

CEMENTITIOUS-BASED WATERPROOFING AND PROTECTING PRODUCTS

batimix[®]





Company overview

Holderchem S.A.L. was founded in 1994 as a building chemicals joint venture with LafargeHolcim, the world's leading cement producer. It has developed by virtue of technically innovative ideas, dedicated customer services, and highly skilled staff to become a main independent supplier to the cement and construction industries in Lebanon as well as Middle East and Gulf countries.

A wide and full range of products are available at Holderchem S.A.L. meeting the most challenging requirements of modern construction. These include concrete admixtures, ready-to-use masonry mortars, tile adhesives and grouts, curing and sealing compounds, epoxy adhesives, injection grouts, concrete repair and waterproofing products, protective coatings, pavement sealers, and miscellaneous other specialty building materials. The products are specifically designed and tested in laboratory according to relevant international standards including ISO, EN, and ASTM. The R & D work is being carried out by a qualified team of professionals in close coordination with Clients on a project-by-project basis to meet the various construction requirements and site-conditions. Holderchem S.A.L. provides laboratory support and specification assistance as well as on-site service for proper usage and application of all supplied products.

Introduction

Holderchem Building Chemicals S.A.L. is pleased to offer a complete line of waterproofing cementitious-based products for the concrete construction and repair industries. The products, marketed under the **balimix** name, are surface-applied against active and/or passive water pressures to waterproof and protect concrete in-depth.

Typical areas of applications include:

- Basement retaining walls
- Concrete slabs (floor, roof, balcony, ...)
- Construction joints
- Water retaining structures
- Swimming-pools
- Sewage treatments plants
- Drinking water reservoirs
- Bridges, etc.

The description and main purpose of the **balimix** line of cementitious-based and specialty products are summarized in [Table 1](#). The physical properties tested according to relevant international standards, including water permeability determined at various levels of water pressure, are presented in [Table 2](#).

TABLE 1

Summary of waterproofing cementitious-based and specialty products

Description of the product

| | |
|-----------------------|---|
| Mortar W-800 | In-depth waterproofing slurry by crystallization |
| Mortar W-810 | Contributes to the waterproofing effect of Mortar W-800 and provides additional protection against abrasion |
| Mortar W-820 | Efflorescence-free surface waterproofer for concrete and masonry |
| Mortar W-821 Z | Similar as Mortar W-820, but made with Type V sulfate-resistant cement |
| Mortar W-830 E | Two-component waterproof and elastic product, particularly suitable for cracking and deforming areas |
| Mortar W-840 | Rapid setting cementitious-based compound to stop water ingress |
| Mortar W-850 | Self leveling mortar to form a smooth and uniform surface over concrete |
| Mortar W-860 | Cementitious grouting material with reduced water absorption, non-shrink, with a particle size ranging from 0-2 mm |
| Mortar W-861 | Similar as Mortar W-860, but with particle size ranging from 0-4 mm |
| Mortar W-862 | Similar as Mortar W-860, but with particle size ranging from 0-8 mm |
| Accelerator L-870 | Powder set-accelerator for Portland cement (also available in liquid form) |
| Plasticizer L-875 | Polymer-modified compound used with cementitious-based materials to improve elasticity, waterproofing, and adhesion |
| Sealer L-880 | Silicate-based surface hardener, dust-proofer, and in-depth protector of concrete and masonry surfaces |
| Water Repellent L-885 | Siloxane-based compound to provide highly effective water repellent protection of new and old surfaces |



batimix®

waterproofing

products

batimix. Mortar W-800

This product is made of Portland cement, carefully-graded sand, and a combination of selected additives and crystallization chemicals. When applied to a carefully prepared substrate, the active chemicals react with the free lime and moisture present in the capillary pores of the concrete to form insoluble crystalline complexes. The so-formed crystals block the capillaries and minor cracks to prevent water ingress.

A 25-kg of **batimix.** Mortar W-800 should be mixed with 8 to 10 liters of clean water. The product is applied in one or two coats with a masonry brush or an appropriate spraying device on properly prepared "open" capillary substrates. When two coats are specified, the second coat should be applied while the first one is still "green". The average consumption rates vary from 0.75 to 1.5 kg/m², depending on the type of application. This product can also be dry sprinkled over freshly placed concrete surfaces once initial setting is reached.

batimix. Mortar W-810

This product is a surface-applied material which waterproofs and protects pressure and non-pressure concrete faces in-depth. It is used in conjunction with Mortar W-800 for general waterproofing purposes or on its own to treat surfaces requiring additional protection against mechanical abrasion. Used alone, this slurry product is particularly suitable for filling voids and air bubbles in weak and porous substrates.

