

How to Deal with Your Problem Floors

By Peter Norton

INTRODUCTION

The South African industrial flooring market is notorious for its after installation defects. These range from surface cracking to surface delamination, uneven surfaces, damaged joints, curled panels, structural cracking, drying shrinkage cracking, dusting of the surface and peeling/blistering of coatings, just to mention a few.

Norton offers a comprehensive range of repair products, equipment and specialist contracting services to effectively deal with these problems. This begins with an investigation into the cause of the defect. Once determined, we are able to draw down on years of contracting experience combined with excellent repair product and equipment to effect the necessary repairs. All repair work is carried out using dust free equipment and all work is unconditionally guaranteed.

The biggest mistake made by contractors and consultants is the inability to accurately determine the cause of the defect. This leads to a doubtful repair specification using incorrect materials.

Our patented high alumina self-levelling cement system is used to repair a range of surface damage situations. The product is pump applied to between 6-8mm thick and is ready to receive heavy traffic within 24 hours. A revolutionary product - 10 Minute Concrete Mender™ - is proving extremely successful in undertaking repairs to concrete floors, which are completed within 10 minutes.

A 2 part modified urethane, it penetrates deep into the concrete matrix and offers long lasting repairs that accommodate very harsh environments. The product can be used outdoors to treat cracks, spalls, surface gouges, etc and is also effectively used to stop rocking joints resulting from curled panel edges. It's basically a product that can repair severely distressed concrete within 10 minutes.

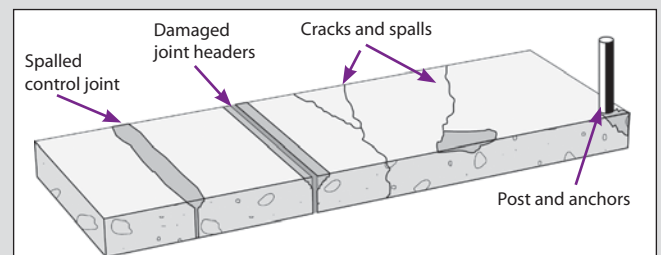
Surface grinding by way of three headed planetary diamond grinding machines is a fast and effective way to remove surface delamination and deal with uneven surfaces that exhibit high spots. The machines are also capable of removing tiles, adhesives and epoxy/urethane coatings.

We also advocate the Pentra-Sil system as an alternative to coatings as the lithium hardener is a penetrant into the concrete and hardens, seals and dustproofs the floor for life. It will not wear, fade, chip or peel.

For further information or advice on flooring related issues, please contact Peter Norton on tel: 011 704 4557 or e-mail: peter@norcon.co.za.



Norton's Roadware 10 Minute™ concrete mender provides quick repair solutions for the following common flooring problems:



Man pumping



Joint repair

ROADWARE 10 MINUTE CONCRETE MENDER™

Standard product data sheet

PRODUCT NAME

ROADWARE 10 Minute Concrete Mender™

PRODUCT DESCRIPTION

Roadware 10 Minute Concrete Mender is a high-penetration two-part hybrid urethane that combines with sand to form a tough instant polymer concrete. This nearly water thin formula is designed to Microdowel™ deep into the host concrete creating extremely high bond strengths, reinforcement of the repair area as well as permanent repairs.

Roadware 10 Minute Concrete Mender produces polymer concrete repairs that absorb the shock and transfers the load of heavy traffic without cracking or disbonding. It is highly chemically resistant and can be applied in a wide range of temperatures. It is excellent for industrial floor repairs subject to forklift traffic and harsh conditions.

GENERAL USE

- Repairing hairline cracks or larger, where future movement is not anticipated.
- Repairing spalled control joints.
- Restoring integrity to distressed concrete.
- Connecting broken slabs.
- Repairing moving slabs.
- Repairing spalls and pop-outs in concrete.
- Securing bolts, equipment, or railings into concrete.
- Vertical repairs when combined with specified sand.
- Rebonding delaminated floors
- Ramping elevated slabs
- Repairing concrete surface imperfections prior to coating.

