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THE FRIENDSHIP AND PROGRESS”

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# **BALKANMINE CONGRESSES**

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September 13-17, 2005.  
Varna, Bulgaria  
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## **II Balkan Mining Congress**

September 10-13, 2007.  
Belgrade, Serbia  
President of the Balkan Coordinating Committee:  
Prof. dr Slobodan Vujić

## **III Balkan Mining Congress**

October 1-3, 2009.  
Izmir, Turkey  
President of the Balkan Coordinating Committee:  
Dr. Eng. Bahtiyar Ünver

## **IV Balkan Mining Congress**

October 18-20, 2011.  
Ljubljana, Slovenia  
President of the Balkan Coordinating Committee  
Dr. Marjan Hudej

## **V Balkan Mining Congress**

September 18-21, 2013.  
Ohrid, Republic of Macedonia  
President of the Balkan Coordinating Committee:  
MSc. Sasho Jovchevski

## **VI Balkan Mining Congress**

September 20-23, 2015.  
Petrosani, Romania  
President of the Balkan Coordinating Committee:  
Prof.dr. Nicolae Iliaş

## IN MEMORIAM



Assistant professor Tomo Benović was born on January 06, 1958 in Bogutovo Selo in Ugljevik. From 01.02.1982. Tomo Benović was employed in Rudnik i termoelektrana Ugljevik in the following works: trainee, shift manager, technical manager of coal production, assistant director (for mines and technical business), manager for mining and geological service, director of RiTE Ugljevik, coordinator for coordination with Regulatory Authorities, Team Leader of Project Implementation and realization of investments and projector for the mine. Tomo Benović was the first Mayor of Municipality Ugljevik and in the period 2000-2002 he had been a member of the National Assembly of Republic Srpska. Tomo Benović had been in the following scientific and professional organizations and associations: the Chairman of the Alliance of Engineers and Technician of Mining - Geological and Metallurgy Profession, the membership of the International Coordination Committee of the Balkan Mining Congress from Bosnia and Herzegovina in two mandates.

At the Senate of the University of Banja Luka session, held on August 25, 2016, Tomo Benović PhD in mining was elected as Assistant professor for scientific research - Surface exploitation of the mineral raw materials. Assistant professor Tomo Benović tragically died on 27 November 2016 in a traffic accident.



## Preface

Dear Colleagues,

On behalf of the University of Banja Luka, the Faculty of Mining Prijedor and the International Coordination Committee of the 7<sup>th</sup> Balkan Congress, we welcome you as respected and dear guests of the University and Faculty, Prijedor, Republic Srpska and Bosnia and Herzegovina. The 7<sup>th</sup> Balkan Mining Congress has a motto "**Balkan mining for the friendship and progress**", which speaks enough about the basic idea of organizing and holding this event. This Congress has been held biennial in the Balkan countries.

This international meeting is an opportunity for Congress participants - authors of works, sponsors, exhibitors, representatives of institutions and companies to meet each other, exchange experiences in solving problems and issues related to the development of mining, geology, and the work of companies. Every opportunity to hear something new, something that is applied in other countries and conditions is the chance to find a chance in this transition period which is difficult for the work and development of mining companies. The exploitation of mineral resources could be beneficial, for the producers themselves, and for local communities and countries where these mines are located.

In contemporary trends in the mining and geology development, there are dilemmas to reconcile certain, at first sight, completely opposed and incompatible activities: mining, environmental protection, optimal economic effects of mining activities for the concedents and concessionaires. The Balkan Mining Congress is a unique opportunity to talk about these issues, exchange experiences, find solutions and align certain models of more rational solutions.

Wishing to feel comfortable and pleasant in Prijedor, and after the end of the Congress, you go home happy and with the view that it was worth being here, I greet you in my personal name and the name of the University in Banja Luka-Mining Faculty Prijedor and others co-organizer of the Congress.

Prijedor, October 2017.

