



## SOME TECHNICS TO PLATFORM CUTTING AND SPLITTING OF THE MARBLE BLOCKS

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### ABSTRACT

*In this paper are presented some new techniques with specific material for splitting and cutting of the marble blocks after their separating and topple on the platform. Will be given characteristics of this material, way of use, who can use this material, where can be used etc.*

*We was make some tests in queries for white marble and the results are presented.*

**Keywords:** *marble, techniques, expansive mortar, cutting, splitting, demolition*

### INTRODUCTION

Quarry for construction - technical stone used hydraulic bolt for cutting commercial blocks. In this paper we will be given another different techniques when can used expansive mortar who is nonexplosive material. For this method is needed to make boreholes with drilling machines and then put this material in the holes. After 5 -10 hours the part between holes is broken with crack.

This material is with different names on the market and depends of country have different commercial names. In this area (Balkan) are presented many types of this material but most popular for us is type with name FRACT.AG (company chimica edile, s.r.l., Italy).

### WHAT IS FRACT.AG AND WHERE CAN BE USED?

This is material – highly expansive mortar to demolish and cut rocks and concretes. When is purred into a hole after some time develops a pressure higher then 8000t/m<sup>2</sup> on the hole walls.

It is non explosive material, and for storage requires no special conditions, provided the containers are not tampered with and are kept in a dry place.

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

We can used on any type of rocks formation, concrete or tiled structure in: excavating foundations, leveling rocks for road works removing boulders, different demolitions for buildings, poles, towers, walls etc. Also this is very important: can be use for cutting blocks of marble, granite and travertine more economically than with the traditional helicoidal wire-cutting method and excavation and demolition of rocks formation or cement/concrete structures where the use of explosives would be expensive due to long operating times, special transport, more secure and safety ways, storage and handling precautions and the need to comply with public safety regulations.

### WHO CAN USE AND HOW FRACK.AG?

In general anyone can use it in any situations, because it is perfectly safe, soundless and nonhazardous. It does not debris or dust, not does it form gas or cause any shock waves. Unskilled labour can be very



easily trained to use in a short time. FRACKT.AG is a powder that must be thoroughly mixed with clean cool water 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.

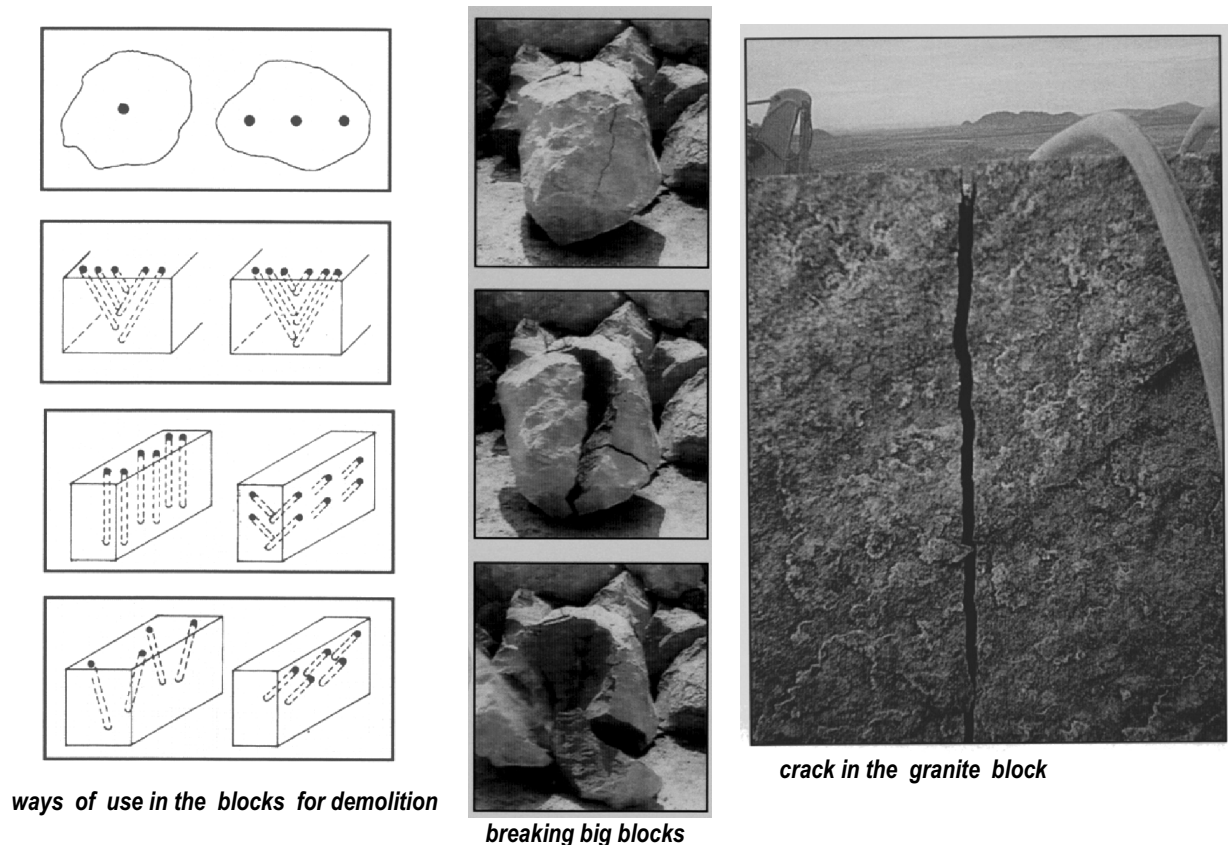


Fig.1 Ways of use fract.ag (for demolition, cuts, splitting, breaking rocks)

#### TIPES OF FRACT.AG AVAILABLE

On the market are any types of this material or agent. There are six types of fract.ag like powder and plus type with cartridge for horizontal holes.

