MAGNA WALL™

Mortar Cement Type N

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.

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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 top quality Type S hydrated lime, Portland cement, high performance pozzolans, and other additives. These ingredients combine to create products with high compressive strengths, high bond strengths, and high resistance to water penetration.

Magna Wall™ Mortar Cement Type N is a "green" product that meets the requirements of ASTM C1329.

Basic Use:

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

Composition and Materials:

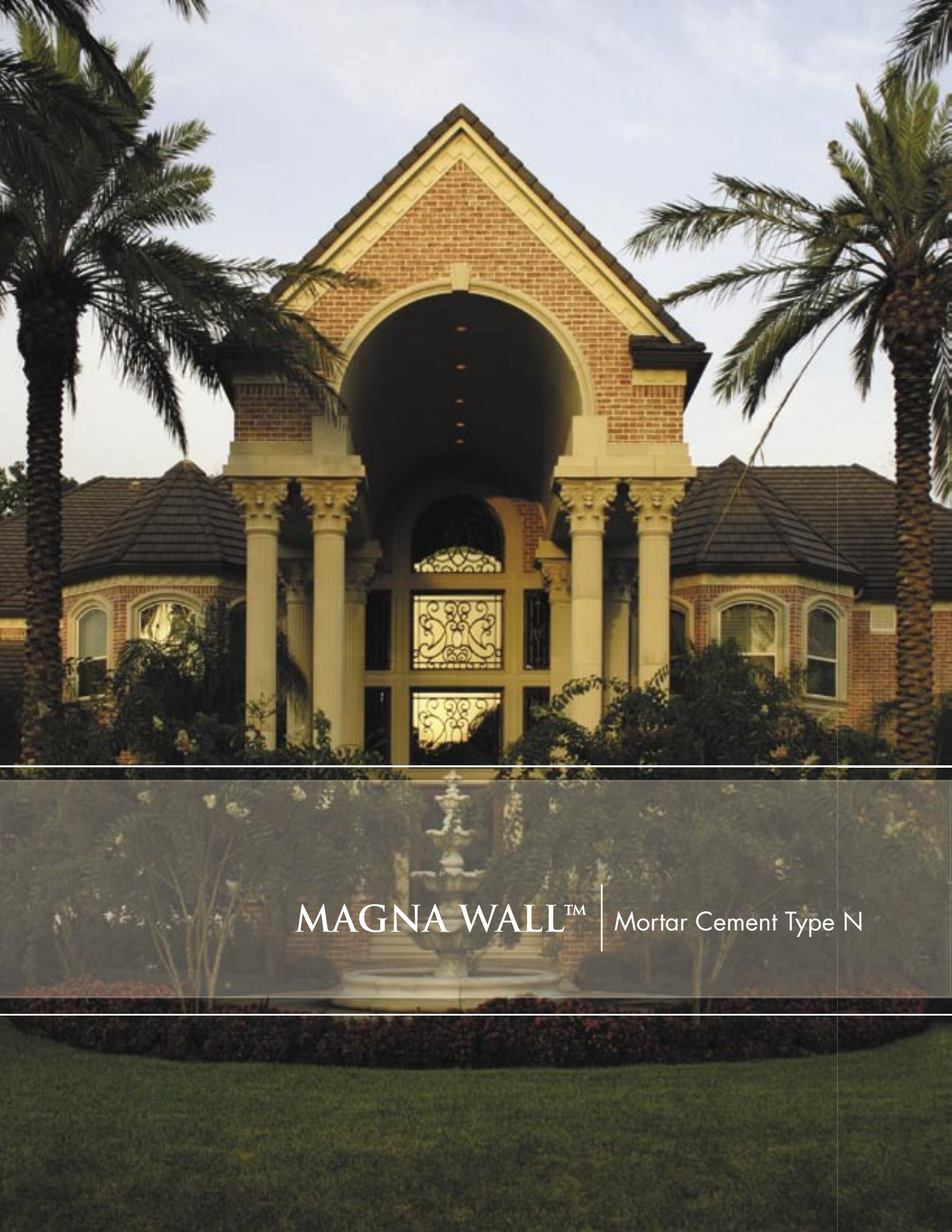
A blend of Portland cement, high performance pozzolan, hydrated lime, and air-entraining agents.

Bag Weight: 70 lb. (31.8kg)

Color: Gray

Storage: Store in dry area off the ground.

Shelf life: Approximately 6 months.



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product INSTRUCTIONS

The Pozzolanic 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)
- 3.5 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 2.5 to 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™ Mortar 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 35°F, or when freezing temperatures are anticipated within 24 hours.

product DATA

Applicable Standards: ASTM C1329 for Type N • UBC 21-14 • ASTM C91 for Type N

A. Fineness:
This is determined by wet sieving the unmixed mortar cement through a No. 325 mesh sieve.

ASTM C1329 ..... 24% Maximum
UBC 21-11 ..... 24% Maximum
Magna Wall™ Mortar Cement Type N 19.4%

B. Autoclave Expansion:
This test is used to predict the long-term durability of the product.

ASTM C1329 ..... 1% Maximum
UBC 21-11 ..... 1% Maximum
Magna Wall™ Mortar Cement Type N 0.06%

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.

	Initial Set, Minimum	Final Set, Maximum
ASTM C1329	Not Less Than 120 Minutes	Not More Than 1440 Minutes (2 Hrs) (24 Hrs)
UBC 21-14	Not Less Than 120 Minutes	Not More Than 1440 Minutes (2 Hrs) (24 Hrs)
Magna Wall™ Mortar Cement Type N	250 Minutes (4 Hrs 10 Min.)	325 Minutes (5 Hrs 25 Min.)

D. Compressive Strength:
Compressive strength is the main criterion for selecting a mortar, if holding brick apart is the primary concern. Magna Wall™ Mortar Cement Type N exceeds the ASTM standards and continues to gain strength over time.

	3 days	7 days	28 days	90 days	365 days
ASTM C1329	N/A	500 psi	900 psi	N/A	N/A
UBC 21-14	N/A	500 psi	900 psi	N/A	N/A
Magna Wall™ Mortar Cement Type N	500 psi	900 psi	1500 psi	2200 psi	3000 psi

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 Minimum .....70 psi
UBC 21-14 Minimum .....71 psi
Magna Wall™ Mortar Cement Type N .....78 psi

*Using Magna Wall™ Mortar Cement Type N, 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%/16%
UBC 21-14 Minimum/Maximum 8%/16%
Most Masonry Cement.....16-21%
Magna Wall™ Mortar Cement Type N 12-15%

G. Water Retention:
Mortar is affected by water retention in three ways:

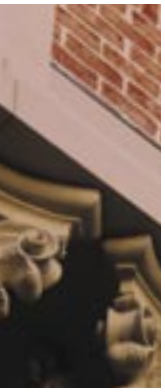
a. The greater the water retention, the longer the mortar remains workable.
b. Ultimate compressive strength and bond strength are reduced with each retempering. Magna Wall™ Mortar Cement Type N does not need retempering as often as conventional mortars; therefore, it retains its ultimate strength better.
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%
UBC 21-11 Minimum 70%
Magna Wall™ Mortar Cement Type N .....85% Average

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 Type N
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.



MAGNA WALL™

Premium Stuccos, Mortars, & Masonry Cements

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