



MAXMORTER[®]

EXPANSIVE

**HIGHLY EXPANDING MORTAR FOR SAFE
DEMOLITIONS WITHOUT EXPLOSIONS**



DESCRIPTION

MAXMORTER® EXPANSIVE is a high safety demolition mortar to demolish where dynamite is not an option. So, it is an essential, effective and definitive alternative to the use of conventional explosives, being not only safer, but in many cases much more economical.

When **MAXMORTER® EXPANSIVE** is mixed with water and poured into holes, it hardens and provides an expansive pressure on the hole walls which cracks the element to be demolished.

APPLICATION FIELDS

- Shattering and demolition of loose rocks, fixed bedrock with or without access, cracking of beams or columns, walls, demolition of buildings, bridges, water reservoirs, safety boxes, silos, chimneys, etc.
- Excavation and mining.
- Cutting of marble, granite or decorative stone blocks

ADVANTAGES

- Quicker and more economical demolitions than using heavy machinery, such as hydraulic hammers, vibration, etc.
- Breakage in a safe and precise way, without vibration or explosion, hammering noise or tremor, no gases, sparks or accessibility problems. No contamination or ecological assaults. Does not stop any other job on the site.
- Environmentally friendly because does not cause damages to ecosystems whether fauna or flora, being an irreplaceable resource in underwater demolitions.
- Non-explosive system. Does not require permits or experience, so it can be used by any workman, anyplace, even in closed or reduced spaces or with difficult access.
- Specially indicated in risk areas with presence of flammable or explosive products.
- Suitable for rocks, reinforced or unreinforced concrete in both large jobs and small projects.

APPLICATION

Effectiveness for **MAXMORTER® EXPANSIVE** depends on the temperature, i.e. type of version to be used (Summer/Winter), type of element to be demolished and depth, diameter and placement of the holes drilled in the material.

Depth and diameter of the holes

Drill the holes with an electrical drill, rock drill or crawler drill to the diameter and depth required.

Drill hole length must be almost the whole of the element to break (80-90% of the thickness) without passing it in order to avoid that material comes out from the bottom. Minimum hole depth must be about 5 times the hole diameter and never exceed 1,8 m length.

Maximum drill hole diameter must be 40 mm when ambient temperature is below 22°C, or 35 mm when temperature is higher. The smaller the diameter of the drill hole, the closer one drill hole can be to another, so holes with big diameters and positioned closer together will provide shorter breaking times.

Drill hole design

Drill holes must be drilled so as to allow a free face for the expansive mortar to push towards. For a hole diameter given, i.e. temperature, the distance between holes varies depending on the type of material, accordance with the Table.

Surface preparation

Drilled holes must be free from grease, loose concrete, contaminants or any other material that could affect to performance of the mortar. The cavity must be cleaned after drilling of loose particles and dust with blow pump, vacuum means, compressed air or water, starting from the bottom of the hole.

Before the application of **MAXMORTER® EXPANSIVE**, specially with very porous and absorbent material such as concrete, the hole surface must be dampened with clean water using a swab i.e. it must be saturated surface dry avoiding any free-standing water. Special attention should give to this matter when dealing with absorbent substrates or applications exposed to the direct sunlight.

Mixing

A 15 kg plastic bag of **MAXMORTER® EXPANSIVE** is mixed with 3,75 to 4,20 litres of clean water (maximum: 25-28% by weight). Always add the water to the powder. During mixing, initially the material may seem that requires more water, but do not add it. The use of a very powerful mixer with low revolutions should be used in order to achieve a fluid mixture with the water ratio recommended and a homogeneous appearance with no lumps. Mixing container should have double volume that the powder to be mixed.

Filling of the holes

Place the expansive mortar into the drilled holes within 5-10 minutes after mixing. In order to minimize the chance of air entrapment, **MAXMORTER® EXPANSIVE** should be placed in a continuously way. When filling the drill holes, leave a space of at least 2 to 3 cm without material.

Filling of horizontal holes: There are several alternatives.

- a.-: Drill the holes with a slight slope and then, pour the fluid mortar into the holes by gravity directly from the mixing container.
- b.- Place the fluid mortar into a thin plastic tubes or sacks forming cartridges and then, place these cartridges into the holes.
- c.- Force expansive mortar into the drilled hole using a pump and then, plugging the hole with a quick setting mortar such as **MAXREST®** or **MAXPLUG®** (Technical Bulletins 2 and 4 respectively), plaster or rubber stoppers, with two holes, one for filling in and the other to allowing the air to escape and for controlling the filling.