SIZES

21 fl oz. dual cartridge units (600 ml) with mixer (80300)

2 gallon kits (7.57 litres) in two parts (80040)

10 gallon units (45 litres) in two parts (80050)

COLOUR

10 Minute Concrete Mender is composed of an amber coloured liquid and a violet coloured liquid. The material is black when dispensed and cures to a gray finish. Alternate colours can be achieved by selecting different colours of manufactured sand. 10 Minute Concrete Mender will lighten in colour when exposed to ultraviolet rays. This natural occurrence within urethanes will NOT effect the physical properties of the material or the repair. For colourfast repairs that are exposed to sunlight, we recommend coating the repair with paint or a standard concrete topping material.

YIELD

Roadware 10 Minute Concrete Mender™ is combined with manufactured silica sand or equivalent at the point of application. The gradation of the sand and the amount of sand used will determine yield. Listed below is the approximate yield of 1 part mixed polymer to 3 parts 30-40 grit silica sand.

One 300x300 cartridge with sand yields 1,9 ℓ.

One two gallon kit with sand yields 23,9 ℓ.

LIMITATIONS

10 Minute Concrete Mender is a rigid material designed for use on interior or exterior concrete surfaces. It is not intended for repairing areas of movement such as exterior cracks and joints subject structural or ground movement. It must be applied to concrete free of surface moisture.

TECHNICAL DATA

Physical/chemical properties

Typical test results when tested in accordance with applicable ASTM standards and Roadware developed testing.

Typical Properties	Value (average)
Hardness @ 22°C	72D
Compressive Strength (with sand)	20 MPa
Elongation	6%
Tensile Strength	20 MPa
Bond Strength, ASTM 882-99	8.8 MPa
Viscosity (at application)	<9 cps
V.O.C.(mixed)	5.5 g/l
Solids	98%
Cured Colour	Gray
Gel time @ 22°C	6-7 mm
Cure time @ 22°C	10 mm
Ambient temperature range for application	-30°C to 49°C

INSTALLATION

Surface preparation

Preparation:

Surface Cracks (all depths and widths): Cracks should be free of dirt, oils, dust, latents and old crack repair materials. ALL SURFACES MUST BE CLEAN AND DRY. New concrete must be fully cured. A dry diamond blade attached to an electric hand grinder is recommended for preparing cracks and creating a clean surface for bonding. A wire brush or twisted wire wheel on a grinder may be used in some cases.

Surface Spalls and Deflections: Remove all loose materials back to sound concrete with a chisel or light chipper. DO NOT SQUARE CUT THE REPAIR AREA. If a square appearance is necessary, lightly score surface and remove material. Use a wire brush or twisted wire wheel to clean the repair area. All surfaces must be free of dirt, oils, dust, latents and old repair

materials. For feather edge repairs in high traffic areas, score the repair edge with a dry diamond blade 3mm deep around the perimeter of the repair. New concrete must be fully cured.

Application temperature:

Recommended application temperature is between -30°C and 40°C. It is best to keep material at room temperature prior to application. If manufactured sand is to be used with product, it also should be kept at room temperature. Avoid frost laden surfaces as this may adversely affect bonding and curing. 10 Minute Concrete Mender will fully cure in 10 minutes at 22°C. The temperature of the material and the temperature of the concrete surfaces will affect cure time. Warmer temperatures will decrease cure time and colder temperatures will increase cure time. In extremely cold environments, heat the concrete to remove frost before application. Successful repairs have been installed at temperatures of -29°C and below.

MIXING

Cartridges: 10 Minute Concrete Mender is a two component material and must be thoroughly mixed at a ratio of 1 part "A" to 1 part "B" by volume. Mixing and metering of 10 Minute Concrete Mender is achieved with self-mixing cartridges provided by Norton/CLF is ejected from prepackaged cartridges through a supplied static mixing nozzle with a dual component caulking gun such as the Roadware 5300 Application Tool, Mixed material is applied directly into the repair area immediately after mixing.

Bulk: Due to the rapid setting nature of the product, pot-mixing of the components is not recommended for crack and joint repairs less than 20mm in width. 10 Minute Concrete Mender supplied in 10 gallon kits may be bucket mixed in quart batches and applied immediately to the repair area. Combined one pint of Part A with one pint of Part B. Mix with a drill mixer or hand mixing stick for 30 seconds or until well blended. Add 2 quarts of manufactured sand and mix for an additional 10 seconds. Pour the entire batch into the repair area immediately. SEE BULK MIXING INSTRUCTIONS INCLUDED WITH MATERIAL. 10 Minute Concrete Mender may be dispensed through a one-to-one ratio pump specifically designed to handle extremely low viscosity materials while maintaining exact ratios. The system must not allow the two components to combine until they reach the point of delivery.

