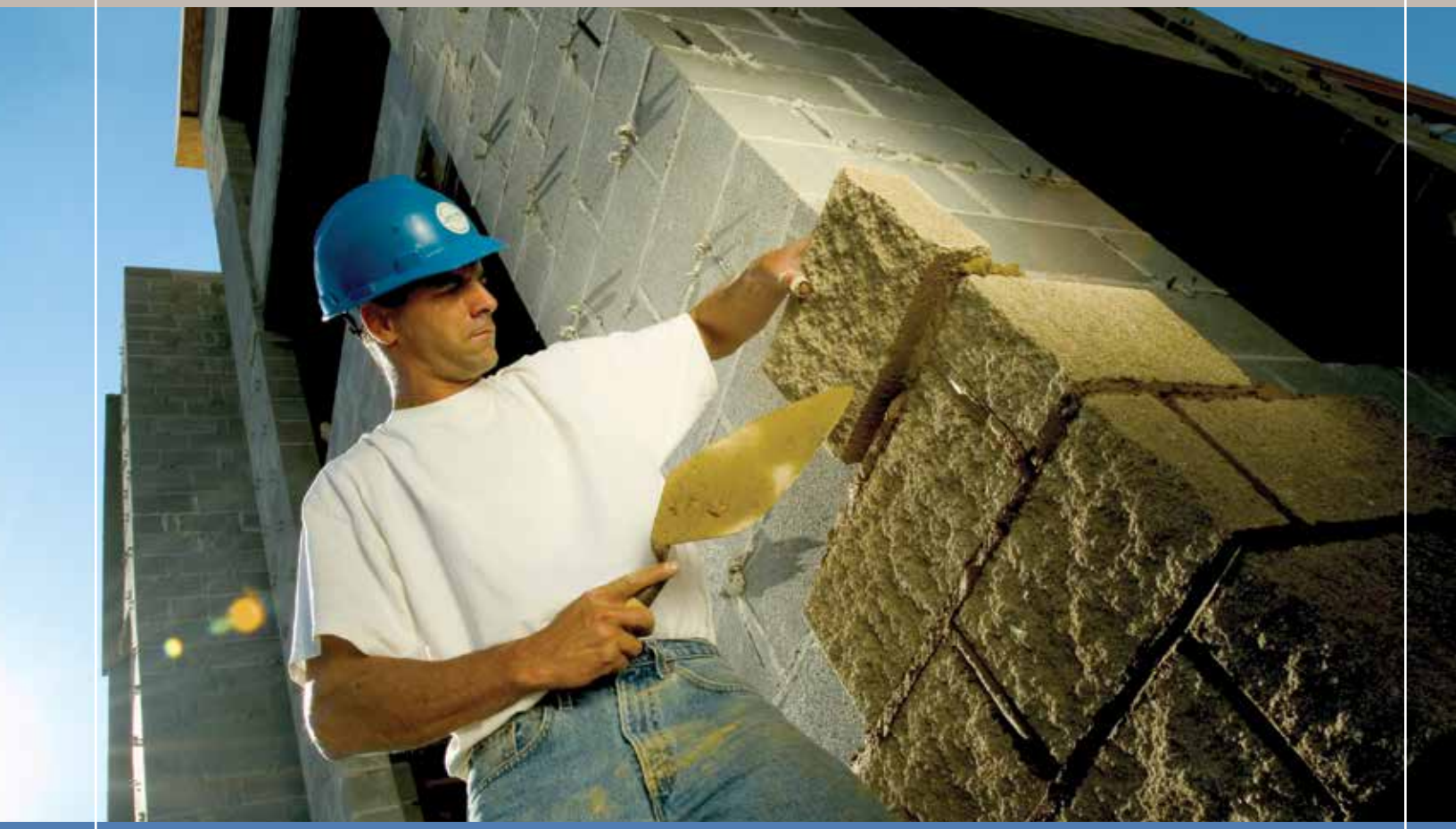
U.S.A.

SPEC MIX®

IWR MORTAR
INTEGRAL WATER REPELLENT MORTAR

1-888-SPECMIX

DIVISION MASONRY PRODUCTS 04



Superior Adhesion. Highly Durable.