A 25-kg of **batimix.** Mortar W-810 should be mixed with 7 to 9 liters of clean water until a uniformly homogenous slurry is obtained. It is generally applied in one coat using a masonry brush or appropriate spraying device. When over-coating Mortar W-800, it should be applied while the previous coat is still "green". The average consumption rates vary from 0.75 to 1.5 kg/m². All treated surfaces should be kept damp for a period of five days and protected against direct sun, wind, and frost.

batimix. Mortar W-820 and W-821 Z

These products are efflorescence-free surface waterproofers with hydrophobic properties, resistant to water and moisture. Mortar W-820 is a mixture of Type I Portland cement, carefully graded sand, and a combination of active chemicals. Mortar W-821 Z has similar composition, but made with Type V Portland cement for increased sulfate resistance. The bonding capabilities of these products are excellent, making them suitable for horizontal and vertical applications.

Depending on the method of application, one 25 kg of **batimix.** Mortar W-820 or W-821 Z should be mixed with 6 to 9 kg of clean water. The average consumption rates vary from 3 to 6 kg/m², whereas the applied thickness may range from 1.5 to 5 mm. In case subsequent screeds, renders, or tile fixings are required, these product coatings should be covered by a thin rough cast of **batimix.** Key Coat products.

balimix. Mortar W-830 E

This two-component polymer-modified product has improved waterproofing, elasticity, and bonding characteristics. Owing to its elastic properties, this product is particularly suitable for areas subjected to cracking and deforming problems. Its use is not recommended for drinking water reservoirs.

Place the 10kg liquid component of **balimix. Mortar W-830 E** in a clean container, then add the 25-kg powder component slowly while mixing. The product can be applied using a brush, trowel, or spray equipment at thicknesses ranging from 2 to 4 mm. The substrate to be sealed must be sound and even, and its surface free from laitance, voids, and large cracks. The products' average consumption rates are around 2 to 6 kg/m² (a maximum of 4 kg/m² can be laid in one application).

balimix. Mortar W-840

This product is a fast setting compound used to stop in seconds water and moisture ingress. It is made of high alumina cement, fine graded sand, and a combination of selected waterproofing chemical additives. It can be used internally or externally for plugging water leaks and seepage, sealing leaking cracks and wet surfaces, fixing steel elements in water structures, and for general underwater repair works.

To avoid wastage, **balimix. Mortar W-840** should be mixed in small quantities needed for the specific job. Setting time is dependent largely on the amount of mixing water used; in general, 0.25 liters are necessary for 1 kg of this product. After mixing, apply the product to the appropriate area without any delay.

balimix. Mortar W-850

This highly flowable cementitious-based product is used to obtain a uniform and smooth surface finish over concrete substrates. It can also be used for filling blowholes and repairing minor damages on horizontal concrete surfaces. This product is made of Portland cement, fine-graded sand, and selected additives to improve waterproofing, flowability, and adhesion.

A 25-kg of **balimix. Mortar W-850** should be mixed with 5.5 to 7 liters of clean water, depending on the desired consistency. It is generally applied using a masonry trowel on properly prepared substrates free from foreign particles and dust. The average consumption rates vary from 18 to 22 kg/m²/cm. After application, the product should be protected from extreme temperatures by moist curing for a minimum of 3 days.

balimix. Mortar W-860, W-861, W-862

These three non-shrink cementitious-based products are made of different particle sizes of 0-2 mm, 0-4 mm, and 0-8 mm making them suitable for filling voids ranging from 5-40 mm, 10-80 mm, and 20-150 mm, respectively. They are made of Portland cement, graded sand, and selected additives to exhibit controlled increase in volume together with improved resistance against water ingress.

The average quantity of water used with 25 kg of **balimix. Mortar W-860, W-861, or W-862** ranges from 5 to 6.5 kg. Depending on the size of specific unit to be grouted, the mixed and uniformly stirred material is poured into the voids using any ordinary masonry trowel. The average consumption rates vary from 18 to 22 kg/m²/cm. Proper curing of the exposed grout edges should be done for a minimum of 3 days.