APPLICATION

Surface Cracks (all depths and widths): Assemble cartridge according to directions. Remember to use the flow restrictor included with each cartridge set. Holding the application gun upward, place cartridge set into gun. Gently squeeze trigger to bleed-off air and start material flowing into mixers. Point mixer into waste container and squeeze trigger to start mixing process. DO NOT POINT MIXER UPWARD AFTER MATERIAL IS FLOWING. This may cause material to flow back into the tubes and cause clogging.

Pre-wet repair area with mixed Concrete Mender without sand. Fill with 30-40 grit manufactured sand and additional material to grade. Be sure to saturate all of the sand completely.

Additional sand may be added to the repair as necessary. Saturated sand may be moved into place with a margin trowel or scraper. Work with one small section at a time. Do not stop flowing material for a period of more than 2 minutes. If material sets inside mixer, remove cartridge from gun and replace mixer. Fill all repair areas to grade. When material cures (turns gray) in about 10 minutes, remove excess material with a sharp scraper for a smooth and flat finish. Finished repairs may be "cleaned up" by sanding or buffing within a few hours of application.

Spalls: Pre-wet repair area with mixed Concrete Mender without sand. Fill with no more than one-inch of 30-40 grit manufactured silica sand and additional material. Add additional layers to grade if needed. Be sure to saturate all of the sand completely. Additional sand may be added to the repair as necessary. Saturated sand may be moved into place with a small squeegee or scraper. Work with one small section at a time. Do not stop flowing material for a period of more than 2 minutes. If material sets inside mixer, remove cartridge from gun and replace mixer. A trowel or scraper may be used to move saturated sand into place and to create a level surface. If required, surface friction may be maintained by adding additional manufactured to the surface as the material cures. Allow to cure (approximately 10 minutes). Finished repairs may be "cleaned up" by sanding or buffing within a few hours of application.

MAINTENANCE

None Required



Grinding

**ROADWARE
10 MINUTE CONCRETE MENDER™
CRACK REPAIR**

Project Home Depot Garden Centre, New Construction
Problem Shrinkage cracks appeared before control joints could be cut
Solution Roadware 10 Minute Concrete Mender™ topped with 10 Minute Silica Sand



1. The Garden Centre developed shrinkage cracks parallel to the control joints ranging from hairline to 6mm wide.



2. The cracks are lightly scored and cleaned out with a diamond blade attached to an electric grinder. Dust and debris is removed with a vacuum.



3. Ultra penetrating Roadware 10 Minute Concrete Mender™ is applied directly the crack followed by a 6mm layer of 10 Minute Silica Sand.



4. Repairs are made full depth. Silica sand is added to stop "sinkers" and build a polymer concrete matrix.



5. Additional material and sand is added to fill the crack up to the top.



6. Excess material is trowelled or scraped off before curing.

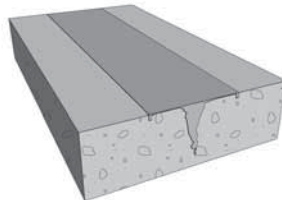


7. After 10 minutes at 22°C, the repair is ready for traffic or finishing if desired. Here a concrete finishing stone is used to blend the repair with the surrounding concrete.