SPEC MIX® Integral Water Repellent (IWR) mortar is specially formulated to reduce water penetration, shrinkage and efflorescence of masonry mortar joints. By incorporating a proprietary, dry polymeric integral water repellent admixture during the SPEC MIX manufacturing process, the designer, specifier, owner and contractor are assured the mortar on their project will repel moisture, while maintaining optimal workability and flexural bond strength. When using ASTM C 1357 "Test Method for Evaluating Masonry Bond Strength" to compare the flexural bond strength of SPEC MIX IWR Mortar to the same reference mortar mixed with the leading liquid admixture, the SPEC MIX IWR mortar demonstrated a 46 percent increase in bond strength.

SPEC MIX IWR Mortar is a dry, preblended mortar mix that is produced using either Portland cement and hydrated lime, mortar cement or masonry cement with dried masonry sand and a proprietary repellent admixture formulated for water repellency, superior bond, water retention and board life. Available in Types M, S and N, each meets ASTM C 270 and ASTM C 1714 requirements. SPEC MIX IWR Mortar is also available in standard and custom colors.

In addition to custom mix designs that are available for specific applications or properties, the standard IWR Mortar is designed to be compatible with the characteristics of the specified masonry unit. It is acceptable for all types of masonry construction with submittals available upon request. The mortar may be used above or below grade when manufactured to the appropriate specification.

AVAILABLE IN COLOR

MATERIALS USED

PORTLAND CEMENT
HYDRATED LIME
MASONRY CEMENT
MORTAR CEMENT
PROPRIETARY ADMIXTURES
SAND

TOTAL QUALITY CONTROL WITH EVERY BAG
LABORATORY TESTED TO ASSURE BOND AND WATER REPELLENCY
PREBLENDED WITH ADMIXTURE FOR CONSISTENCY
MORE COST EFFECTIVE THAN LIQUID ADMIXTURES
GREAT WORKABILITY AND BOARD LIFE
NO SAND PILES OR WASTED MATERIALS LEFT ON SITE
AVAILABLE IN STANDARD & CUSTOM COLORS

Reliable Performance. Proven Durability.

SPEC MIX Integral Water Repellent (IWR) mortar is specially formulated to reduce water penetration, shrinkage and efflorescence of masonry mortar joints while meeting ASTM C 270 requirements. By incorporating a proprietary, dry polymeric integral water repellent admixture during the SPEC MIX manufacturing process, the designer, specifier, owner and contractor are assured the mortar on their project will repel moisture, while maintaining optimal workability and flexural bond strength.

Water penetration resistance of concrete masonry walls is dependent on wall design, design for differential movement, workmanship, wall maintenance, and the application of water repellents in both masonry units and mortar. Tests indicate that SPEC MIX IWR Mortar, when used with Dry Block® treated CMUs, creates a water-repellent assemblage when properly designed and constructed.

Based on independent testing in accordance with ASTM E 515 “Test Method for Water Penetration and Leakage Through Masonry,” SPEC MIX IWR Mortar and the masonry test wall showed no signs of water penetration (R.L. Nelson report, Oct. 2002). The water repellent in the mortar mix imparts hydrophobic properties to the mortar. This impedes water movement through the mortar joints, which also potentially reduces efflorescence.

When using ASTM C 1357 “Test Method for Evaluating Masonry Bond Strength” to compare the flexural bond strength of SPEC MIX IWR Mortar to the same reference mortar mixed with the leading liquid admixture, the SPEC MIX IWR mortar demonstrated a 46 percent increase in bond strength (R.L. Nelson report, Oct. 2002). In addition, ASTM C 270 compressive strength values reported for IWR Mortar made with Portland cement and lime materials, as well as masonry cement, achieved similar results as the SPEC MIX reference mortar.

Weighing and blending the dry water repellent admixture during the computer batching process guarantees the consistency and quality assurance of IWR Mortar. The same amount of IWR admixture, as well as the other mortar components, is included in each bag, every time. For the contractor, this eliminates the time associated with measuring and hand-adding materials on site that lower job site efficiency. More importantly, it eliminates the possibility of varying admix dosage rates that effect the integrity and aesthetic value of the masonry structure.

