The CRACKER

DESCRIPTION The Cracker is a Non-Explosive Cracking Agent for Universal Application. It enables standard demolition to be carried out with comparative accuracy, without the need for special equipment or preconditions. Compared to conventional methods of demolition, The Cracker is virtually noiseless and free from vibration. It is moreover, ECOLOGICALLY FRIENDLY.

- The Cracker is supplied in powder form and sealed in vacuum packed heavy duty plastic bags.
- The Cracker is mixed with a specific amount of water and poured into specifically spaced pre-drilled vertical holes (see instructions).
- After a few hours reaction time, The Cracker develops an extremely high expansion pressure that breaks reinforced concrete or hard stone.
- The Cracker is easy to use indoors as well as outdoors and in dry or humid environments
- Use where inaccessible for typical demolition, where blasting is not permitted or where heavy equipment, noise or vibration is unacceptable

WEBSITE **To view our Video go to the ATC Website at www.ATC.ws or Scan this QR Code.**

PACKAGING	
Bulk Only	Part #'s
11 lb (5 kg) bag	**CRKR**

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EQUIPMENT REQUIRED

1. Protective goggles, rubber gloves and a dust mask.
2. Five (5) gallon plastic buckets (for mixing The Cracker)
3. Bucket for water
4. Water supply (cool & clean; ice will be required in warm environments)
5. Measuring cup (calibrated)
6. Jiffy mixer attachment for 1/2" electric drill **(no hand mixing)**
7. Handheld Infrared Thermometer

WATER--The CRITICAL FACTORS

1. **Amount of mixing water:**
   - Must use EXACT amounts. Addition of too much water can cause product failure or a "blow-out". **WATER MUST BE MEASURED.**

2. **Temperature of the mixing water:**
   - Water must be added in the proper amount according to the temperature of the material being broken. First measure temperature of the material to be broken using an infrared thermometer, then adjust water temperature accordingly.
   - To prevent overly rapid reaction, when ambient temperature and concrete or rock temperature is 73ºF or above, it may be necessary to ice the mixing water
   - In cold weather, mixing water may be slightly warmed to speed up the reaction and facilitate cracking.

Refer to Chart on Page 4 for exact water amounts and temperature adjustments.

HOLE DIAMETER

1. When the temperature of concrete or rock is over 73ºF, the hole diameter must be 1 ¼".
2. When the temperature of concrete or rock is below 73ºF, the hole diameter must be 1 ½".

Smaller holes will decrease effectiveness and larger holes may be dangerous to the installer.

HOLE DEPTH

- The Cracker is not recommended for slabs of less than six (6) inches. Hole depth must be at least four (4) times the diameter. Holes that are too shallow can create a "blow-out" or product failure.
- The hole depth should be 85% - 90% of the depth to be broken in reinforced concrete or hard rock. This percentage will give you maximum production.
- Do not ever drill all the way through the material to be broken. The Cracker will simply run out of the hole.
- Maximum hole depth is ten (10) feet. If breaking deep foundations or high wall or rock formations, lifts are recommended.

FREE EDGE / OPEN FACE

Just as with blasting, The Cracker must have an area of "least resistance" toward which it can break. At least two edges are required. If you are in bedrock or removing part of a slab without free edges, an "open face" can be created by opening a small area with The Cracker to provide relief.

HOLE CONDITIONING

- Holes must be clean (drilling dust blown out) and dry.
- Allow holes to cool from friction of drilling
- Be aware of the concrete and hole temperatures. If in the sun, holes may be cooled using fresh cool water through a water hose. Dry holes with compressed air prior to mixing The Cracker.

HOLE SPACING

- As a general rule, hole spacing can be on 12" centers in reinforced concrete or hard rock. However, in rock of extremely high tensile strength (above 5,000 psi) or greater reinforcement on 6" centers, holes should be placed on 6-8" centers. In light or nonreinforced concrete or rock of low strength, centers ranging from 14" - 15" may produce satisfactory results. Always try a few holes spaced at 12 inch centers first as a test before increasing /decreasing hole spacing.
- If drilling in rock of very low strength, never space holes at a distance less than the hole depth.
- It is permissible to cast holes with PVC pipe in concrete being poured which will have to be broken later. However, it is recommended that 1 ½" OD pipe be used and removed. If pipe is left in the concrete, do not leave pipe protruding above concrete surface. If filled above surface with The Cracker, a "blow-out" can occur. Also, be sure that pipe is not extremely hot if sitting in the sun.
- Particularly in rock, it is always helpful to do some test holes in order to save time and material.

HOLE PATTERN

Hole pattern is determined by the material to be broken (strength or reinforcement) and by the size blocks or configuration which the object is to be broken. See Diagrams on Pages 5 and 6.

