

FRACT.AG®

REV. N. 2
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EXPANSIVE MORTAR FOR DEMOLITION AND CUTTING
OF ROCK AND CONCRETE



WHAT IS FRACT.AG?

FRACT.AG is a highly expansive mortar to demolish and cut rocks and concretes.

FRACT.AG swells when poured into a hole and develops a pressure higher than 8000 t/m² on the hole walls, thereby breaking them open.

FRACT.AG is environmentally friendly because it releases no toxic fumes or harmful substances of any kind. It is non-explosive, therefore supervision of trained personnel is not essential.

FRACT.AG storage requires no special precautions, provided the containers are not tampered with and are kept in a dry place.

The product is not sensitive to electrical discharges or currents.

WHAT IS FRACT.AG USED FOR?

FRACT.AG can be used in an almost unlimited range of applications and particularly to break, cut, or demolish rocks, concrete and reinforced concrete when explosives cannot be used for safety reasons.

It is ideal for use in situations where surrounding buildings or other structures would be damaged by flying debris or shock waves.

It maximises production time, product output and therefore profits, in quarrying and mining as it avoids ore loss or dispersion. There is no need for shaft or pit evacuation during blasting.

WHERE CAN FRACT.AG BE USED?

FRACT.AG can be used on any type of rock formation, concrete, reinforced concrete or tiled structure in:

- excavating foundations;
- levelling rocks for road works;
- excavating trenches for pipe-laying;
- underground excavations;
- marine and submarine excavations;
- removing boulders;
- demolition of concrete or reinforced concrete poles, towers, walls, wharves, etc.;
- demolition of foundations;
- demolition of breakwaters/jetties;
- demolition of tiled and refractory structures.

FRACT.AG provides the most technically suitable and cost-effective solution in:

- restricted demolition of rock and concrete structures where nearby structures must be protected from shock waves generated by explosions;
- pre-splitting of rock formations, to create isolated blocks that can then be more easily demolished;
- cutting blocks of marble and granite more economically than with the traditional helicoidal wire-cutting method;
- excavations and demolition of rock formations or cement/concrete structures where the use of explosives would be expensive due to long operating times, special transport, storage and handling precautions and the need to comply with public safety regulations.

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HOW DO YOU USE FRACT.AG?

FRACT.AG is a powder that must be thoroughly mixed with clean water before use, in a ratio of 30% of the overall weight. Put the required amount of water into a large container (1.5 litres for each 5 kg package), gradually add the powder to water stirring all the time to obtain a smooth, lump-free mortar.

Pour the mortar into the prepared holes within 5 to 10 minutes. Slope horizontal holes to allow an easy pouring of FRACT.AG (should some of the mortar leak out of a hole, stop it with a piece of soft sponge).

Do not plug the holes. Cover them only in the event of rain using a waterproof sheet.

The holes must be perfectly dry before pouring in the mortar. If there is heavy leaking, slits or cracks it is advisable to place a polyethylene sheath into the hole and before filling it with the mortar.

The distance between the holes varies depending on the size of the hole (from 32 mm diam. to 50 mm diam.) and the type of material to be demolished or cut.

WHO CAN USE FRACT.AG?

Anyone can use it, in any situations, because FRACT.AG is perfectly safe, soundless and non-hazardous.

It does not leave debris or dust, nor does it form gas or cause any shock waves. Unlike explosives, no permit is required to use FRACT.AG. Unskilled labour can be very easily trained to use FRACT.AG in a short time.

Demolition or cutting operations using FRACT.AG can be interrupted at any time; simply remove the product from the hole by boring another hole into the existing one.