Filling of holes with water: Use a thin polyethylene bag or tube of a slightly larger diameter than the drill hole. After introducing all the way down the hole, fill the bag with **MAXMORTER® EXPANSIVE** through a plastic tube.

Filling of vertical holes: Pour **MAXMORTER® EXPANSIVE** into the holes by gravity directly from the drum or use a funnel or similar. Fill approximately until 2-3 cm from the edge. For large jobs and for a more comfortable application a pump can be used.

Application conditions

For a temperature range from 15 to 30°C, the **MAXMORTER® EXPANSIVE -S** (summer version) must be used.

For a temperature range from 5 to 14°C, the **MAXMORTER® EXPANSIVE -W** (winter version) must be used.

Do not apply **MAXMORTER® EXPANSIVE** when ambient or application surface temperature is below 5°C or if such temperatures are expected within the 8 hours after placing. Do not apply the expansive mortar on frozen or frosted surfaces.

For applications during hot temperatures (>30°C), low humidity and windy conditions, i.e. summer time, it is recommended to use cold water for mixing, store **MAXMORTER® EXPANSIVE** in a cool place. For temperature above 25°C, do not mix more than 15 kg each time. Do not apply above 35°C.

Reaction time and performance

After mortar is poured into the holes drilled in rocks or concrete, **MAXMORTER® EXPANSIVE** will begin to work immediately, i.e. provides an expansive stress that gradually increases with time, and finally cracking will occur between 12 to 48 hours. The maximum expansion will be achieved on the fourth day. The higher the temperature, the quicker is the reaction.

Plan for the demolition keeping in mind that the slowest operation is the drilling. So establishing an operative cycle in such a way that the removal of rubble is begun on the fourth day. For absolutely successful results, it is necessary that the drilling has been done correctly. Once mortar has expanded, the broken material could be easily removed with any mechanical means.

Cleaning

All tools and equipments must be cleaned immediately with water after use. Once the grout sets can only be removed by mechanical methods.

CONSUMPTION

The consumption of **MAXMORTER® EXPANSIVE** varies depending on the hardness of the element to be broken, see the Table for the most usual cases. Thus, for drill holes with a size of 30 and 40 mm, the estimate consumptions are about 1,1 and 2,0 kg per linear meter of drill hole, respectively.

IMPORTANT INDICATIONS

- Observe all instructions given for the use of **MAXMORTER® EXPANSIVE** in order to avoid the risk of flying material from drill holes.
- Do not look directly drill hole filled at least the first 8 hours. Use always safety goggles for checking the area.
- Do not use more water for mixing than the ratio recommended.
- Observe application instructions for applying **MAXMORTER® EXPANSIVE** and avoid the blow-out effect.
- Do not mix **MAXMORTER® EXPANSIVE** with other compounds than water.
- Once the drills are filled, do not allow pedestrians passing close to the area.
- For further information or other uses not specified in this Technical Bulletin, consult our Technical Department.

PACKAGING

MAXMORTER® EXPANSIVE (-S; summer version, or -W; winter version) is supplied in 15 kg plastic bags inside a metal drum, in order to provide a better and easier mixing condition.

STORAGE

Twelve months in its original unopened packaging. It must be stored in a dry and covered place, protected from frost and with temperatures above 5°C.

SAFETY AND HEALTH

MAXMORTER® EXPANSIVE is an abrasive product, so protective rubber gloves and safety goggles must be used to prepare and apply. In case of eye contact, rinse thoroughly with clean water for at least 15 min, but do not rub. In case of skin contact, wash affected areas with soap and water. If irritation continues, seek medical attention.

For further information, Safety Data Sheet of **MAXMORTER® EXPANSIVE** is available by request.

Disposal of the product and its empty packaging must be made by the final user and according to official regulations.

Table I. Consumption and drill hole design

Type of substrate (Material to be cracked)		Standard spacing between drill holes (mm)		Consumption (kg/m ³)
		Diam. 30 mm	Diam. 40 mm	
Exposed rock	Soft	360 – 480	500 – 600	2,0 – 5,0
	Medium	300 – 390	400 – 500	3,0 – 7,0
	Hard	180 – 330	300 – 400	5,0 – 10,0
Bedrock (2 exposed faces)	Soft	300 – 450	400 – 600	5,0 – 10,0
	Medium	240 – 360	300 – 500	6,0 – 15,0
	Hard	150 – 300	300 – 400	10,0 – 20,0
Concrete	Non reinforced	300 – 400	400 – 600	4,0 – 8,0
	Reinforced	150 – 240	200 – 300	15,0 – 35,0
A trial test is advisable in the case of reinforced concrete		The consumption of MAXMORTER® EXPANSIVE will vary depending on the existing reinforcement		

GUARANTEE

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