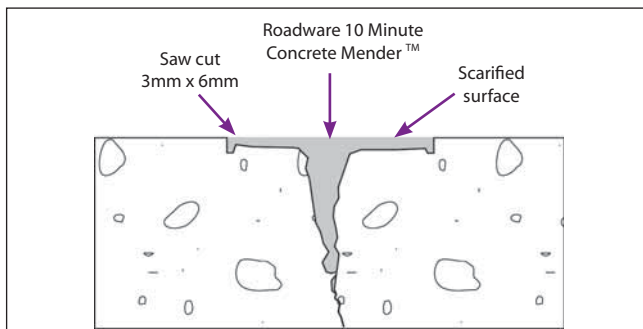


8. After the repair cures for an hour, the crack is repaired structurally, and is nearly invisible.

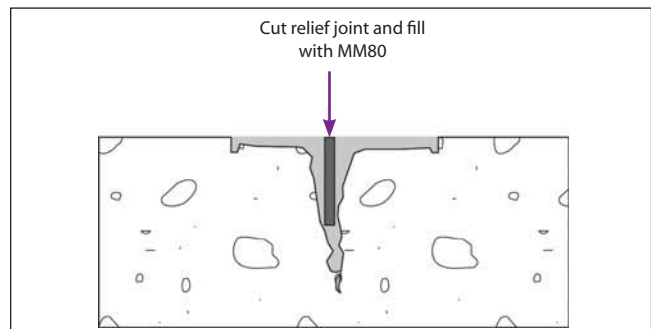
**JOINT REPAIR USING ROADWARE
10 MINUTE CONCRETE MENDER™**



Non-movement damaged saw-cut joints.

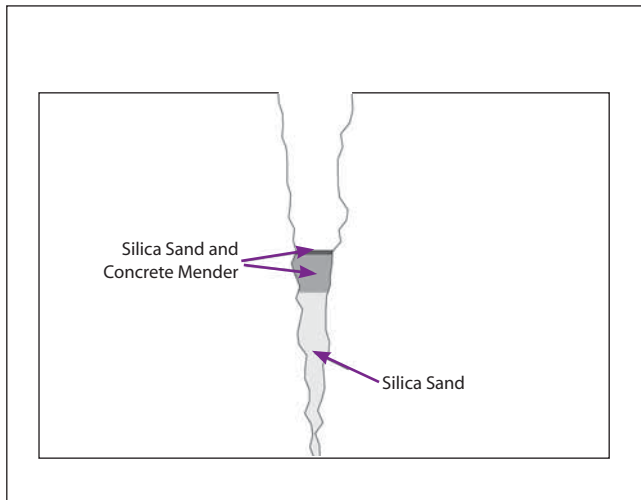


Slight movement damaged saw-cut joints



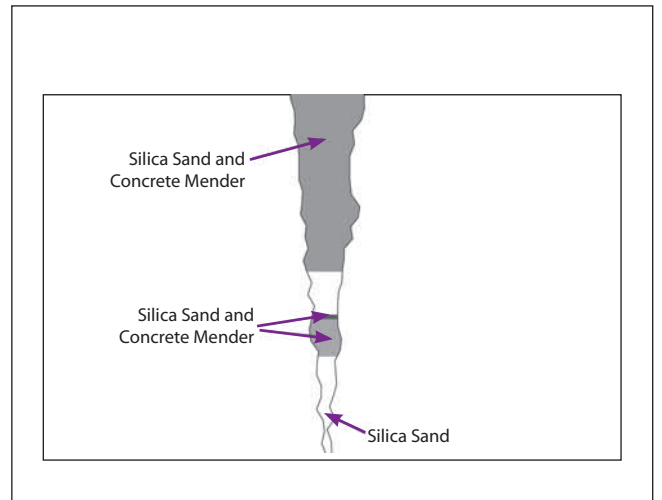
CRACK REPAIR USING ROADWARE 10 MINUTE CONCRETE MENDER™

Repairing cracks that are open to the sub-base



Step 1

Fill bottom of crack with a fine grade silica sand. Add 25mm of concrete mender and allow to set. This will form a bottom to the repair as well as dissipate any moisture in the crack.

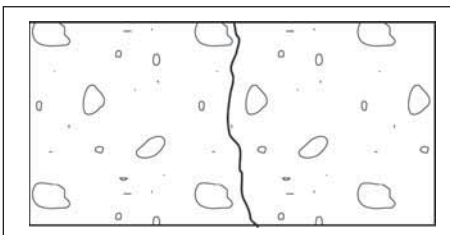
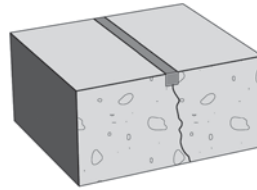


Step 2

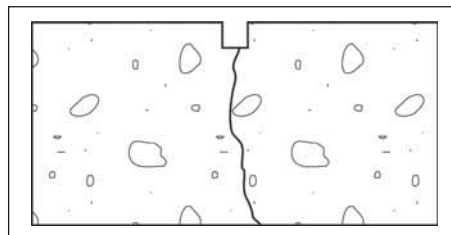
Continue repair up to grade with concrete mender and silica sand.

