16.3 L) packaged in a steel pail
 Mini Unit Kit*: 2.5 Gal (9.4 L)
 - Part A 0.8 Gal. (2.8 L) packaged in a steel pail
 - Part B 1.7 Gal. (6.6 L) packaged in a steel pail

*NXT[™] Vapor Reduction Coating is a kit of two pails. Individual pails (Part A or Part B) cannot be purchased separately, and cannot be returned separately.

Coverage

NXT Vapor Reduction Coating is to be applied at minimum thickness of 12 mils. NXT Vapor Reduction Coating when applied at a minimum 12 mils thickness exceeds ASTM F3010 and will control moisture vapor emission rate up to 25 lbs/1,000 ft²/24 hr (1415 μ g/(s • m))^ per ASTM F1869/maximum^ RH conditions per ASTM F2170. In order to help insure coverage, periodically check mil thickness using an NXT Vapor Reduction Coating Wet Film Thickness Gauge.

Vapor Permeance ^µ	MVER/ RH	mil thickness	ft² /gal (m²/L)
0.052 grains/h/ft²/in Hg (3 ng/h • m² • Pa)	≤25 lbs (1415 μg) / 100%	12	133 (3.2)
Each full unit will yield approximately 865 ft2 (80.8 m2)**.			
Each mini unit will yield approximately 319 ft2 (29.8 m2)**.			

**Coverage is approximate and will vary depending on CSP (concrete surface profile), mil thickness, absorption, and other field conditions. ^No visible water or condensation on the surface.

^µ Tested according to ASTM E96 Wet Method

Shelf Life

Factory sealed containers of this product are guaranteed to be of first quality for two (2) years if stored at temperatures >32°F (0°C) and <110°F (43°C).

Limitations

- Interior use only
- NXT Vapor Reduction Coating is not a replacement for waterproofing membranes. When a waterproofing membrane is required HYDRO BAN[®] can be installed directly over NXT Vapor Reduction Coating.
- All existing expansion joints, cold joints must be brought up through the NXT Vapor Reduction Coating and the finish. Failure to honor movement joints will result in cracking and/or loss of bond.

- Not for use over any other substrates other than concrete slabs Cured for a minimum of 5 days at 70°F (21°C)
- LATICRETE is not responsible for moisture emission from expansion and isolation joints, existing cracks, or new cracks that may develop in the concrete slab after the system has been installed.

Cautions

- Consult SDS for more safety information.
- NXT[™] Vapor Reduction Coating Part A causes severe skin burns and eye damage. May cause an allergic skin reaction. Suspected of damaging fertility or the unborn child. Toxic to aquatic life.
- NXT Vapor Reduction Coating Part B causes skin irritation. Causes serious eye irritation. May cause an allergic skin reaction. Toxic to aquatic life with long lasting effects.
- Check <u>www.laticrete.com</u> for any technical bulletins or updated information about the product and its application.
- Contact your local LATICRETE Technical Sales Representative with any questions.
- Once material is fully mixed the reaction may generate high heat if left in mixing container for an extend period of time.
- Protect finished work from traffic until fully cured.
- Do not take internally.
- Keep out of reach of children.

4. TECHNICAL DATA

Test	Method	Results
Vapor Permeance At 12 mil thickness	ASTM E96	0.052 grains/h/ft2/in. Hg. (3 ng/h • m2 • Pa) CTL Project 281426
Tensile Strength (7 days)	ASTM C1583	> 410psi (>2.8 MPa) Concrete Failure
Pull off Adhesion Strength	ASTM D7234	> 480 psi (> 3.3 MPa)
Alkalinity Resistance	ASTM D1308	Pass (resist up to 14 pH)

Specifications are subject to change without notification.

Technical data shown in LATICRETE product data sheets and technical data sheets are typical but reflect laboratory test procedures conducted in laboratory conditions. Actual field performance and test results will depend on installation methods and site conditions. Field test results will vary due to variability of job site factors.

