



MAXROAD® EXPRESS



FAST-SETTING, CEMENT-BASED REPAIR MORTAR FOR CONCRETE PAVEMENTS IN SMALL AND LARGE VOLUMES



DESCRIPTION

MAXROAD® EXPRESS is a one-component mortar formulated with special cements, well-graded aggregates and additives. Once mixed with water, a high performance and mechanical properties mortar is achieved, suitable for urgent repairs and patches of concrete pavements in small or large volumes.

MAXROAD® EXPRESS meets the requirements of class R4 according to the European standard EN-1504-3

APPLICATION FIELDS

- Urgent repairs of concrete paving and concrete floors that require a very quick return to service, such as:
 - Concrete airport runways, whether damaged by wear or with bomb crater damage.
 - Bridge decks, expressways, etc.

- Concrete floors, ramps and access in warehouses, parking deck, garages, truck docks, buildings and industrial roads.
- As pure product for small volumes patching of concrete floors.
- As binder material, adding sand and gravel up to 50% by weight, for repair of large volumes, up to 2 m³.

ADVANTAGES

- Fast setting: rapid return to service of the repaired area after two hours at 20°C or 1 hour at 30°C.
- High initial and ultimate mechanical resistances, for both compressive and flexural strengths.
- Good adhesion to concrete.
- Suitable for damp surfaces.
- Chloride-free.
- Withstands to freeze-thaw cycles.
- Easy to mix and use: one-component mortar.
- Environmentally friendly: non-toxic, cement-base and solvent-free product.

APPLICATION INSTRUCTIONS

Surface preparation

Remove all disintegrated or unsound concrete until achieving a structurally resistant substrate. Square cut or undercut the perimeter of the area to be patched to a depth of at least 30 mm. Avoid small or sharp angles in the edges of the patch. The concrete substrate must have a Concrete Surface Profile CSP 6 or higher, in accordance with the classification of the ICRI (*International Concrete Repair Institute*).

Surface must be thoroughly cleaned, free of dust, dirt, coatings, efflorescence, oil, grease or any other foreign material that could affect to adhesion of the mortar. Use water blasting or equivalent mechanical means to clean concrete and provide a porous and open texture surface.

Prior to applying **MAXROAD® EXPRESS** saturate the surface with water, avoiding puddle formation, and begin application once the surface acquires a matte appearance. If it dries, proceed to saturate it with water again.

Mixing

A 25 kg bag of **MAXROAD® EXPRESS** is mixed with between 3,25 to 3,5 litres of clean water (13-14% by weight), depending on the ambient conditions and the consistency required.

Pour the water in a clean container and then slowly add **MAXROAD® EXPRESS** mixing by a slow speed electric drill (400-600 rpm) fitted with a disc mixer, for about 2-3 minutes until achieving a smooth, lump-free and homogeneous mortar. Allow the mixture to rest for 3 minutes to fully wet out all the powder and remix briefly before applying. Small quantities of product can also be mixed by hand.

After 30 minutes, setting process starts and mortar loses its workability, so mix only the amount of material that can be placed in the next 25 minutes. If necessary, remix to keep the workability of the fresh mortar but do not add more water.

To optimize adhesion and curing, it can also be used as mixing liquid a dilution composed of 1 part of **MAXCRYL®** (Technical Bulletin No. 3) and 3 parts of water.

Application

For an optimum adhesion prepare a bonding slurry by mixing 5 parts of **MAXROAD® EXPRESS** and 1 part of mixing liquid or water, until achieving a homogeneous consistency without any lumps.

Apply the bonding slurry on the surface to be patched using a brush or broom such as **MAXBRUSH®** or **MAXBROOM®**.

Patches up to 5 cm thick:

When bonding slurry begins to lose brightness but is still fresh, start application of **MAXROAD® EXPRESS** by trowel with a maximum thickness per layer up to 50 mm. If several layers are required, provide a roughened surface to improve the adhesion of successive layers, i.e. each lift should be scored and allowed to set for 15-30 minutes before applying the next one. If bonding slurry dries, or if the previous coat is fully set, a new bonding slurry should be applied to continue the work. Levelling can be done with a trowel or ruler, although to avoid the formation of cracks, do not overwork or review the application of the material once it has begun to set. Conveniently finish the last coat, e.g. with a non-slip finish with a brush, before the hardening of **MAXROAD® EXPRESS** begins.