ESTIMATING QUANTITY REQUIRED

- Temperature of the concrete or rock to be broken will determine hole size (1 ¼" or 1 ½").
- Size pieces into which you wish to break will determine hole pattern.
- Each 5 kg (11 lb) bag of The Cracker, mixed with water will fill 7 1/2 linear feet of 1 ½" holes or
- 10 feet of 1 ¼" holes.
- Hard rock or reinforced concrete requires anywhere from one to three bags per cubic yard, depending on the size into which it will be broken.
- Boulders often require less than one bag per cubic yard - production can be up to 4 cubic yards per bag, depending on the size into which the boulder will be broken.
- Formulas for calculating quantities follows:
  1. For 1 ½" holes: number of holes x depth of holes in feet divided by 7.5 = # of 5 kg (11 lbs)
  2. For 1 ¼" holes: number of holes x depth of holes in feet divided by 10 = # of 5 kg (11 lbs)

CHART FOR CORRECT MIXING OF THE CRACKER IN VARYING TEMPERATURES

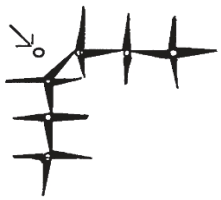
Temperature of material to be broken:	32º - 40ºF 0º - 4ºC	41º - 48ºF 5º - 9º C	49º - 57ºF 10º - 14º C	58º - 72ºF 15º - 22ºC	73º - 84ºF 23º - 29ºC	85º - 100ºF 30º - 35ºC
Mixing Water Temperature	110ºF maximum	100ºF maximum	85ºF maximum	68ºF maximum	40ºF (iced) maximum	33ºF (iced) maximum
Amount of Water	1 liter (20%) 33 oz per 5kg bag	1 liter (20%) 33 oz per 5kg bag	1 liter (20%) 33 oz per 5kg bag	1 liter (20%) 33 oz per 5kg bag	1.16 liters (23%) (38.5 oz) per 5kg bag	1.16 liters (23%) (38.5 oz) per 5kg bag
Hole Diameter	1 ½"	1 ½"	1 ½".	1 ½"	1 ¼"	1 ¼"
Minimum Hole Depth	7 ½"	7 ½"	7 ½"	7 ½"	6 ¼"	6 ¼"
Hole Spacing	12 inches	12 inches	12 inches	12 inches	12 inches	12 inches
Hole Condition	Dry and dust free	Dry and dust free	Dry and dust free	Dry and dust free	Dry and dust free	Dry and dust free
Optimum Installation Time	Noon-warmest part of the day	Noon-warmest part of the day	Noon-warmest part of the day	If outdoors, avoid hours of hottest sun	Early morning or late afternoon when concrete or rock has cooled.	Early morning or night when concrete or rock has cooled.
Other information	Use wet cloth or thermal cover. Heat area	Use wet cloth or thermal cover. Heat area	Use wet cloth or thermal cover. Heat area	Cover with wet cloth, protect from sun	Cover with wet cloth, protect from sun	Cover with wet cloth, protect from sun
Initial Cracking Approx. Time	24—48 hours	12—48 hours	5—18 hours	2—8 hours	2-4 hours	1—3 hours
Installation Time	5 minutes Maximum	5 minutes Maximum	5 minutes Maximum	5 minutes Maximum	5 minutes Maximum	5 minutes Maximum
The Cracker Condition	Normal storage Out of extreme cold	Normal storage Out of extreme cold	Normal storage	Normal storage Out of high heat	Keep the Cracker as cool as possible before use	Keep the Cracker as cool as possible or on ice before use

NOTE:
REMEMBER THAT ALTHOUGH AMBIENT TEMPERATURE MAY BE IN RANGES STATED ABOVE, THE ACTUAL TEMPERATURE OF CONCRETE OR ROCK TO BE BROKEN MAY BE MUCH HIGHER IF IT IS IN THE SUN OR AFFECTED BY NEARBY HEAT FROM MACHINERY OR FROM DRILLING THE HOLES. BE SURE THAT YOU ARE AWARE OF THE CONCRETE OR ROCK TEMPERATURE AND HAVE ALLOWED THE HOLES TO COOL AFTER DRILLING. ALWAYS RUN FRESH COOL WATER THROUGH HOSE.

HOLE LOCATION---DIRECTING THE CRACKS

An individual drill hole or evenly scattered drill holes produce a random crack development.

Neighboring drill holes inevitably promote a crack along the axis of the drill holes.



Omitting to fill a corner drill hole relieves the tension in two (2) main crack lines thereby enabling them to combine in a curve.