TABLE 2

Physical properties of batimix cementitious-based products

| Test method | Setting time, hour | Compressive strength, MPa | Flexural strength, MPa | Pull-off strength, MPa | Drying shrinkage, mm/m | Water absorption, gram | | | |
|------------------|--------------------|---------------------------|------------------------|------------------------|------------------------|------------------------|--------|--------|--------|
| | ASTM C 191 | ASTM C 109 | ASTM C 348 | EN 1542 | EN 1015-13 | ASTM C 1403 | | | |
| | | | | | | 0 bars | 2 bars | 4 bars | 6 bars |
| Reference mortar | 4 to 7 | 30 to 35 | 4.5 to 6 | 0.7 | 0.9 | 5.3 | 9.2 | 15.4 | 21.3 |
| Mortar W-800 | 3 to 5 | 40 to 45 | 7 to 8.5 | 1.2 | 0.75 | 1.1 | 2.5 | 2.8 | 3.3 |
| Mortar W-810 | 3 to 5 | 40 to 45 | 6 to 8 | 1.3 | 0.7 | 2.3 | 3.9 | 5.2 | 6.7 |
| Mortar W-820 | 3.5 to 6 | 40 to 45 | 6 to 8 | 1.3 | 0.8 | 2.1 | 4.2 | 5.7 | 7.5 |
| Mortar W-821 Z | 3.5 to 6 | 37 to 42 | 5.5 to 7 | 1.1 | 0.85 | 1.8 | 4.1 | 6.2 | 8.8 |
| Mortar W-830 E | 18 to 24 | 25 to 30 (elastic) | 4 to 4.5 (elastic) | 1.8 | 0.85 | 1.4 | 2.4 | 3.1 | 3.8 |
| Mortar W-840 | 0.1 to 0.5 | 32 to 38 | 4.5 to 6 | 0.8 | 1.1 | 2.4 | 4.1 | 5.5 | 8.2 |
| Mortar W-850 | 4 to 7 | 42 to 48 | 7 to 9 | 1.4 | 0.7 | 1.8 | 3.6 | 5.1 | 7.2 |
| Mortar W-860 | 4 to 6 | 40 to 45 | 6.5 to 8.5 | 1.3 | 0.35 | 2.3 | 4.4 | 6.1 | 8.1 |
| Mortar W-861 | 4 to 6 | 40 to 45 | 6.5 to 8.5 | 1.3 | 0.35 | 2.2 | 4.5 | 6 | 7.3 |
| Mortar W-862 | 4 to 6 | 40 to 45 | 6.5 to 8.5 | 1.3 | 0.35 | 1.9 | 4.1 | 6.3 | 7.8 |

- The compression, flexure, pull-off, shrinkage, and water absorption tests are determined after 28 days of curing in water

- The Reference mortar was made with 30% Type I Portland cement and 70% well graded sand

- The ASTM C 1403 was adapted to evaluate water absorption under various pressures. Values lower than 10 grams are generally recommended for durable waterproofing treatments

balimix. Accelerator L-870

This product is a powder set accelerator that significantly reduces setting time and increases early strength of cementitious-based systems. It does not contain chloride ions that could potentially attack steel, aluminium, or zinc embedments. It is particularly effective in cold temperatures or when treating water leaking surfaces.

The optimum dosage of **balimix. Accelerator L-870** to meet specific requirements is best determined by trials using the actual ready-to-use or in-situ prepared mortar under conditions that will be experienced in use. As a guide to the trial tests, the addition rates shall vary from 0.03% to 2% of the total mortar's weight, or from 1% to 5% of the cement content available in the mix.

balimix. Plasticizer L-875

Liquid water-based acrylic dispersion formulated to modify cementitious-based systems by significantly improving waterproofing, elasticity, and bonding characteristics. Mortars mixed with this product exhibit good water vapour transmission, and thus can be applied against active or passive water pressure.

Depending on the type of application and desired waterproofing and bonding strength, one part of **balimix. Plasticizer L-875** may be diluted with 1, 2, or 3 parts of water prior to its mixing in the mortar. The resulting elongation at break is generally greater than 15%. The product can be used as a "mixing solution" to the mortar or as a "primer" prior to application.

balimix. Sealer L-880

Silicate-based surface hardener and in-depth protector of concrete surfaces. It can be used to harden, seal, or dustproof concrete. The product produces through a physico-chemical process an improvement of the strength and density of concrete and masonry substrates.