Patches from 5 cm to 10 cm thick:

Add 8 kg of clean and rounded silica sand, free of fine particle, and with size between 3 to 10 mm, per each 25 kg of **MAXROAD® EXPRESS**. Mix dry both compounds before adding the water. Add the enough water to achieve a workable consistency mortar but avoiding any excess which may cause bleeding or segregation. As a guide the amount of water can be increased up to 18 % by weight, i.e. 4,5 litres per 50 kg of powder plus aggregates, until the mix begins to have a workable consistency. Apply by trowel to the desired thickness.

Patches from 10 cm to 30 cm thick.

Add 25 kg of clean and rounded silica sand, free of fine particle fillers, and with size between 3 to 25 mm, per each 25 kg of **MAXROAD® EXPRESS**. Mix both compounds before adding the water. Add the enough water to achieve a workable consistency mortar but avoiding any excess which may cause bleeding or segregation. As a guide the amount of water can be increased up to 18 % by weight, i.e. 4,5 litres per 50 kg of powder plus aggregates, until the mix begins to have a workable consistency. Apply by trowel to the desired thickness.

Patches of large volumes (up to 2 m³):

For these applications, such as bomb crater or deep patch (about 1 to 2 m deep), **MAXROAD® EXPRESS** is used as a binder mixed with the remaining rubble as a filler, and then, compact the area using a vibration roller. Do not fill the hole until a maximum of 30 cm deep and then, apply **MAXROAD® EXPRESS** following the above recommendations for this kind of thickness. To provide a continuous production of patching mortar and get a homogeneous repair, a suitable mixer equipment such as concrete mixer should be used.

Application Conditions

Avoid applications if rain, and/or contact with water, humidity, condensation, dew, etc., are expected during the 24 hours following application.

The optimal working temperature range is 10°C to 30°C. Do not apply with substrate and/or ambient temperatures below 5°C or if lower temperatures are expected within 24 hours of application. Likewise, do not apply on frozen surfaces. Do not apply with temperature above 40°C.

The setting time can be regulated with the temperature of the mixing water. Namely:

- Low temperature applications. To speed up the setting, it is recommended to heat the mixing water to a warm temperature, i.e. approximately 25°C.
- Applications at temperatures above 30°C, low relative humidity and/or windy conditions, i.e. summertime, surface must be wet thoroughly with plenty of water prior to application. Keep both product and mixing water stored under shadow and use cold water for mixing to have enough open time for its placement. Likewise, there is also an acceleration effect of the setting the greater the volume of the repair, due to the exothermic reaction of the hydration of the cement.

Curing

With hot temperature (>30°C), windy conditions and/or direct sunlight, protect immediately from quick drying the first 1-2 hours by spraying a fine mist of water or by covering with polyethylene sheeting and damp burlaps. Also, a curing agent such as **MAXCURE®** can be applied.

Allow **MAXROAD® EXPRESS** to cure for 2 hours at 20°C before road traffic. Lower temperature and/or higher R.H. values will lengthen the curing time.

Cleaning

All mixing and application tools must be cleaned immediately with water after use. Once product hardens, this can only be removed by mechanical means.

CONSUMPTION

Estimated consumption of **MAXROAD® EXPRESS** in pure form is 2,0 kg/m² per mm thickness. A 25 kg bag fills a volume of about 12,5 litres. One kg of **MAXROAD® EXPRESS** fills a volume of about 0,5 litres.

Patches from 5 cm to 10 cm thick: adding 8 kg of aggregates (3-10 mm size) and 25 kg of

MAXROAD® EXPRESS fills a volume of about 12,5 litres.

Patches from 10 cm to 30 cm thick: adding 25 kg of aggregates (3-25 mm size) per 25 kg of **MAXROAD® EXPRESS** fills a volume of about 22,5 litres.

These figures are for guidance only and may vary depending on porosity, texture, substrate conditions and application method. Perform a preliminary test on-site to ascertain the total consumption exactly.