Using SPEC MIX IWR mortar can greatly reduce the potential for problems associated with water penetration of the building envelope. Preblending all dry mortar materials ensures uniformity of the mixture and increases productivity while improving the long-term performance of the wall system. SPEC MIX IWR is THE ultimate solution.

PROVEN COMPATIBILITY WITH TREATED MASONRY UNITS

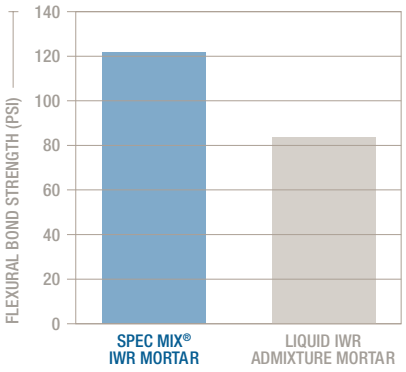
FOR MASONRY WALLS TO ACHIEVE OPTIMAL WATER RESISTANCE, IT IS ESSENTIAL THAT INTEGRAL WATER REPELLENT ADMIXTURES BE INCORPORATED INTO CONCRETE UNITS AND MORTAR DURING THE MANUFACTURING PROCESS. TO TEST THE PERFORMANCE AND COMPATIBILITY OF SPEC MIX IWR MORTAR WITH MASONRY UNITS TREATED WITH WATER REPELLENT ADMIXTURES, STANDARD TEST METHOD ASTM E 514 WAS EMPLOYED. THIS STANDARD TEST IS THE MOST COMMONLY USED TEST AS IT MEASURES THE RELATIVE WATER PENETRATION RESISTANCE OF AN ENTIRE ASSEMBLAGE.

THE TEST SIMULATED THE AFFECTS OF WIND DRIVEN RAIN ON MASONRY ASSEMBLAGES BUILT WITH WATER REPELLENT UNITS AND SPEC MIX IWR MORTAR. DURING THE ACTUAL TEST, 40.8 GALLONS OF WATER PER HOUR FOR FOUR HOURS WERE APPLIED TO THE WALL PRESSURIZED AT 10 LBS/FT2, WHICH EQUALS 3.4 GAL/FT2/HR. THIS WOULD EQUATE TO A WIND VELOCITY OF 62.5 MILES PER HOUR AND A RAINFALL RATE OF 5.5 INCHES PER HOUR.

CONCLUSION: WHETHER DRY SPEC MIX IWR ADMIXTURE IS BLENDED WITH PORTLAND CEMENT AND LIME OR MASONRY CEMENT MORTARS, NO SIGNS OF DAMPNESS OR WATER PENETRATION WERE VISIBLE AFTER THE FOUR-HOUR TEST PROCEDURE. SPEC MIX IWR MORTAR IS COMPATIBLE WITH TREATED MASONRY UNITS WHILE ACHIEVING 46 PERCENT GREATER FLEXURAL BOND STRENGTH COMPARED TO THE SAME MORTAR MIXTURE INCORPORATING A LEADING LIQUID WATER REPELLENT ADMIXTURE.

FLEXURAL BOND STRENGTH COMPARISON

SPEC MIX IWR MORTAR SIGNIFICANTLY OUT-PERFORMED LIQUID IWR ADMIXTURE MORTAR IN LABORATORY TESTS COMPARING FLEXURAL BOND STRENGTH. THE TEST MEETS ASTM C 1072 STANDARDS AND WAS CONDUCTED WITH AN AVERAGE OF 6 PRISMS CONSTRUCTED WITH UNITS TREATED WITH A WATER REPELLENT MIXTURE.



