



MAGNA WALL™

Mortar Cement Type S

Product Overview, Instructions, & Data

Durable

Famed Roman structures, such as the Pantheon, Colosseum and aqueducts, are still standing today. One secret to the long-term durability of these structures is that the Roman builders turned to volcanic ash to harness the power of pozzolans. Like Roman concrete, fly ash pozzolans in the chemically-balanced formulas of Magna Wall™ mortars react to free lime, forming additional cement binder. This leads to greater durability of the Magna Wall™ mortars.

MORTAR

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product OVERVIEW

Green

Magna Wall™ mortars provide the Pozzolanic Advantage, and are also the greenest mortars on the market. The use of fly ash – a recovered resource – reduces depletion of natural resources and conserves landfill space. It also reduces the energy-intensive manufacturing of other concrete ingredients resulting in reduced green house gas emissions.

Magna Wall™ products excel in every measurement of masonry and mortar cement performance and are designed to last. The unique formulations of the products include Portland cement, high performance pozzolans, top quality Type S hydrated lime, and other additives. These ingredients combine to create products with high compressive strengths, high bond strengths, and high resistance to water.

Magna Wall™ Mortar Cement Type S is a “green” product that meets the requirements of ASTM C91 and ASTM C1329

Basic Use:

Magna Wall™ Mortar Cement Type S is intended for use in general brick, block, and stone masonry construction.

Composition and Materials:

A blend of Portland cement, high performance pozzolan, hydrated lime, and additives.

Bag Weight: 75 pound bags (34.09kg)

Color: Gray

Storage: Store in dry area off the ground.

Shelf life: Approximately 6 months.





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product INSTRUCTIONS

The Pozzolan Advantage

As the Romans learned, pozzolans like those used in Magna Wall™ mortars bring many advantages including:

Increased Workability
Growth in Strength
Water Resistance
Increased Flexural Strength
Reduced Efflorescence

A. Mixing Proportions:

NOTE: THIS PRODUCT USES LESS WATER

- 1 bag Magna Wall™ Mortar Cement
- 3 cubic feet of ASTM C144 sand (masonry sand)
- 4 to 5 gallons of water, depending on the moisture content of the sand

B. Mixing Sequence:

1. Add three-fourths of the required water to mixer. Start off with 3.5 gallons per bag of Mortar Cement. Adjust based on experience and required workability.
2. Add half of the required sand.
3. Add pigments, if used. To obtain maximum benefit of pigments, mix for 2 to 3 minutes before adding Mortar Cement. If pigments are used, always add weighed quantities of pigment.
4. Add Magna Wall™ Masonry Cement.
5. Add remaining sand.
6. Mix until a uniform color and texture are observed.
7. Add additional water to achieve desired workability.
8. Machine mixing for 4 to 5 minutes is recommended to obtain the maximum workability. Mixing over 5 minutes is not recommended.

Warning – Mixing and Application

- Do not add air-entraining agents, mortar fat, accelerators, or water-proofing agents, as they may interfere with the chemical integrity of this product.
- Do not apply at temperatures below 40°F, or when freezing temperatures are anticipated within 24 hours.



A. Fineness:

This is determined by screening the unmixed mortar through a No. 325 mesh sieve.

B. Autoclave Expansion:

This test is used to predict the long-term hydration of unhydrated particles. This in turn predicts long-term failure.

C. Time of Setting:

Mortar must remain workable to give masons time to use it and tool joints. But if it fails to firm set within 24 hours, the number of courses of brick laid per day may be reduced.

D. Compressive Strength:

Compressive strength is the main criterion for selecting a mortar, if holding brick apart is the primary concern. MW Mortar Cement Type S exceeds the ASTM standards and continues to gain strength over time.

E. Flexural Bond Strength:

Headwaters Construction Materials designs cements to impart impressive bond strength and to be sufficiently workable to allow a high extent of bond. A positive byproduct of high bond strength and high extent of bond is water resistance, since most leakage through a brick wall is at the interface between the brick and the mortar or in areas where the mortar was inadvertently omitted.

ASTM C1329	24% Maximum
UBC 21-11	24% Maximum
MW Mortar Cement Type S	14.4%

ASTM C1329	1% Maximum
UBC 21-11	1% Maximum
MW Mortar Cement Type S	-0.045%

	Initial Set, Minimum	Final Set, Maximum
ASTM C1329	Not Less Than 90 Minutes (1.5 Hrs)	Not More Than 1440 Minutes (24 Hrs)
UBC 21-11	Not Less Than 90 Minutes (1.5 Hrs)	Not More Than 1440 Minutes (24 Hrs)
MW Mortar Cement Type S	165 Minutes (2 Hrs 45 Min)	322 Minutes (5 Hrs 22 Min)

	3 days	7 days	28 days	90 days
ASTM C1329 Minimum	N/A	1300 psi	2100 psi	N/A
UBC 21-11 Minimum	N/A	1300 psi	2100 psi	N/A
MW Mortar Cement Type S	1200 psi	1500 psi	2400 psi	2900 psi

ASTM C1329 Minimum	100 psi
Magna Wall™ Mortar Cement Type S	102.5 psi



*Using Magna Wall™ Mortar Cement Type S, the flashing and weephole system become the secondary protection against water penetration rather than the primary protection.

F. Air Content:

Air content affects workability, yield, and strength. Masons want a high air content to increase workability and yield. However, the higher the air content, the lower the compressive strength and bond strength.

ASTM C1329 Minimum/Maximum 8% / 15%
MW Mortar Cement Type S10% - 12%

G. Water Retention:

Mortar is affected by water retention in three ways:

- a. The greater the water retention, the longer the mortar remains workable.
- b. Ultimate compressive strength and bond strength are reduced with each retempering. Magna Wall™ Mortar Cement Type N does not need retempering as often as conventional mortars; therefore, it retains its ultimate strength better.
- c. When using block or brick with high initial rate of absorption, the block or brick can dehydrate the mortar before it sets chemically. This reduces the bond strength and the compressive strength significantly when using a low water retentive mortar. Magna Wall™ Mortar Cement Type N has high water retention, and thus does not dehydrate before chemical hydration occurs.

ASTM C1329 Minimum.....70%
MW Mortar Cement Type S90%

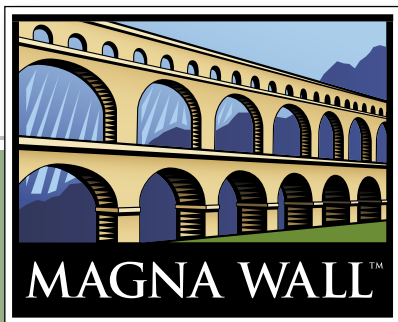
H. Water Penetration:

There are no ASTM C1329 limits for water penetration. Brick walls are built with flashing and weepholes to remove water from behind the walls, since they are known to leak. From time to time, the flashing is penetrated or the weepholes are plugged, and this can lead to interior water damage. Brick walls can be tested for water penetration with the ASTM E514 test (commonly known as the hurricane test). To pass this test, a wall needs to withstand the equivalent of a 5-inch per-hour rainfall event driven by a 60 mile per hour wind for a period of 4 hours.

Test Method	Conventional Mortar Cement	Magna Wall™ Mortar Cement Type S
14.7 sq.ft. test wall panel exposed to near hurricane conditions for a minimum of 4 hours	Leaked 0.1 to 0.7 liters per sq.ft. per hour	Test discontinued after 24 hours without leakage*

CAUTIONS and LIMITATIONS

- A. See package for handling precautions.
- B. MSDS should be viewed in order to understand all warnings.



Premium Stuccos, Mortars, & Masonry Cements



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