IMPORTANT INDICATIONS

- Do not add cement, admixtures or any other non-specified compounds.
- Use the recommended mixing ratios.
- Observe the recommended consumptions and thickness per layer.
- To keep the workability of fresh mortar, remix again but do not add more water.
- Do not use leftovers from previous mixes.
- Do not apply on surface previously treated with water-repellent agents, bituminous materials, plasters, paints and/or metal supports.
- For other uses not specified on this Technical Bulletin or further information, consult the Technical Department.

PACKAGING

MAXROAD® EXPRESS is supplied in 25 kg bags or metal drums. It is available in standard grey colour.



STORAGE

Twelve months in its unopened and undamaged original sealed bags. Eighteen months when is supplied in metal drum sets. Store in a cool, dry and

covered place, protected from moisture, freezing and away from direct exposure to sunlight at temperatures above 5°C.

SAFETY AND HEALTH

MAXROAD® EXPRESS is not a toxic product but is an abrasive composition. Avoid direct contact with skin and eyes, and breathing dust. Use rubber gloves and safety goggles when handling, mixing and applying the product. In case of contact with

skin, wash affected area with soap and water. In case of contact with eyes, rinse immediately thoroughly with clean water but do not rub. If the irritation persists, seek medical assistance.

Consult the Material Safety Data Sheet for **MAXROAD® EXPRESS**.

Disposal of the product and its packaging should be carried out according to the current official regulations and it is the responsibility of the final user of the product.

TECHNICAL DATA

Product characteristics	
CE Marking, EN 1504-3 Description. Hydraulic cement mortar (CC) for non-structural repair of concrete. Uses: Building and civil engineering works Principles / Methods. Concrete restoration by applying mortar by hand (Principle 3-CR / 3.1)	
General appearance and colour	Grey powder
Density of powder, (g/cm ³)	1,36 ± 0,10
Mixing water, (% by weight)	13,0 – 14,0
Application and curing conditions	
Minimum application temperature for substrate and ambient, (°C)	> 5
Pot life at 20 °C & 50 % R.H., (min)	< 25
Initial/ Final Setting time at 20 °C & 50 % R.H., (min)	< 30 / < 60
Curing time for road traffic at 20 °C & 50 % R.H., (h)	2
Cured product characteristics	
Density for cured and dry mortar, (g/cm ³)	2,04 ± 0,10
Requirement for repair products, EN 1504-3 (Class)	R4
Compressive strength at 28 days, EN 12190 (MPa)	88
Flexural strength at 2/4 hours and 1/7/28 days, (MPa)	2,2 / 2,2 / 5,0 / 7,5
Chloride ion content, EN 1015-17 (% by weight)	0,004
Adhesive bond on concrete at 28 days, EN 1542 (MPa)	2,6
Carbonation resistance, EN13295 d _k (mm). Control concrete 4 mm	2,1
Elastic modulus, EN 13412 (GPa)	41,6
Thermal compatibility	
- Part 1: Freeze-thaw, EN 13687-1 (MPa)	2,0
- Part 2: Thunder shower, EN 13687-2 (MPa)	2,0
- Part 4: Dry cycling, EN 13687-4 (MPa)	2,0
Capillary absorption, EN 13057 (kg/m ² ·h ^{0,5})	0
Reaction to fire, EN 13501-1 (Euroclass)	A1
Thickness / Consumption*	
Thickness per layer as pure product, (mm)	5 – 50
Consumption per layer as pure product, (kg/m ² ·mm)	2,0

* These figures are for guidance only and may vary depending on porosity, texture and conditions for substrate, and application method. Perform a preliminary test on-site to ascertain the total consumption exactly under jobsite conditions

GUARANTEE

The information contained in this leaflet is based on our experience and technical knowledge, obtained through laboratory testing and from bibliographic material. **DRIZORO®**, **S.A.U.** reserves the right to introduce changes without prior notice. Any use of this data beyond the purposes expressly specified in the leaflet will not be the Company's responsibility unless authorised by us. We shall not accept responsibility exceeding the value of the purchased product. The data shown on consumptions, measurement and yields are for guidance only and based on our experience. These data are subject to variation due to the specific atmospheric and jobsite conditions so reasonable variations from the data may be experienced. To know the real data, a test on the jobsite must be done, and it will be carried out under the client responsibility. We shall not accept responsibility exceeding the value of the purchased product. For any other doubt, consult our Technical Department. This version of bulletin replaces the previous one.



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