FLEXIBLE CEMENT II™ CRACK REPAIR

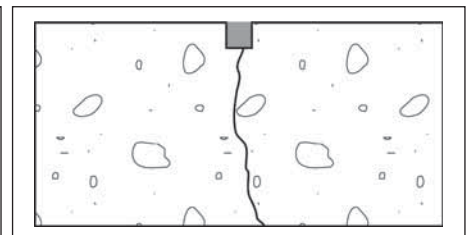
Use Roadware Flexible Cement II™ to fill non-moving cracks in exterior concrete slabs and decks.



Hairline crack in concrete deck or slab



Rout out a small channel of concrete at the top of the crack. Approximately 6mm x 6mm. Prepare surface in accordance to material instructions



Fill void with Roadware Flexible Cement II™



Repair of Surface Delamination



Saturate the Crack with Roadware

Better Solutions for Better Floors

REPAIR CRACKS IN YOUR CONCRETE IN 10 MINUTES

Save your concrete with a crack and spall repair system that fully cures in 10 minutes

FREE*
Demonstration
on your floor!

Now you can repair cracks and spalls to a smooth finish in a fraction of the time it takes with ordinary products. Roadware 10 Minute Concrete Mender™ is a revolutionary new two-part hybrid urethane for repairing concrete. It's nearly water for deep penetration and it won't pop out like epoxy because it never gets brittle.

NO POT-MIXING AND NO WASTE

Roadware 10 Minute Concrete Mender™ is packaged in uniquely designed ratio-packs that completely mix the material at the point of application. No pot-mixing and no unused material. Difficult repairs are now simple, just clean the area, prime with 10 Minute Concrete Mender, add manufactured sand, and flood with additional 10 Minute Concrete Mender. In 10 minutes you'll get a tough 20 MPa polymer concrete that will stay in place permanently.

GREAT FOR ALL CONCRETE FLATWORK

Roadware 10 Minute Concrete Mender™ is extremely tough and will withstand the harshest punishment. Great for freezers... may be applied at temperatures as low as -29° C with excellent results. High chemical resistance, perfect for containment areas. Re-coat in 10 minutes-will accept primers and industrial coatings in just 10 minutes after application. Now prep-work and coatings can be applied in the same day!



Badly in need of repair

ROADWARE 10 MINUTE CONCRETE MENDER™

Application Chart

For Professional Use Only
READ ALL DIRECTIONS CAREFULLY BEFORE USE!

Tools Recommended for Concrete Repair:

Roadware 5300 Gun. For easy dispensing of Roadware 300 x 300 ml Cartridges



100mm Taping knife or margin trowel for applying material and sand.



Sharp scraper for shaving off cured material and sanding brick for smoothing and blending repairs.



Wire brush for cleaning cracks and spalls.



115mm Grinder with a diamond blade or twisted wire wheel for cleaning cracks and spalls.



Shop vacuum for cleaning out dust and debris from cracks and spalls.



30 - 40 grit manufactured silica sand. Used for repairing cracks and spalls. DO NOT USE PLAY SAND, CONCRETE SAND, BEACH SAND OR ANY SAND THAT MAY CONTAIN EXCESS MOISTURE. FOLLOW MANUFACTURERS SAFETY GUIDELINES WHEN WORKING WITH SILICA SAND.



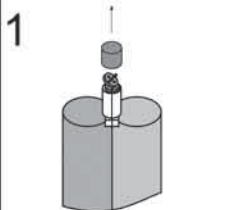
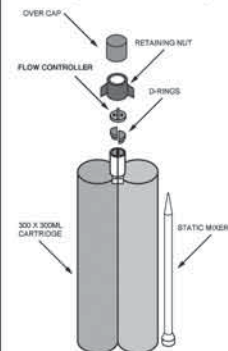
Gloves



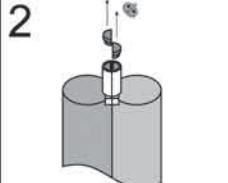
Safety Glasses

Cartridge Assembly Instructions

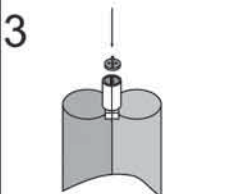
Each cartridge set contains the following:



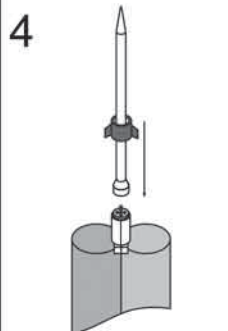
Step 1: Remove over cap. FLOW CONTROLLER is stowed under the overcap.