Prior to application, all surfaces should be dry, clean, and free of any contamination and weak material. **balimix. Sealer L-880** is applied in 1 or 2 coats using a brush, roller, or a low-pressure spraying device until the surface is saturated. The coverage is estimated at about 4 to 10 m² per kg, depending on the porosity of the substrate. Surfaces treated with this product can be painted over.

balimix. Water Repellent L-885

Siloxane water-based compound which is applied on concrete and masonry surfaces to minimize the risks of water penetration and efflorescence. It is suitable for various jobs such as waterproofing calcareous building materials and treating joints subject to contact with water.

balimix. Water Repellent L-885 functions by creating a network of insoluble water resistant material within the pores of the matrix. It is applied in 1 or 2 coats using a brush, roller, or a low-pressure spraying device until the surface is saturated. The coverage is estimated at about 4 to 12 m² per kg, depending on the porosity of the substrate. It generally dries tack-free in two to four hours at 23 °C.

General application instructions

1. Preparation of substrate

To ensure maximum bonding, apply **balimix** products on clean concrete surfaces having "open" capillary systems. Remove all laitance, shutter release agent, curing compound, loose particles, etc. by means of wet or dry sandblasting, or wire brushing. Prior to application, carefully rinse all surfaces with clean water several times so that the substrate is thoroughly saturated, but not wet.

2. Product preparation

Place the required quantity of water or polymer dispersion in a clean container. Add the powder product and stir for at least 3 minutes with a mechanical mixer until the mortar is completely free from lumps. To maintain workability, do not add water but simply re-stir the mortar. Do not mix more material than can be used within the pot life (refer to TDS).

3. Application methods

Do not apply **balimix** products at temperatures over 40 °C, below 5 °C, or to frozen substrates.

3.1 Brush application

Specific **balimix** products can be applied using a suitable masonry brush. Ensure that all cavities in the substrate are filled in order to exclude any trapped air. If several layers are needed, it is recommended that the following layer be applied while the previous one is still damp. Depending on climatic conditions, allow sufficient waiting time before proceeding with the application of the next layer in order not to damage the previous layer.

3.2 Trowel application

A scrape coat of **balimix** products should be applied with a steel trowel for maximum adhesion to the substrate, working from the bottom up. As earlier stated, if several layers are needed, the following layer should be applied while the first one is still damp. The previous layer should be textured by suitable means to increase adhesion between layers.

3.3 Spray application

balimix products can be applied using an appropriate fine mortar spraying device. The air pressure, air volume, and nozzle size required will depend on the type of ma-

terial to be sprayed. The compressor performance must be at least 5 bar pressure, delivering 500 L/min. The first layer should be applied in circular motion with the spray nozzle held at a 90° angle to the substrate. The material should then be flattened with a suitable trowel to increase adhesion. Similar treatments to those described earlier should be conducted in case several layers are needed.

3.4 Dry sprinkling application

When the concrete to be treated starts to reach initial set, the specific amount of **balimix** products can be dry distributed by hand or any suitable means onto the concrete surface. It is then trowelled in until coverage is uniform and the specific finish is achieved.

4. Curing and protection

All cementitious-based products should be properly cured and protected in the same manner as ordinary Portland cement. For maximum effectiveness, it is essential that all mortars be kept damp for at least 5 days and protected against wind, extreme temperature, and direct sun.

5. Backfilling, decoration, and coating

Backfilling can be carried out 3 days after completion of the waterproofing treatment. All treated surfaces, which are to be coated or painted over, must be left to cure for at least 4 weeks. It is advisable to apply **balimix**. Key Coat products when a plaster or render finish is required on top of the treated surface. Decoration coating should be alkali resistant and water vapour permeable, especially if applied on the passive water pressure side.

6. Filling of water retaining structures

It is important to clean and disinfect with approved disinfectants all surfaces treated with **balimix**. products prior to filling with water. Filling can take place when the surface treatment has hardened sufficiently, usually not before 7 days from application.

7. Health and safety

Cementitious-based products are irritant to skin. Keep out of reach of children. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable gloves. For further information, refer to the MSDS.

Important notes

The information and application advice presented in this brochure are provided with no warranty, implied or otherwise, as to its completeness or accuracy. Since methods and conditions of application and use are beyond our control, Holderchem Building Chemicals S.A.L. makes no warranties as to the merchantability or fitness for ordinary or particular purposes of its products and excludes the same. As products are applied, handled and stored in manners over which Holderchem Building Chemicals S.A.L. has no control, the company's liability in respect of any material which can be proven defective shall be limited to the replacement of such defective material or reimbursement of its cost.

For proper use and detailed application instructions for any specific product, you may consult the corresponding "Technical Data Sheet" or "Application Guidelines" by referring to one of our representatives or visiting our web-site at www.holderchem.net.

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