5. INSTALLATION

Surface Preparation

Concrete slabs must be clean, structurally sound, absorptive, and have an ICRI concrete surface profile (CSP) of 3 - 5. All dirt, oil, paint, laitance, efflorescence, sealers, curing compounds and any other bond breaking contaminants must be removed down to the full depth of contamination by shot blasting or other mechanical means then swept and vacuumed clean. Use of chemicals to remove contaminants is prohibited. Use of sweeping compound is not recommended as they may contain oil which will act as a bond breaker. Do not use over gypsum or asphalt based products. Water drop test (Refer to TDS 230N for water drop test instruction) is recommended prior to application of NXT Vapor Reduction Coating. If the water drop test yields a nonsuction results where the water beads up and doesn't absorb, please contact LATICRETE Technical Sales Representative. Per ASTM F3010, concrete slab to receive NXT® Vapor Reduction Coating must have a tensile pull-off strength of 200 psi (1.4 MPa) or greater when tested in accordance with ASTM C1583.

Surface temperature must be 50–90°F (10–32°C) during application and for 24 hours after installation. In all cases, the surface temperature of the prepared concrete slab must be warm enough to avoid condensation on the surface of the concrete.

Joints, Cracks, Surface Depressions and Other Irregularities

All joints and cracks should be evaluated and repaired if necessary prior to installation of NXT Vapor Reduction Coating. A good crack repair technique depends on knowing the causes and selecting appropriate repair procedures that take these causes into account. Repairing a crack without addressing the cause may only be a temporary fix. Successful long-term repair procedures must address the causes of the cracks as well as the cracks themselves. Refer to ACI 224.1R-07 for guidance on evaluation and repair of cracks in concrete. LATICRETE product application over moving cracks and joints is not recommended.

1. Moving joints (e.g. expansion joints, isolation joints, etc.) and dynamic (moving) cracks must be honored up through the NXT Vapor Reduction Coating. LATICRETE is not responsible for vapor emission through untreated joints or for areas where cracks may develop later.

2. All non-moving joints and dormant cracks (e.g. saw cuts, surface cracks, grooves, control joints, etc.) must be cleaned out and free of all loose debris. Non-structural cracks up to 1/8" (3 mm) in width can be filled with NXT Vapor Reduction Coating epoxy during main application. Inspect these areas to ensure cracks are completely filled with no voids. Non-moving joints, dormant cracks greater than 1/8" (3 mm) wide, can be patched with mixture of 1 part NXT Vapor Reduction Coating and 3 parts clean, dry play sand. In a suitable container, such as an empty NXT Vapor Reduction Coating pail, pour 1 part NXT Vapor Reduction Coating pre-blended to 3 parts clean, dry play sand, using a 300 rpm drill with jiffy paddle, mix together for 2-3 minutes until the NXT Vapor Reduction Coating and gualified sand mixture is consistent. Slowly pour the mixture into the crack, using the flat side of a trowel force the epoxy/sand mixture into the crack. Surface crazing and hairline cracks do not need filling. Construction Joints, Expansion Joints and Large moving cracks that have lost aggregate lock (one side of crack is higher than the other) have structural implications and cannot be repaired using this method.

Moisture Evaluation

Moisture testing must be conducted in accordance with finish floor goods and adhesive manufacturers' requirements prior to NXT Vapor Reduction Coating application. When evaluating moisture conditions the HVAC system or a properly conditioned temporary enclosure must be operational and in place for the minimum specified time period recommended in the moisture test standard. The concrete floor slabs and the ambient air space above the floor must be at service temperature and relative humidity for at least 48 hours before taking moisture measurements in the concrete slab. These conditions must remain throughout the test period to ensure accurate results.

Mixing

Before using, store resins at room temperature 65-85°F (18-30°C) for 24 hours to ensure ease of mixing. Mix Components A and B at a ratio of 1:2 by volume (components are packaged into the pails to the specified ratio). Pour the A component into the larger B component steel pail. Verify that all of the Part A liquid is drained from pail. Mix with a slow speed drill (<300 RPM) with a jiffy blade for 3 minutes, assuring mixture is fully uniform and that all ribbons of contrasting shade are completely eliminated. Pour the fully mixed material onto the substrate immediately after mixing.