Depends of temperature in the air this types can be used.

RED – for near 5°C, GREEN – for temperatures from 5 to 25°C, YELLOW – from 20 to 35°C, BLUE – 50 to 60°C – universal.

The product in cartridges is conveniently supplied ready – mixed in plastic wrapped cartridges and as such there are no limitation to its use in any working environment. 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 (roofs or wall holes). reaction time is quicker, therefore it demolishes or cuts faster. Cartridges are available in 100 cartridge – boxes. each cartridge is f 28mm , 22cm long and contains 200g of agent. They must be used in 32-34mm diameter holes.



Fig. 2 Types of frack.ag available

### TIPS ON HOW TO USE AND WARNING TO USER

When we use FRACT.AG must to know tips for best useful. The diastance between the centres of the holes in the rock (marble or granite) or non-rienforced concrete should be 30 to 60cm, depending on the diameter of the holes. (for example: diam. 32mm dist = 30cm, 35=40cm, 40mm=50cm).

Estimated consumption of FRACT.AG powder for 1meter of hole is:

<b>Diameter</b>	<b>30</b>	<b>32</b>	<b>34</b>	<b>38</b>	<b>40</b>	<b>45</b>	<b>50</b>
<b>Consumption (kg/m)</b>	<b>1,1</b>	<b>1,3</b>	<b>1,5</b>	<b>1,8</b>	<b>2,0</b>	<b>2,6</b>	<b>3,0</b>

When we use this agent must keep our face from the hole during the first 2-4 hours as the product miht (thoigh highly unlikely) eject from the hole violently (blow-out) if instruction have not been followed correctly. goggles and rubber gloves should be worm as a safety precaution. This is an alkaline product with a PH = 13 and could cause severe irritation to mucous membranes, especially eyes.

### TESTS WITH FRACK.AG IN SOME QUARRYES FOR MARBLE AND GRANITE

We make some test in quarries in Macedonia for marble and granite. We will present as bellow.

#### **1<sup>st</sup> test in marble quarry:**

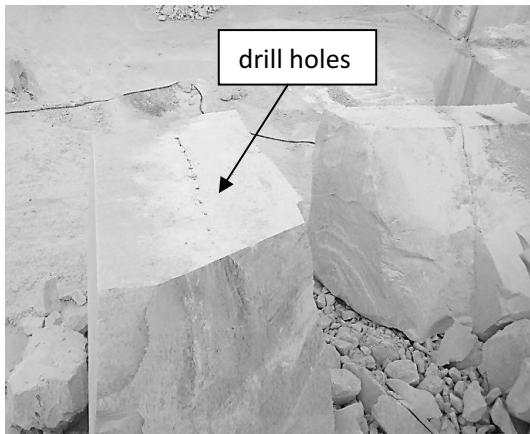
Diameter of holes: 32mm

Distance between holes: 30cm

Consumption: 1,3 kg/m'

Type of rock: pure white marble

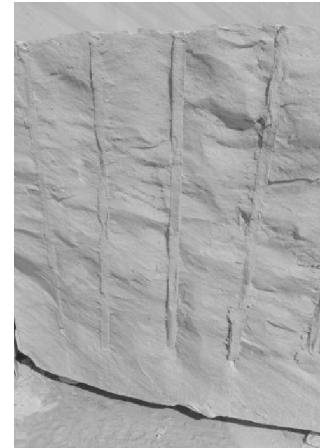
Use is for make cut between two blocks.



block with holes before use



crack between new part of block



new fresh site of the block

**2<sup>st</sup> test in marble quarry:**

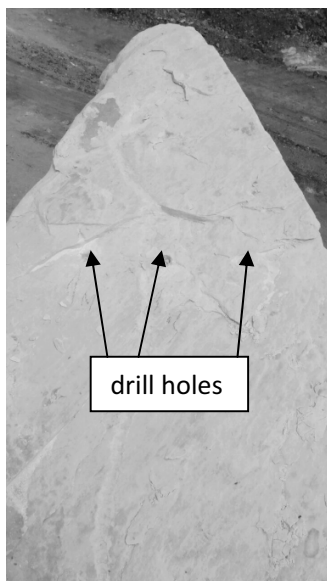
Diameter of holes: 32mm

Distance between holes: 35cm

Consumption: 1,5 kg/m<sup>3</sup>

Type of rock: white marble

Use is for make new small block



block with holes before use



broken new part of block



new fresh site of the block

**3<sup>st</sup> test in granit quarry:**

Diameter of holes: 32mm

Distance between holes: 30cm

Consumption: 1,3 kg/m<sup>3</sup>, Type of rock: granite, Use is for make cut (crack) on the big block

There was tree different test



preparing blocks with fract.ag



results of fract.ag

### CONCLUSION

This material (base is  $\text{CaCO}_3$ ) can use in any situation for more methods for cutting and splitting blocks in the quarry mine. Also this agent we can use for demolition concrete/cement structures. This method is more economically than standard methods of cutting blocks of marble or granite. The time for action effects depend of weather and temperature on the blocks. This time was between 5 and 12 hours for our tests which we make in this quarries.

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