NP443 TECHNICAL DATA (Concrete Crack and Spall Repair)

PREPARE

Crack Repair

PRODUCT DESCRIPTION:
NP443 is a two-component, polyurethane hybrid specially designed with an ultra-low viscosity providing a quick repair of hairline cracks and spalls in concrete. With its fast curing properties, it is perfect for use when minimal downtime is required and rapid return-to-service is needed, and can be used in temperatures from 0 °F to 110 °F (-18 °C to 43 °C).
RECOMMENDED FOR: Used to quickly repair interior/exterior hairline cracks, Spall repair when mixed with aggregate, Industrial floor repair applications with high volume traffic, Parking structures and concrete bridge repair.
ADVANTAGES & FEATURES: Self-leveling, ultra-low viscosity providing deep penetration resulting in a superior bond, Reaches over 4,500 psi compressive strength in one hour, Easy 1:1 mix ratio, Available in 22 oz. cartridges, Wide temperature application range between 0 °F to 110 °F, Repaired cracks and spalls can be opened to traffic in less than 60 minutes at 77 °F (25 °C).

SOLIDS BY WEIGHT: Nearly 100%

VOLATILE ORGANIC CONTENT: 13 grams per liter

STANDARD COLORS:
Part A (Resin) Amber: Part B (Hardener) Black, Mixed Color when cured - Gray

RECOMMENDED THICKNESS:
The NP443 polymer can be applied at variable thicknesses with the use of any dry sand aggregate.

COVERAGE PER UNIT:
Coverage is dependent on hole size and amount of aggregate sand used. One cartridge set will repair approximately 100 feet of ¼" x ¼" cracks in a concrete floor.

PACKAGING	CUBIC INCHES
300ml x 300ml	36 (approx.)

Packaged as a dual cartridge system with two 300ml cartridges per set. Sold in packages of six sets per box.

MIX RATIO: The mix ratio is 1:1 by volume

SHELF LIFE: For best results, store between 40 °F (4 °C) and 90 °F (32 °C). Shelf life is 12 months when stored in unopened containers in dry conditions.

SHORE D HARDNESS: 70 @ ASTM D2240

TENSILE STRENGTH: 3,485 psi @ ASTM D638

ELONGATION: 18% @ ASTM D638

IMPACT RESISTANCE: Excellent

ABRASION RESISTANCE: Excellent

COMPRESSIVE STRENGTH:
5,102 PSI @ ASTM D695 (neat)

BOND STRENGTH: 1,894 psi @ ASTM C882

DOT CLASSIFICATION:
Part B "not regulated"
Part A "not regulated"

VISCOSITY: 60 cP mixed – typical

PRIMER: For patch work, use the liquid as dispensed from the dual cartridge system with static mixing nozzle. This will allow for greater penetration into the concrete.

TOPCOAT: None required. However, many types of products can be used as coatings or overlays for the area that has been patched.

CURE SCHEDULE (75 Degrees F)	
Working Time	2 minutes
Full Cure	1 hour
CURE SCHEDULE (0 Degrees F)	
Working Time	11 minutes
Full Cure	24 hours

1. Working and full cure times are approximate, may be linearly interpolated between listed temperatures and are based on cartridge/nozzle system performance.
2. Application Temperature: Substrate and ambient air temperature should be from 0 to 110 °F (-18 to 43 °C).
3. All tests performed in a neat condition, without aggregate added.
4. Cartridge and nozzle should be maintained at temperatures above 30 °F (-1 °C) while in use.

LIMITATIONS:
DO NOT POINT TUBES UPWARD AFTER THE MIXING NOZZLE HAS BEEN ATTACHED AND PRODUCT HAS BEEN DISPENSED AS THIS MAY CAUSE MATERIAL TO FLOW BACK INTO THE TUBES AND CAUSE CLOGGING OR GELATION.
Do not thin with solvents, as this will prevent cure
NOT intended for repairing cracks subject to movement (eliminate the cause of cracking prior to repair)
NOT intended for aesthetic finishes as product may develop a greenish tint from UV exposure or may cure with an uneven color with swirls or marbling - when cured it can be coated or painted to meet desired appearance
New concrete should be a minimum of 21 days old prior to crack repair
Cartridge balancing and crack or spall repair instructions must be followed closely.
Additional care should be taken when injecting into cracks below grade and/or below 32 °F (0 °C).
This product is highly sensitive to and reactive with moisture and therefore, the cementitious substrate must be completely dry prior to application.
See following pages for application instructions.
Test data based on neat resin unless otherwise noted.
Physical properties are typical values and not specifications.
See following pages for limitations of our liability and warranty.

MIXING AND APPLICATION INSTRUCTIONS: NP443 Concrete Crack and Spall Repair

STORAGE and SHELF LIFE: For best results, store between 40F - 90F. Shelf life is 12 months when stored in unopened containers in dry conditions. Do not Freeze.

INSTALLATION INSTRUCTIONS: NOTE: Reaction with trace amounts of moisture may cause NP443 to expand, create a foam and could raise the product as it cures above the substrate's surface that may require shaving with a stiff metal scraper, floor knife or grinding flush with a flap wheel.

- Product is initially dark gray/black when mixed, but will turn gray upon curing
- Many applications are finished by sanding or grinding the surface smooth
- Always wear proper personal protective equipment, such as safety goggles, dust mask/respirator and gloves while sanding or grinding (see Safety Data Sheet)
- INTERIOR APPLICATIONS: Some color variation may occur during the curing process
- EXTERIOR APPLICATIONS: Product may develop a greenish tint after cure due to UV exposure; Application of a coating, paint or industrial grade primer is an option for improving aesthetic appearance
- Always complete a compatibility test on a small area prior to full application of any coating

CRACK REPAIR PREPARATION:

1. Prepare crack or spall prior to starting a cartridge.
2. New concrete should be a minimum of 21 days old.
3. Clean the crack by wire brushing.
4. Blow out with compressed air; repeating until free of dirt and debris deep into the crack.
5. It is not necessary to open or widen a crack unless you suspect it is very deep and want to insert backer rod or kiln-dried sand to control loss of product deep into the crack.