SOME SPECIAL BENEFITS FOR THE MINING INDUSTRY

- Production can be significantly increased as it can be continuously conducted safely.
- Stopping width can be easily controlled as there is no waste to deal with. Mining operations can be conducted in a working environment unhampered by flying debris making cleaning-up unnecessary.
- Efforts are concentrated on exploiting the ore - or precious stone-bearing reef - a factor which is most important in marginal situations.
- The product is ideal for the mining of emeralds and other precious stones, as brittle material is not destroyed or broken up.
- FRACT.AG has a shelf-life of 2 years, thus obviating problems associated with out-of-date material as may be the case with explosives and detonator fuse.
- We believe hoisting operations can be minimised, significantly reducing electricity and maintenance costs.
- Mines employing only FRACT.AG would not need to evacuate personnel from the shaft before blasting. Labour can therefore be more productively and cost-effectively employed, thus safeguarding jobs.
- Because of the all-round saving, particularly in the areas of labour, winching, electricity maintenance and cleaning, many marginal mines could avoid closure via the use of FRACT.AG.
- Mine safety is promoted because there is no danger of underground fire caused by explosives or igniter cord. There is no post-blast caused by misfires. Mine safety is further enhanced since the disturbance of the surrounding rock is minimal as there is no concussion or vibration and there are no blasting accidents.
- Heavily faulted areas are mineable.

TYPES OF FRACT.AG AVAILABLE

Six types of FRACT.AG are available on the market:

- **RED** For temperatures near 5°C (ab. 41°F)
- **GREEN** For temperatures from 5° to 20°C (41° to 68°F)
- **YELLOW** For temperatures from 20° to 35°C (68° to 95°F)
- **BLUE (multipurpose)** To use in demolition work with hole of diameter 40 mm (the temperature affects the reaction time).

FRACT.AG are available in packs of 20 Kg.

FRACT.AG

SAFETY PRECAUTIONS WHEN USING FRACT.AG

Keep your face away from the hole during the first 2-3 hours as the product might (though highly unlikely) eject from the hole violently ("blow-out") if instructions have not been followed correctly.

Goggles and rubber gloves should be worn as a safety precaution.

Do not use small or narrow-mouthed containers, or glass containers such as bottles, flasks, etc., as the product is expansive.

Should you get spray from FRACT.AG in your eyes, do not rub but wash them immediately with plenty of cold water and consult a doctor.

FRACT.AG is an alkaline product with a pH value of approximately 13 and could cause severe irritation to mucuous membranes, especially eyes.

TIPS ON HOW TO USE FRACT.AG

The distance between the centres of the holes in rock or non-reinforced concrete should be 30 to 60 cm, depending on the diameter of the hole. With reinforced concrete, the distance should be 20 to 30 cm.

The smaller the diameter of the hole, the closer one hole can be to another (**for example**: diam. 32 = 30 cm; diam. 35 = 40 cm; diam 40 = 50 cm).

For the best possible use and to obtain best results, it is advisable to carry out preliminary tests with FRACT.AG before starting work. Large diameter holes positioned closer together accelerate breaking times.

When using FRACT.AG with highly absorbent materials like concrete, the holes should be dampened before the mortar is poured, making sure however, that there is no presence of water.

STIMATED CONSUMPTION OF FRACT.AG POWDER FOR 1 M OF HOLES:

Ø	30	32	34	38	40	45	50
kg/m	1,1	1,3	1,5	1,8	2,0	2,6	3,0

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FRACT.AG C - CARTRIDGES

FRACT.AG C was designed to solve some of the minor snags encountered when using expansive mortar FRACT.AG in powder form.

The product is conveniently supplied ready-mixed in plastic-wrapped cartridges and as such there are no limitations to its use in any working environment.

Currently 6 types of FRACT.AG C are available:

■ **RED**

For temperatures around 5°C (<41°F)

■ **GREEN**

For temperatures from 5° to 20°C (41° to 68°F)

■ **YELLOW**

For temperatures from 20° to 35°C (68° to 95°F)

■ **BLUE (multipurpose)**

the temperature affects the reaction time

BENEFITS

Mixing is not necessary thereby eliminating the possibility of using the wrong amount of water, since it will only absorb the required amount. It can be used anywhere without taking special measures (i.g. roofs or wall holes). Reaction time is quicker, therefore it demolishes or cuts faster.