Assoc. prof. Vladimir Malbašić

Chairman of the Organizing Committee  
of the 7<sup>th</sup> Balkanmine Congress

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#### **- Logistic processes-**

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## EXPANSIVE MORTAR TO DEMOLISH AND CUT ROCKS AND CONCRETES

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### APSTRACT

In this paper are describe the material - expansive mortar for demolish and cutting rocks and all tipe of concretes. Also are given some results of use in the queries in Macedonia for extracting commercial blocks of pure white marble.

Key words: mortar, no explosion, cutting, demolish, marble

### 1. INTRODUCTION

This material is highly expansive mortar to demolish and cut rocks and concretes. When is purred into a hole after some time develops a pressure higher then  $8000 \text{ t/m}^2$  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.

This material are produce with diferent commercial names. Most popular is this tip FRACT.AG, from the firm CHIMICA EDILE, srl, Italy. Six tipos of Fract,AG are available on the market. This all tipos are in use depends of temperature in the air when we use.

## 2. WHO CAN USE AND HOW FRACKT.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 liters 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.

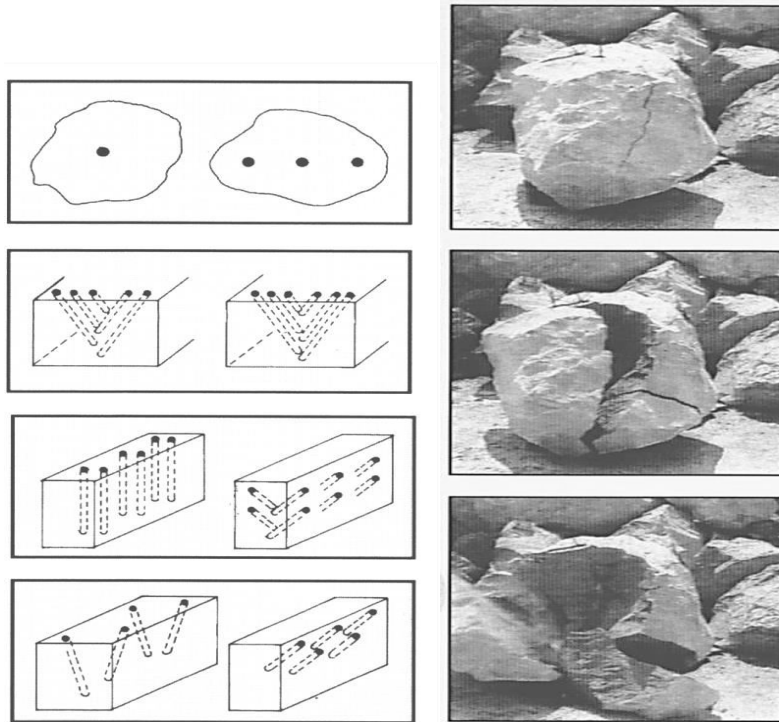


Figure1. Ways of use fract.ag (for demolition, cuts, splitting, breaking rocks)

### 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 28 mm, 22 cm long and contains 200 g of agent. They must be used in 32-34 mm diameter holes.



Figure 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 distance between the centres of the holes in the rock (marble or granite) or non-reinforced concrete should be 30 to 60 cm, depending on the diameter of the holes. (for example:  $d = 32 \text{ mm}$  dist = 30 cm,  $35 = 40 \text{ cm}$ ,  $40 \text{ mm} = 50 \text{ cm}$ ).

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 might (thigh 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.

### 3. SOME RESULTS OD USE FRACT.AG IN QUERIES

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: 32 mm, Distance between holes: 30cm, Consumption: 1,2 kg/m', Type of rock: white marble, Use for make cut between two blocks and breaking the blocks.



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

Diameter of holes: 32 mm, Distance between holes: 30cm, Consumption: 1,2 kg/m<sup>3</sup>. Type of rock: white marble, Use is for make new CUT between holes.





#### 4. 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 to 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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