SPALL REPAIR PREPARATION:

1. A dry diamond blade, tuck point blade or masonry blade may be used to prepare the spall and create a clean bonding surface.
2. A wire brush or twisted wire wheel may be used to remove any loose concrete or dirt.
3. Avoid feathered edges (see Figure 1) which leave the edges of concrete thin and prone to cracking and deterioration.
4. The edges must be ground at a 90° angle to the surface (see Figure 2).
5. Use compressed air or vacuum, blow out or remove all dust, dirt, debris, oil and any other contaminant from the crack.
6. Minimum spall depth across the entire repair area should be 1/2 in. (13 mm) when applying mortar or neat material.

   NOTE: No high spots should exist.

FIGURE 1

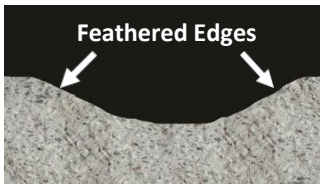
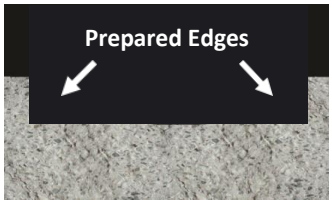


FIGURE 2



Cartridge Preparation:

1. Shake the cartridge vigorously for 20 seconds, then stand cartridge upright for at least 1 minute allowing any bubbles to rise to the top.

2. Insert cartridge into the dispenser. Make sure it is properly positioned with the shoulder of the cartridge flush with the front/top bracket of the dispenser. Point upward at about a 45° angle.

3. Remove the plastic cap and plug from the top of the cartridge. Find the flow control inside the threaded end of the mixing nozzle. Insert flow control into the two holes at the top of the cartridge where the product comes out. Make sure it is securely seated in place.

4. Install mixing nozzle onto cartridge. Continue to point the nozzle upward away from yourself and others while slowly applying pressure to dispenser moving any bubbles and product up through the nozzle until it reaches the tip. CAUTION: Never point mixing nozzle toward yourself or others while dispensing, as low viscosity materials can travel some distance from the end of the nozzle if dispensed too rapidly.

5. Dispense a full stroke of material into disposable container. The cartridge is now balanced and ready for use. NOTE: Schedule dispensing to consume an entire cartridge at one time with no interruption of flow to prevent material from hardening in mixing nozzle. If product hardens in nozzle and will not easily flow out, replace nozzle and repeat the cartridge balancing steps listed above after replacing the nozzle. Never transfer a used nozzle to a new cartridge. Never point a tube set either during assembly or during application toward eyes or body as gun pressure can cause material to eject with force for several feet.

CRACK REPAIR PROCEDURES

1. In horizontal concrete slabs, inject directly into cracks by placing the mixing nozzle tip directly over the crack. Allow adhesive to penetrate into the crack and top-off as needed. Kiln-dried medium grade silica sand can be broadcast on top of the repair to add texture or to more closely match that of the existing concrete.
2. For larger, deeper cracks, insert backer rod or a layer of kiln-dried sand to eliminate excessive loss of adhesive. The layer of product must still be at least 1/2 in. (13 mm) deep on top.
3. The repair will be tack-free in less than 10 minutes at 75 °F (24 °C). Excess material may be removed shortly after application by scraping/leveling with a blade. The crack surface may be ground smooth one hour after application. See SDS for precautions while grinding.
4. Allow material to fully cure before subjecting repaired area to any type of traffic (see Table 3 for working and full cure time schedule).

SPALL REPAIR PROCEDURES

1. Spall repairs can be made with neat material or using a repair mortar.
2. To form a repair mortar, NP443 should be mixed with kiln-dried medium grade (approximately 60 mesh) silica sand to form a repair mortar. Deep patches can use larger aggregate blends.
3. For best results have all equipment and materials prepared prior to mixing. The ratio of sand to mixed adhesive should be between 1 and 3 parts of sand to 1 part of mixed product. For best results, test several ratios to select the ratio of sand to liquid to yield desired results. Premeasure the sand needed based on the volume of mixed NP443.
4. When using cartridge product for spall repair, dispense the desired amount of liquid from cartridge into mixing container while Parts A & B are mixing, swiftly add the premeasured sand. Make sure all sand is saturated or wetted out and there are no “clumps” on bottom of bucket. Rapidly scrape bottom and sides of pail to assure good mix. Use clean containers when mixing multiple batches.
5. After mixing the NP443 at 75 °F (24 °C), it must be placed within 5 minutes. In warmer temperatures, place product in less than 5 minutes.
6. Rapidly pour and trowel (do not over trowel due to fast cure of product).
   a) Only mix the quantity that can be mixed/placed within 5 minutes (1 gallon at a time maximum).
   b) Repairs should be from a minimum 1/2 in. (13 mm) up to a maximum 3 in. (76 mm) per lift to avoid cracking from high heat exothermic reaction.

CONTROL JOINT REPAIR PROCEDURES

1. Unprotected control joints may spall when subjected to traffic.
2. Saw cut spall areas as described in spall repair preparation section.
3. Fill entire area with the mixed product.
4. After cure, saw cut control joint and fill with a suitable filler.