SPEC MIX IWR MORTAR TEST RESULTS: FLEXURAL BOND AND WATER PENETRATION STUDY

- SPEC MIX IWR MORTAR UTILIZING IWR ADMIX INTEGRAL WATER REPELLENT ADMIXTURE WAS AS EFFECTIVE AND COMPARABLE TO MORTARS CONTAINING A NATIONALLY RECOGNIZED, PROPRIETARY LIQUID WATER-REPELLENT ADMIXTURE.
- THE FLEXURAL BOND STRENGTH OF SPEC MIX IWR MORTAR WAS COMPARABLE TO THAT OF THE REFERENCE MORTAR. THE FLEXURAL BOND STRENGTH OF THE SPEC MIX IWR MORTAR SIGNIFICANTLY EXCEEDED THE BOND STRENGTH RESULTS OF A SIMILAR MORTAR MIXTURE CONTAINING A NATIONALLY RECOGNIZED PROPRIETARY LIQUID WATER-REPELLENT ADMIXTURE.
- SPEC MIX IWR MORTAR AND A MORTAR CONTAINING THE NATIONALLY RECOGNIZED PROPRIETARY LIQUID WATER-REPELLENT ADMIXTURE BOTH PROVIDED GREATER RESISTANCES TO WATER PENETRATION THAN THE REFERENCE MORTAR WHEN TESTED IN ACCORDANCE WITH ASTM E 514.
- SPEC MIX IWR MORTAR MADE WITH A DRY INTEGRAL WATER REPELLENT ADMIXTURE, WHEN USED WITH DRY BLOCK TREATED UNITS, CREATES A WATER-REPELLENT MASONRY ASSEMBLAGE WHEN PROPERLY DESIGNED AND CONSTRUCTED.
- THE SEVEN AND 28 DAY COMPRESSIVE STRENGTH OF THE SPEC MIX IWR MORTAR WAS SIMILAR TO THAT OF THE REFERENCE MORTAR.

OPPOSITE PAGE: SPEC MIX IWR MORTAR SHOWS NO WATER PENETRATION WHEN TESTED IN ACCORDANCE WITH E 514 STANDARD TEST METHOD FOR WATER PENETRATION AND LEAKAGE THROUGH MASONRY. THE TEST APPARATUS SIMULATES RAIN AT 60 MPH.

TOP LEFT: SPEC MIX IWR MORTAR EXCEEDS C 1367 BOND REQUIREMENTS.

ABOVE: FOR PROJECTS CONSTRUCTED WITH ARCHITECTURAL INTEGRAL WATER REPELLENT MASONRY UNITS, IWR MORTAR REDUCES THE PROBLEMS ASSOCIATED WITH WATER PENETRATION OF THE BUILDING ENVELOPE.

INSTALLATION/APPLICATION

Mortar type should correlate with the particular masonry unit to be used. The specifier should evaluate the interaction of the mortar type and masonry unit specified. That is, masonry units having a high initial rate of absorption will have greater compatibility with mortar that has a high-water retentivity. The material properties of mortar that influence the structural performance of masonry are compressive strength, bond strength and elasticity. Because the compressive strength of masonry mortar is less important than bond strength, workability and water retentivity, the latter properties should be given principal consideration in mortar selection. Select mortar based on the design requirements and with consideration of code and specification provisions affected by the mortar.

A sample of the proposed product will be provided by the manufacturer for architectural approval and testing, if required. Preparation of this panel with all materials and systems employed in the final project is imperative. Retain the mock-up or field sample through the completion of the project.

When mixing, a mechanical batch mixer best ensures homogeneity, workability and good board life. Use clean, potable water and add the maximum amount consistent with optimum workability. Mixing time is five minutes and should be consistent from batch to batch. Tool mortar joints when the surface is thumb-print hard. Keep tooling time consistent. Do not strike joints too early or too late as the color will not remain consistent with the mock-up panel. Hand mixing mortar should be permitted only with written approval by the specifier who should outline hand-mixing procedures. Mortar should be cured a minimum of 28 days. Clean masonry only with a national proprietary cleaning agent or potable water.

Mortar shall be used and placed in final position within two-and-one-half hours after initial mixing or discarded at that time. Retemper mortar only when mixing water is lost due to evaporation.

Do not retemper colored mortar. SPEC MIX products are custom packaged to the specification. They must be kept dry, covered and protected from weather and other damage.

Clean masonry only with a national proprietary cleaning agent (following the manufacturer's instructions) or potable water. SPEC MIX products are custom packaged to the specification. They must be kept dry, covered and protected from weather and other damage.