PACKAGING

Cartridges are available in 100 cartridge – boxes. Each cartridge is 28 mm in diameter, 22 cm long and contains 200 gr of FRACT.AG.

They must be used in 30 mm diameter holes. 100 cartridges are enough for a length of 14 to 16 metres of holes.

USE

Open the sealed bag containing the cartridges right before use. Dip the cartridges in a bucket of clean water at the correct temperature (check type of FRACT.AG selected) for approx. 3/5 minutes. Insert the wet cartridges in the holes, one at a time, packing them in tightly with a rod to make them adhere to the wall of the hole. If the last cartridge, once inserted, should not fit, remove it, and using your hands, fold it in half and break it in two pieces which can then be used to complete the filling of two holes.

WARNING TO FRACT.AG USER

Use FRACT.AG only to cut or demolish rocks and concretes.

FRACT.AG generates heat once mixed with water:

- unexpected overheating can cause the product to blow out of holes and hot steam to come out;
- FRACT.AG can overheat if wrong type is used at wrong temperature and the diameter of the hole is larger than it should be or mixing water is too warm.

Once a shot has occurred there may be 3 – 4 other shots out the same hole and in other holes as well. It is then a necessary precaution to stand clear of the filled holes area at this time.

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How to prevent blow out shots:

- a.** use the right colour grade of FRACT.AG for the temperature range, especially with rock or concrete;
- b.** keep every source of heat away from FRACT.AG;
- c.** do not store FRACT.AG in direct sunlight or near a source of heat, cool FRACT.AG before use;
- d.** do not mix into small or narrow-mouthed plastic cans or bowls use instead a metal bucket;
- e.** cool every tool you are going to use before mixing;
- f.** use the indicated water amount (1.5 litre for each bag of 5 kg of product);
- g.** do not use hot water to mix FRACT.AG;
- h.** mix manually no more than two bags (10 kg) for each batch at a time;
- i.** mix thoroughly avoiding lump formation for at least 2-3 minutes;
- j.** If the mortar becomes lightly stiff add a little more water to achieve the right fluidity;
- k.** pour all freshly mixed mortar into holes within 5 minutes of mixing;
- l.** do not overfill the holes;
- m.** do not tamp filled holes with bars or similar tools;
- n.** do not plug holes with hard or setting materials after filling;
- o.** do not pour FRACT.AG mortar into glass bottles or similar containers: the pressure will shatter the glass;
- p.** dispose of non used mortar only after substantial dilution with water on an open surface.

KEEP OUT OF REACH OF CHILDREN

Safety prevention against blow-out shots:

- a.** FRACT.AG is a highly alkaline product, pH reaches 13 after contact with water and can cause severe irritation to mucous membranes, especially eyes.
- b.** Wear safety goggles, rubber gloves and helmet during FRACT.AG handling, mixing and filling.
- c.** Wear a dustproof mask when using FRACT.AG in poorly ventilated areas such as tunnels or mines.
- d.** Do not get your face close to or stand near filled holes for at least 3 hours after filling completion.
- e.** Keep people away from job site after filling.
- f.** Shelter the holes from rain or sunlight only with a cloth or a plastic sheet.
- g.** Skin contact with FRACT.AG must be rinsed off with large amounts of cold water immediately.
- h.** Eye contact with FRACT.AG must be rinsed off with large amounts of cold water immediately without rubbing. Consult a doctor quickly.

WARNING

**THE PRODUCT IS SAFE IF SPECIFICALLY USED AND ACCORDINGLY AS DIRECTED
THE COMPANY DOESN'T ACCEPT ANY LIABILITY OF ANY NATURE WHATSOEVER FOR ANY DAMAGE
OR INJURY WHICH MAY OCCUR DUE TO THE INCORRECT USE OF THE PRODUCT.**