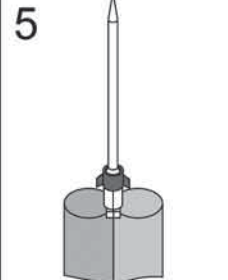
Step 2: Remove black D-rings and save.



Step 3: Place the FLOW CONTROLLER on top of cartridge. Be careful to align material openings.



Step 4: Place static mixer over the FLOW CONTROLLER and secure with black retaining nut.



Step 5: Tighten firmly with hands. KEEP CARTRIDGE UPRIGHT UNTIL USE.

Cartridge Start-up Procedure



Hold cartridge upward and load into gun. Bleed off any air inside the cartridge by slightly squeezing handle and rocking the cartridge from side to side as needed to force the air bubble out through the mixer.



Immediately point mixer into a waste container and dispense a small amount to start the material mixing.

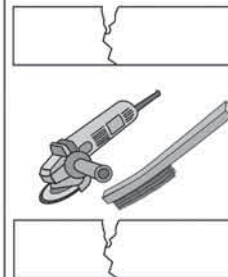


CAUTION: DO NOT POINT MIXER UPWARD AFTER MATERIAL IS FLOWING! This may cause Back-flt and clogging.

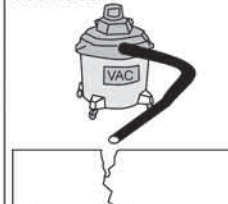


Apply material immediately, with study full strokes of the gun.

Crack Repair Spalled Control Joint Repair



1) Clean repair area. Remove all dirt, oils, and loose debris.



2) Remove any dust with a vacuum or compressed air.



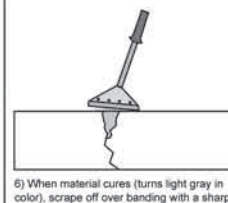
3) Fully pre-wet sides and bottom of crack with 10 Minute Concrete Mender™.



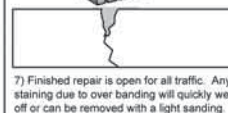
4) Immediately add silica sand and more 10 Minute Concrete Mender™. Add enough material to slightly overflow the repair. Use enough liquid to COMPLETELY SATURATE THE SAND.



5) Use a margin trowel or taping knife to smooth and shape the sand and material mortar.

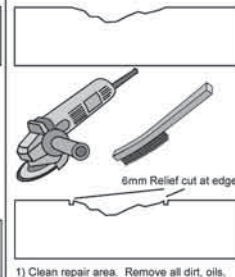


6) When material cures (turns light gray in color), scrape off high spots with a sharp scraper.



7) Finished repair is open for all traffic. Any staining due to over banding will quickly wear off or can be removed with a light sanding.

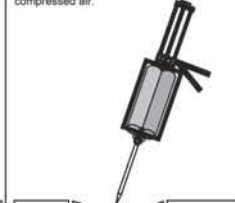
Spall Repair



1) Clean repair area. Remove all dirt, oils, and loose debris. Make a 6mm relief cut with grinder.



2) Remove any dust with a vacuum or compressed air.



3) Pre-wet entire spall with 10 Minute Concrete Mender™.



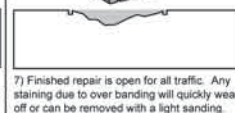
4) Immediately add 10mm of silica sand and completely saturate with 10 Minute Concrete Mender™. Continue in 10mm lifts. Make certain all of the sand is saturated.



5) Use a margin trowel or taping knife to smooth and shape the sand and material mortar.



6) When material cures (turns light gray in color), scrape off high spots with a sharp scraper. Smooth and finish with a rubbing stone.



7) Finished repair is open for all traffic. Any staining due to over banding will quickly wear off or can be removed with a light sanding.

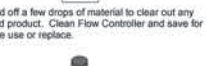
Recapping Partially Used Tubes



Hold cartridge sideways over a waste container and remove retaining nut, mixer, and Flow Controller.