SIZES AND EQUIPMENT

SPEC MIX IWR Mortar is available in 80 lb. (36.3 kg.) packages for easy hand loading or in 3000 lb. (1360.8 kg.) reusable bulk bags to be used with the various SPEC MIX silo systems. When using the silo system, once the bulk bags of mortar are delivered to the project site, the portable silo is loaded with a jobsite forklift and the product is dispensed into a mechanical batch mixer.

1:1:6 PROPORTIONED PORTLAND/LIME/SAND MORTARS

ASTM C 270	Reference Type N Mortar	Type N Mortar with IWR Admixture
Water Retention	89%	93%
Air	6.3%	6.1%
7-Day Compressive Strength	1,520 psi	1,570 psi
28-Day Compressive Strength	1,730 psi	1,800 psi
ASTM E 514		
Time of First Dampness	60 min	None
Time of First Visible Water	None	None
Area of Dampness (% of test area)	10%	None
Water Collected in 4 Hours	None	None

1:3 MASONRY CEMENT/SAND MORTARS

ASTM C 270	Reference Type N Mortar	Type N Mortar with IWR Admixture
Water Retention	86%	86%
Air	15.8%	15.3%
7-Day Compressive Strength	1,570 psi	1,600 psi
28-Day Compressive Strength	1,950 psi	2,040 psi
ASTM E 514		
Time of First Dampness	38 min	None
Time of First Visible Water	None	None
Area of Dampness (% of test area)	12%	None
Water Collected in 4 Hours	None	None

MIXING INSTRUCTIONS

1. Use a mechanical batch mixer to ensure homogeneity, workability and good board life.
2. Add the minimum amount of clean, potable water for optimum workability.
3. Mix for five minutes consistently from batch to batch.
4. Tool mortar joints when the surface is thumb-print hard. Keep tooling times consistent.
5. Hand mix mortar only with written approval by the specifier who should outline procedures.
6. Use mortar within 2.5 hours after initial mixing.
7. Retemper mortar only when mixing water is lost due to evaporation.
8. Allow mortar to cure a minimum of 7 days but no more than 28 days before cleaning. Consult manufacturer of the masonry units and cleaning chemicals for further instructions to ensure proper washing procedures.

LIMITATIONS

SPEC MIX IWR Mortar should be installed in accordance with the provisions of the local building code and applicable ASTM standards. Good workmanship coupled with proper detailing and design assures durable, functional, watertight construction. Follow proper cold-weather masonry procedures at temperatures below 40° F (5° C).

LIMITED WARRANTY

SPEC MIX, Inc. warrants this product to be of merchantable quality when used or applied in accordance with the instructions hereon. This product is not warranted as suitable for any purpose or use other than the general purpose for which it is intended. Liability under this warranty is LIMITED to the replacement of its product (as purchased) if found to be defective, or at the shipping company's option, to refund the purchase price. In the event of a claim under this warranty, notice must be given to SPEC MIX, Inc. in writing. THIS LIMITED WARRANTY IS ISSUED AND ACCEPTED IN LIEU OF ALL OTHER EXPRESS WARRANTIES AND EXPRESSLY EXCLUDES LIABILITY FOR CONSEQUENTIAL DAMAGES.

WARNING

IMPORTANT! READ BEFORE USING This product contains Portland cement. Contact with freshly mixed product can cause severe burns. Avoid direct contact with skin and eyes. If this product should contact eyes, immediately flush with water for at least 15 minutes and consult a physician. For skin exposure, wash promptly with plenty of soap and water. Remove soaked clothing promptly. If this product burns your skin, see a physician immediately. This product may contain silica. Silica dust if inhaled may cause respiratory or other health problems. Prolonged inhalation may cause delayed lung injury, including silicosis and possibly cancer. A N95 approved dust mask, eye protection, and rubber boots and gloves are recommended when using this product. Material Safety Data Sheets can be viewed online at **www.specmix.com**

KEEP OUT OF REACH OF CHILDREN

WARNING: This product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

TECHNICAL SUPPORT

- CONTACT YOUR LOCAL SPEC MIX® MANUFACTURER
- VISIT WWW.SPECMIX.COM
- CONTACT SPEC MIX®, INC.
  PHONE: 888-SPEC-MIX FAX: 651-454-5315