CRACKBOND® CSR-FLEX

Product Description

CRACKBOND® CSR-FLEX is a flexible, self-leveling, ultra-low viscosity, 2-component hybrid polymer used to repair large cracks and spalls including roads, highways, bridges, and much more. When used with layered aggregate it will rapidly restore distressed surfaces in concrete and asphalt and creates load-bearing and skid resistant surfaces. Its fast curing properties allow the surface to be opened to traffic in less than 1 hour.

General Uses & Applications

- Repair pot holes, large areas of broken concrete, asphalt and control joints
- Rehabilitation of bridge joint headers
- Parking deck reconstruction

Advantages & Features

- Repaired cracks or spalls may be opened to traffic in less than 60 minutes at 77 °F (25 °C)
- High flexibility
- Waterproof and chemical resistant
- Stops corrosion within repaired area
- Self-leveling, ultra-low viscosity system
- Low odor
- No primer required

Availability: Adhesives Technology Corp. (ATC) CRACKBOND products are available through select distributors who can provide you with all your construction needs. Please contact ATC for a distributor near you or visit our website to search by zip code.

Color & Ratio: Part A (Resin): Brown, Part B (Hardener): Black, Mixed: Black, Mix Ratio: 1:1 by volume

Storage & Shelf Life: 12 months when stored in unopened containers in dry conditions. Store between 40 °F (4 °C) and 90 °F (32 °C). High relative humidity will reduce shelf life.

Installation & Coverage: Manufacturer's Printed Installation Instructions (MPII) are available in this Technical Data Sheet (TDS) and online at www.atcepoxy.com. Due to occasional updates and revisions, always verify that you are using the most current version of the MPII. In order to achieve maximum results, proper installation is imperative.

Clean Up: Always wear appropriate protective equipment such as safety glasses and gloves during cleanup. Clean uncured materials from tools and equipment with mild solvent. Cured material can only be removed mechanically.

Limitations & Warnings:

- This product is highly sensitive to moisture during application only, therefore, substrate and aggregate must be **completely dry** with no presence of moisture prior to application
- NOT intended for aesthetic finishes as product may develop a brownish tint from UV exposure or may cure with an uneven color (when cured it can be coated or painted to meet desired appearance; see MPII)
- New concrete should be a minimum of 28 days old prior to application
- Cartridge balancing and repair instructions must be strictly followed
- Do not thin with solvents, as this will prevent cure

Safety: Please refer to the Safety Data Sheet (SDS) for CRACKBOND CSR-FLEX published on our website or call ATC for more information at 1-800-892-1880.

Specification: The repair material shall be a two component, 1:1 ratio, hybrid polymer system. When cured 7 days and at a temperature of 77 °F (25 °C), the hybrid material shall have a tensile strength of 1,420 psi (9.8 MPa) and a tensile elongation greater than 200 % per ASTM D638. With the addition of aggregate, the hybrid material shall have a compressive strength of 2,170 psi (15.0 MPa) per ASTM D695 and cured adhesive shall have a Shore D hardness of 61 per ASTM D2240. Material shall be CRACKBOND CSR-FLEX from Adhesives Technology Corp., Pompano Beach, Florida.

ORDERING INFORMATION

TABLE 1: CRACKBOND CSR-FLEX Adhesive, Dispensing Tools and Mixing Nozzles[1,2,3]

Package Size	8.6 oz. (254 ml) Cartridge	21.2 oz. (627 ml) Cartridge	2 Gallon (7.6 L) Kit	10 Gallon (37.9 L) Kit
Part #	A9-CSRFBN	A22-CSRFBN	B2G-CSRFB	B10GM-CSRFB
Manual Dispensing Tool	TM9HD	TM22HD	N/A	N/A
Pneumatic Dispensing Tool	N/A	TA22HD-A	Pump[3]	Pump[3]
Case Qty.	12	12	1	1
Pallet Qty.	1,116	576	63 kits	24 kits
Pallet Weight (lbs.)	1,056	1,152	1,256	1,192
Recommended Mixing Nozzle	T12CSREZ	T12CSREZ	N/A	N/A

1. Call for bulk packaging availability and lead times.
2. Part #'s ending in "N" come packaged with mixing nozzle, one per cartridge.
3. For bulk dispensing pumps, contact ATC for recommended manufacturers.


A9-CSRFBN


A22-CSRFBN


B2G-CSRFB

B10GM-CSRFB


T12CSREZ


TA22HD-A


TM22HD

MATERIAL SPECIFICATION

TABLE 2: CRACKBOND CSR-FLEX performance to **ASTM C881-14**[1]

Property	Cure Time	ASTM Standard	Units	Sample Conditioning Temperature 77 °F (25) °C
Gel Time - 100 gram mass (Neat)	----	C881	min	2
Gel Time - 100 gram mass (Aggregate)	----			9
Part A Viscosity	----		cP	60
Part B Viscosity	----			60
Compressive Strength[2]	1 hr	D695	psi (MPa)	201 (1.4)
	7 day			2,170 (15.0)
Tensile Strength		D638	psi (MPa)	1,420 (9.8)
Tensile Elongation			%	> 200
Shore D Hardness		D2240	----	61

1. Results based on testing conducted on a representative lot (or lots) of product. Average results will vary according to the tolerances of the given property.
2. Compression strength measured with 3/8 in. (10mm) coarse gravel added as an aggregate.