Bleed off a few drops of material to clear out any cured product. Clean Flow Controller and save for future use or replace.



Hold cartridge upright and place D-rings into the top ports. Place overcap on cartridge.

Store upright in a cool, dry place. Material will remain usable for a varying amount of time depending on the moisture level of the storage. Use a margin trowel or taping knife to smooth and shape the sand and material mortar. Signs of moisture contamination are heavy caking and crystallization of the A-side material at the D-rings and the rear seals.

To reuse cartridge, follow normal start-up procedures.

Trouble Shooting

Every reasonable effort is made to insure that every cartridge of Roadware 10 Minute Concrete Mender™ is easy to use and trouble free. Below is a list of possible problems, their causes and suggested solutions.

Problem: Material does not cure.
Cause: Material was not mixed properly.
Solution: Make sure all start-up procedures are followed. Check for any blockage of cartridge openings.

Problem: Material is slow to cure.
Cause: Low ambient temperature.
Solution: This material will set in approximately 10 minutes at 22°C. Cooler concrete and sand temperatures will increase cure time.

Problem: Cartridge is hard to pump or surges off ratio.
Possible Cause: Rear plunger is sticking. Slight leakage (mostly found in partially used cartridges) has caused the "A" (light colored) material to crystallize on the plunger causing sticking and surging.
Solution: Carefully rim the skirt of the plunger seal with a small, flat screwdriver.
Possible Cause: Material has cured inside the static mixer or Flow Controller.
Solution: Replace static mixer and Flow Controller if needed.

Problem: Cured material shows intensive marbling and striations.
Possible Cause: Inadequate mixing.
Solution: Follow start up procedures carefully. Make sure all air pockets are bled off before application. Use medium even strokes when applying material.
Possible Cause: Improperly placed or missing Flow Controller.
Solution: Make sure the holes in the Flow Controller restrictor line up with the openings in the cartridge. Hold the static mixer in place when securing the retaining nut to prevent the Back-flt restrictor from twisting.

Problem: Material foams, bubbles, or grows when curing.
Cause: Moisture is in contact with the material.
Solution: Make sure sand is dry. When concrete is damp or green, dry with a heat gun or propane torch. Apply a layer straight 10 Minute Concrete Mender™ to the area. Allow to cure and continue the repair.

Clean up

Wipe tool clean with a rag before material is allowed to cure. Cured material may be removed by abrading with a wire brush or soaking in acetone, xylene, MEK, or epoxy thinner. USE EXTREME CARE WHEN WORKING WITH INDUSTRIAL SOLVENTS.

10 Minute Concrete Mender™ is very aggressive and will stain exposed skin. Gloves should be worn to keep material from contacting skin. In the event of skin contact, remove immediately with an industrial paint and stain hand cleaner.

SEE MSDS SHEETS FOR FURTHER INFORMATION

Disposal Methods

Empty cartridges may be disposed of with normal waste disposal methods in accordance with Federal, State, and local environmental control regulations.

Unused material is best disposed of by mixing equal parts of side A and side B and allowed to cure in a waste container. Cured material may then be disposed of with normal methods.

ACTION TO TAKE FOR SPILLS/LEAKS: Properly protected personnel should contain spill. Ventilate area, cover spill with sawdust or other absorbent material. Scoop and place in open container and treat with decontamination solution (93% water, 5% ammonia, 2% detergent). Leave open in a ventilated area for 24 hours.

DISPOSAL METHOD: Bury or landfill decontaminated waste in accordance with Federal, State, and local environmental control regulations.

SEE MSDS SHEETS FOR FURTHER INFORMATION

**ROADWARE
10 MINUTE CONCRETE MENDER™
CRACK REPAIR**



Crack in a newly laid carpark floor



Crack prepared and ready for treatment



Product application



Crack after repair



**REPAIR CRACKS IN YOUR
CONCRETE IN 10 MINUTES**

CLF Concrete Laser Flooring Pty (Ltd)

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Tel: +27 11 704 5557 • Fax: +27 11 462 1456 • E-mail: info@norcon.co.za



The information given is based on knowledge and performance of the material. Every precaution is taken in the manufacture of the product and the responsibility is limited to the quality of supplies, with no guarantee of results in the field as Norton Construction Products has no control over site conditions or execution of works.