NOTE: Do not mix NXT Vapor Reduction Coating in a plastic bucket as mix generates excessive heat!

Application

Pour ribbons of NXT[®] Vapor Reduction Coating onto the prepared concrete and spread using appropriate round or square notch squeegee that is designed to apply the desired mil thickness in a single coat. Apply an even coat making sure to cover all areas thoroughly. Immediately following, while epoxy is still wet, use a high quality 3/8"

(9 mm) nap non-shedding paint roller to back-roll at 90° from the

squeegee direction to help ensure full coverage and uniform thickness. Replace worn squeegee blades and paint rollers when necessary to help ensure proper application. Use a paint brush to apply epoxy around penetrations, columns, and any other obstructions. Periodically check mil thickness using a NXT Vapor Reduction Coating Wet Film Thickness Gauge. Allow to cure for 12 hours at 50-90°F (10-32°C) prior to installation of underlayment or finish flooring. Always consult flooring and adhesive manufacturer's installation instructions, restrictions and confirm compatibility with NXT Vapor Reduction Coating. Always test performance and compatibility of floor systems prior to application.

Flooring and Self Leveling Underlayments Installation

In all cases the NXT Vapor Reduction Coating surface must be protected from traffic, dust, debris, rain, and any other contaminants. NXT self-leveling underlayments shall be installed over NXT Vapor Reduction Coating as soon as the epoxy is slightly tacky to the touch with no transfer; typically 12 hours after application depending on ambient and substrate conditions. The maximum time to install finished floor goods or NXT self-leveling underlayments over NXT Vapor Reduction Coating is 3 days provided that the surface is protected from traffic, dust, debris, water and any other contaminants. If NXT Vapor Reduction Coating is left open and unprotected longer than 3 days or the surface becomes contaminated, contact LATICRETE Technical Sales Representative. NXT self-leveling underlayments require the use of NXT Primer. Refer to TDS 230N for detailed primer installation instructions. Always refer to finished floor manufacturer's recommendations regarding installation instructions, restrictions, moisture conditions and compatibility. Tile or stone can be installed using LATAPOXY® 300 Adhesive or 254 Platinum. Always test performance suitability and compatibility of finished floor systems prior to their application. Sample surfaces should be installed as a field test so as to be representative of entire surface and tested for intended use.

Use as a Primer for SLU's

When using NXT Vapor Reduction Coating with sand broadcast as a primer for NXT Self-leveling products, refer to TDS230D for surface prep and installation instructions.

6. AVAILABILITY AND COST

Availability LATICRETE® and LATAPOXY materials are available worldwide. For Distributor Information, Call: Toll Free: 1.800.243.4788 Telephone: +1.203.393.0010 For on-line distributor information, visit LATICRETE at www.laticrete.com

Cost

Contact a LATICRETE Distributor in your area.

7. WARRANTY

See 10. FILING SYSTEM: DS 230.13: LATICRETE Product Warranty DS 025.0: LATICRETE 25 Year System Warranty (United States and Canada)

8. MAINTENANCE

LATICRETE and LATAPOXY grouts require routine cleaning with a neutral pH soap and water. All other LATICRETE and LATAPOXY materials require no maintenance but installation performance and durability may depend on properly maintaining products supplied by other manufacturers.

9. TECHNICAL SERVICES

Technical Assistance

Information is available by calling the LATICRETE Technical Service Hotline:

Toll Free:	+1.800.243.4788 ext 235
Fax:	+1.203.393.1948
E-mail:	techsupport@laticrete.com

Technical and Safety Literature

To acquire technical and safety literature, please visit our website at www.laticrete.com.

10. FILING SYSTEM

Additional product information is available on our website at **www.laticrete.com.** The following is a list of related documents:

DS 230.13:	LATICRETE Product Warranty
DS 025.0:	LATICRETE 25 Year System Warranty (United States and Canada)
DS 663.0:	HYDRO BAN®
DS 236.0:	9235 Waterproofing Membrane
DS 502.0:	NXT [®] Primer
TDS 230N:	NXT Substrate Preparation and Primer Guide

LATICRETE International, Inc.

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