TABLE 3: CRACKBOND CSR-FLEX **CURE SCHEDULE**[1,2]

Base Material Temperature °F (°C)	Working Time
45 (7)	9 min
77 (25)	5 min
110 (43)	2 min

1. Working times are approximate, and may be linearly interpolated between listed temperatures.
2. Application Temperature: Substrate and ambient air temperature should be from 45 °F to 110 °F (7 °C to 43 °C).

Revision 1.1

INSTALLATION INSTRUCTIONS (MPII)

General Information

- Product is black when mixed.
- Many applications are finished by sanding or grinding the surface smooth. Always wear proper protective equipment such as safety goggles, dust mask/respirator and gloves while sanding or grinding.
- The application of a coating, painting or using an industrial grade primer over the surface is an option for improving aesthetics. Always complete a compatibility test on a small area prior to full application of any coating.

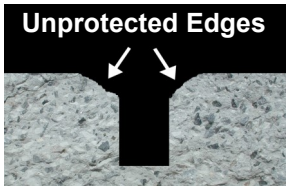
Crack Repair Preparation

- Prepare crack or spall prior to starting a cartridge or mixing bulk product.
- Concrete and crack area must be clean, COMPLETELY DRY with no presence of moisture and then profiled or textured. New concrete should be a minimum of 28 days old. All dirt, dust, oil, debris, wax, grease or other contaminants must be removed from the repair area. Use a wire brush to remove any loose concrete or dirt and then blow away or vacuum dust.
- 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 and Deep Patch Preparation

- A dry diamond blade, tuck point blade or masonry blade may be used to prepare the edges of the spall and create a clean surface for bonding. A wire brush or twisted wire wheel may be used to remove any loose concrete or dirt.
- The edges must be at a 90° angle to the surface (see Figure 2) to avoid a feathered edge (see Figure 1) which would leave the edges of concrete thin and prone to cracking and deterioration.

Figure 1



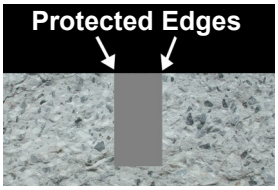


Figure 2

- Using compressed air or vacuum, blow out or remove all dust, dirt, debris, oil and any other contaminate from the crack or spall.
- Minimum spall depth across the entire repair area should be 1/2 in. (12 mm) when applying mortar. **NOTE:** There should not be any high spots.

Cartridge Preparation

Shake the cartridge vigorously for 20 seconds, then stand cartridge upright for at least 1 minute allowing any bubbles to rise to the top. This will disperse any pigment that may have settled.

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. Remove the plastic cap and plug from the top of the cartridge.

IMPORTANT: Before attaching nozzle, balance the cartridge by slowly dispensing a small amount of material into a disposable container until both components flow evenly from cartridge. Find the flow control inside the threaded end of the mixing nozzle attached to a tape strip. 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. Install mixing nozzle onto cartridge.

Continue to point the nozzle upward away from yourself and others while slowly apply pressure to dispenser moving any bubbles and product up through the nozzle until it reaches the tip. Dispense this first full stroke of material into disposable container. The cartridge is now purged 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 you have any problems in dispensing product, replace the nozzle. The product may have begun to cure in the nozzle which will affect the mix ratio. Never transfer a used nozzle to a new cartridge. Repeat the cartridge balancing from step 3 above after replacing the nozzle. When mixing multiple batches, always use a clean container for each batch to prevent acceleration of cure time.

INSTALLATION INSTRUCTIONS

Crack Repair Procedures

- 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.
- 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. (12 mm) deep on top to support traffic.
- The repair will be tack-free in 12 – 20 minutes at 77 °F (25 °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.

Spall Repair Procedures

- For best results have all equipment and materials prepared prior to mixing. The ratio of sand to mixed adhesive should be approximately 2 parts sand to 1 part of mixed product. Premeasure the dried sand needed based on the volume of mixed CRACKBOND CSR-FLEX.
- When using bulk packages, (2 or 10 gallon kits), QUICKLY, but thoroughly, mix only the amount needed for the repair (50 % of Part A with 50 % of Part B by volume) with Jiffy mixing paddle (or similar) and drill motor at low speed for 20 seconds maximum.
- While one person is still mixing A & B, have a second person 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.
- After mixing, product must be placed within 5 minutes at 77 °F (25 °C). In warmer temperatures, place product in less than 5 minutes. Rapidly pour and trowel (do not over trowel due to fast cure of product).
- Only mix the quantity that can be mixed/placed within 5 minutes (1 gallon at a time maximum).
- Repairs should be from a minimum 1/2 in. (12 mm) up to a maximum 3 in. (76 mm) per lift to avoid cracking from exothermal heat.

Deep Patch or Joint Nosing Procedures

- The perimeter and depth of the repair area must be saw cut into good sound concrete.
- Chip out and remove all loose concrete and debris. The area must be completely dry prior to starting the work.
- Using a bulk dispensing applicator with approved mixing nozzle, apply a thin primer layer of the CRACKBOND CSR-FLEX to the clean dry concrete. Then add a layer of completely dry 3/8 in. (10 mm) crushed rock with a maximum depth of 5 in. (127 mm) per lift.
- Flood the CRACKBOND CSR-FLEX into the 3/8 in. (10 mm) rock across the entire repair until the liquid is at the surface of the rock.
- Then add additional lifts as needed following the same procedure until 3/4 in. (20 mm) lower than the concrete surface.
- For the final layer, broadcast the specified dry topping aggregate flush with surface of the concrete then flood with CRACKBOND CSR-FLEX flush with the surface.
- Allow to cure a minimum of one hour or until minimum properties for opening to traffic are achieved.