Effect / Method	Breaking Power	Situation on the site				Safety	Safety Precaution simplicity	Economy
		Noise	Dust gas	Vibration	Rockfall			
Hydraulic wedge	▬	●	●	●	●	●	●	▬
Rock-breaker	❍	❍	★	★	●	★	●	❍
Concrete cracker	★	❍	▬	❍	❍	❍	▬	❍
Explosive (dynamite)	●	▬	▬	▬	▬	▬	▬	●
The Cracker	★	●	●	●	●	●	●	★

Explanation:

- ● Very good / or not ecologically harmful
- ★ Good
- ❍ Less good
- ▬ Unsatisfactory and / or ecologically harmful

MAKING OPENINGS IN WALLS AND ROOFS

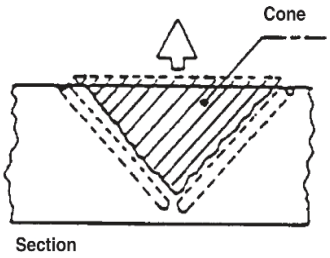


Diagram I

To ensure that no undesired reaction forces are developed at the point where ceiling and wall are bonded, it is necessary first to remove a cone-shaped portion as illustrated in Diagram I in accordance with the principle applied when cracking rocks.

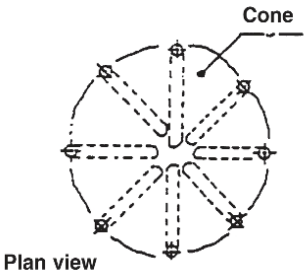


Diagram II

In vertical walls, drill with a slight downward slope. Then systematically enlarge the craters as per Diagram III

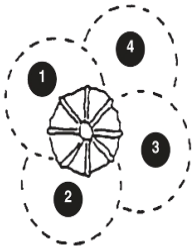
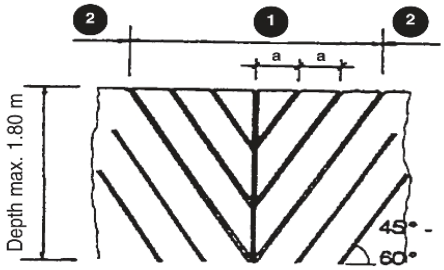
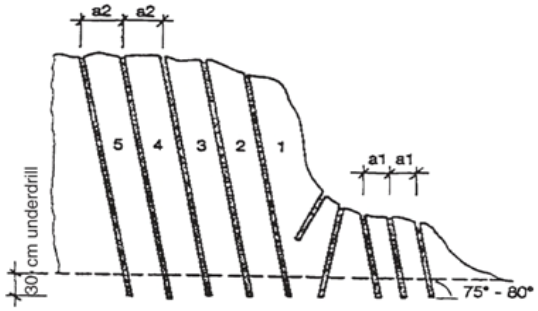


Diagram III

CRACKING ROCKS



If a rock formation does not have free access from the side it is necessary to crack an opening which provides access.
The drill holes (1) of the opening are filled with The Cracker and then, at one hour intervals, the drills holes (2) are filled, one row after the other.



With rock formations it is first necessary to fill the holes at the foot of the formation, i.e., the foot holes, with The Cracker (a1).
It is advantageous to drill these closer together than the actual demolition holes (a2). Here too, each row of holes must be filled at intervals with The Cracker, i.e., one row after the other.

INSTRUCTIONS FOR SAFELY MIXING & USING THE CRACKER

1. **READ ALL INSTALLATION INSTRUCTIONS COMPLETELY BEFORE USING THE CRACKER**
2. **Read all Safety Precautions first** for PPE recommendations and safe product handling.
3. Clear site of non-essential personnel. The jobsite should be closed to the public.
4. Use a thermometer to determine temperature of the concrete or rock to be broken.
5. Specific to the temperature of the material to be broken, consult the temperature chart for correct hole size, amount & temperature of mixing water, time of installation and other recommended procedures.
6. Pre-drill holes according to temperature. Refer to Chart on Page 4 (do not deviate from recommended diameter).
   - Depth should be 85% - 90% of area to be broken but a minimum of 4 times the hole diameter.
   - Example: 1 ¼" diameter hole must be at least 5" deep. Maximum depth is 10 ft.
   - Example: 1 ½" diameter hole must be at least 6" deep. Maximum depth is 10 ft.
   - Remove all drilling dust by blowing. Remove any standing water from the holes.
   - Hole spacing and pattern is determined by structure and sizes into which it will be broken.
   - Allow holes to cool from friction of drilling. If the temperature of the holes exceed the safe range, they can be cooled with ice water and then blown out with compressed air. Recheck the hole temperature.
7. Assemble all mixing and safety equipment, water (and ice if necessary).
8. Referring to the Chart on Page 4, **measure correct amount of water** and prepare by icing or warming to the temperature specified. **Never add water to product "unmeasured" using a hose !!!**
   - When concrete or rock is below 73ºF, use 1.0 liter (33 oz) water per 5 kg (11 lbs) of Cracker. Do not add extra water. At first, The Cracker will appear to be too dry, but will liquefy itself as mixing proceeds. Excess water will slow or stop reaction.
   - When concrete or rock is above 73º, use 1.16 liters (38.5 oz) water per 5 kg (11 lbs) container. The additional water is essential in warmer environments and reduces the chances of a "blow-out"
9. The Cracker Powder should also be kept as cool as possible prior to mixing it in warm weather.
10. Pour The Cracker powder into the water and immediately begin mixing with a ½" electric or pneumatic drill with a "jiffy-mixer" attachment.
    - **TIME ELAPSED SHOULD NOT EXCEED 5 MINUTES FROM THE BEGINNING OF MIXING**
    - Hand mixing is not recommended as it can take too much time to achieve the correct consistency, thereby increasing the danger of a "blow-out".
    - Mix only until a smooth, pourable liquid consistency develops (almost no lumps).
    - If over mixed or allowed to stand in the bucket, The Cracker will thicken and begin to react.
11. Pour the mixed Cracker directly from bucket into clean, pre-drilled holes immediately upon achieving a smooth liquid consistency.

Do not use any type of funneling device. Do not attempt to pump into the holes.

12. Start filling holes nearest free edges or open face and work into the center or away from free areas.
    - Fill holes to top. **Personnel should avoid looking down into the holes at any time.**
    - Do not pour freshly mixed Cracker into holes partially filled from a previous batch.
    - Do not plug holes or place heavy objects on top of hole.
13. Cover holes with wet cloth if personnel will remain in the area or if holes are exposed to sunlight in high temperatures.
14. Do not leave unused mixture in the container. Very high temperatures develop and expansion ensues. Pour any unused material from the bucket onto the ground (non-hazardous) and dilute with cool water.

Additional SAFETY PRECAUTIONS

- **THE CRACKER IS AN IRRITANT TO EYES AND SKIN**
- **ALWAYS WEAR SAFETY GOGGLES, RUBBER GLOVES and DUST MASK**
- The Cracker contains un-hydrated lime. Upon contact with skin or eyes, flush liberally with cool water.

1. See the **MSDS** for further safety precautions published on our **Website www.ATC.ws.**
2. Follow hole diameter, temperature and time restrictions.
3. The Cracker should not be used in coal mines or other areas with potential for ignition of gases as temperatures of the mixed product can turn very hot for a short period during the hydration process.
4. If steam develops in the bucket at any time, immediately add at least 1/2 gallon of water to stop the reaction. Avoid this situation by mixing and pouring within a 5 minute period
5. **THE CRACKER SHOULD ALWAYS BE KEPT OUT OF THE REACH OF CHILDREN.**

ACTIONS THAT CAN CAUSE A "BLOW-OUT"

(Product spurting or exploding out of the hole - particularly in warm weather)

1. Use of water that is too warm (see temperature chart & mixing instructions).
2. Use of too little water (see temperature chart & mixing instructions).
3. Waiting too long to install after beginning to mix (never wait more than 5 minutes in warm weather).
4. Holes of too large diameter (see temperature chart - never over 1 1/2" inches).
5. Holes that are too shallow (must be at least 4 times the hole diameter).
6. Hole spacing which is too close in hot weather.
7. Dust in the holes which can absorb the water.
8. Installation of The Cracker in the hottest part of the day in warm weather, when concrete or rock is heated and the sun will be directly on it. Consider early morning or evening installation.
9. Allowing a container of The Cracker to become super-heated (standing in sun or in hot vehicle) prior to usage. **Keep The Cracker as cool as possible.**

Actions That Can Cause Product Failure

- Use in extreme cold (temperature below 32º F).
- Use of too much water (see temperature chart & mixing instructions).
- Allowing moisture into or contamination of the stored product.
- Water, dust or other materials left in holes.
- Holes of too small diameter (less than 1 ¼").
- Hole spacing too great in hard rock or heavily reinforced concrete.
- Use of The Cracker without free edges or an "open face" toward which it can break.

WARRANTY Adhesives Technology Corporation (ATC) warrants to the Buyer that this product is in good quality and conforms to the manufacturer's specifications in force on the date of manufacture and when used in accordance with the Installation Instructions and when stored as directed in the technical literature. Manufacturer cannot warrant or guarantee any particular method of use, performance or application under any particular condition and Buyer is responsible for determining the suitability of intended purpose and assumes all risks therein. ATC shall not be liable for any injury, loss, cost of labor or consequential damages either directly, indirectly or incidentally, arising out of the use or misuse of any product sold by ATC or another distributor. If the product is proven to be in nonconformance, the Buyers sole remedy shall be a refund of the purchase price or replacement of product.