



1. Product Name

- SPEC MIX® SPECSHOT Shotcrete
- SPEC MIX® SPECPATCH Shotcrete
- SPEC MIX® SPECNAIL Shotcrete
- SPEC MIX® SPECPOOL Shotcrete
- SPEC MIX® SPECFINISH Shotcrete

2. Manufacturer

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3. Product Description

BASIC USE

SPEC MIX offers an extensive line of shotcrete products, available in standard and custom formulas for new construction and restoration projects, above ground or below.

SPECSHOT

SPEC MIX® SPECSHOT is a preblended, high early strength, cement-based product for wet or dry process applications. It is suited for underground work, tunneling and projects where high performance shotcrete is to be installed on vertical, overhead or horizontal surfaces. Formulated to create a cohesive, fast-setting material with good shooting, adhesion and strength characteristics, SPECSHOT can be customized to meet specific project requirements. It is available as an air-entrained shotcrete mixture.

SPECPATCH

SPEC MIX® SPECPATCH is a preblended, high early strength, cement-based product designed for wet or dry process repair applications. Formulated to produce a finishable and fast-setting material with good shooting, adhesion and strength characteristics, SPECPATCH can be custom designed and packaged to meet specific properties and project requirements. It is also available as an air-entrained shotcrete mixture.



SPECNAIL

SPEC MIX® SPECNAIL is a preblended, high early strength, cement-based product for wet or dry process soil and slope stabilization applications. Specially formulated to produce a cohesive and fast-setting material with good shooting, adhesion and strength characteristics, SPECNAIL is designed to harden and gain strength quickly for a wide range of soil and slope stabilization applications.

SPECPOOL

SPEC MIX® SPECPOOL is a preblended, high early strength, cement-based product designed to be used for wet or dry process applications for in-ground pool construction. Available as an air-entrained shotcrete mixture, this cohesive, fast setting material can be used for single- or 2-coat applications.

SPECFINISH

SPEC MIX® SPECFINISH is a preblended, high early strength, cement-based product for wet or dry process applications where aesthetics are important. It is formulated to produce a cohesive material with good shooting, adhesion, strength and finishing characteristics.

COMPOSITION & MATERIALS

SPEC MIX shotcrete products are a blend of Portland cement, fly ash, silica fume, steel or synthetic fibers, aggregates and special chemical admixtures.

Manufactured throughout the United States and Canada, by licensed local manufacturers using high tech blending equipment

and following strict quality control procedures, the products are produced with raw materials from each geographic region. Contact the manufacturer for a precise material breakdown by product type.

TYPES & SIZES

SPEC MIX shotcrete products are packaged in 80 lb (36 kg) or 94 lb (42 kg) bags for easy hand loading and in 3000 lb (1360 kg) reusable bulk bags for use with any SPEC MIX material delivery system.

BENEFITS

- A computer-batching process and strict quality control procedures help ensure that the finished product complies with design and specification requirements
- Batch-to-batch consistency is maintained using dried sand to eliminate the bulking effect of moisture within the aggregate
- Portable SPEC MIX silos can be enclosed to permit construction in all climates
- Pallets and bulk bag containers are reusable and picked up whenever a new load of material is delivered to a site
- The SPEC MIX system helps eliminate the shoveling and heavy lifting associated with field mixing

LIMITATIONS

Because variation in properties of shotcrete raw materials can be significant, conduct trial shoots using test panels to verify the properties of each mixture.

Table 1 TYPICAL PHYSICAL PROPERTIES OF SPEC MIX SHOTCRETE PRODUCTS

| SPECSHOT | SPEC SHOT 5000 MS | SPECSHOT 5000 MSA |
|---|----------------------------|-------------------|
| Compressive strength, ASTM C42 | | |
| 1 day | 2790 psi | 3200 psi |
| 3 days | 4670 psi | 4920 psi |
| 7 days | 6020 psi | 5760 psi |
| 28 days | 6080 psi | 6050 psi |
| 56 days | 7510 psi | 7280 psi |
| Flexural strength, ASTM C78 | | |
| 28 days | 990 psi | 840 psi |
| Hardened air content, ASTM C457 | - | 6.0% |
| Spacing factor | - | 200 µm |
| Rapid chloride permeability in coulombs, ASTM C1202 | 514 (very low) | 210 (very low) |
| Volume of permeable voids, ASTM C642 | 9.4% | 9% |
| Rapid freeze/thaw durability factor after 99 cycles, 100 cylinders, ASTM C666 | 99 | 100 |
| SPECPATCH | ASTM C42 SPECPATCH MS-POLY | SPECPATCH MSA |
| Compressive strength, ASTM C42 | | |
| 1 day | 1340 psi | 1960 psi |
| 3 days | 4060 psi | 7170 psi |
| 7 days | 5760 psi | 8720 psi |
| Flexural strength, ASTM C78 | | |
| 28 days | 990 psi | 1080 psi |
| Hardened air content, ASTM C457 | - | 6% (±2%) |
| Spacing factor | - | 300 µm |
| Rapid chloride permeability in coulombs, ASTM C1202 | 593 (very low) | 500 (very low) |
| Volume of permeable voids, ASTM C642 | - | 12% |
| Rapid freeze/thaw durability factor after 99 cycles, 100 cylinders, ASTM C666 | 88 | 92 |
| SPECNAIL | | |
| Compressive strength, ASTM C42 | | |
| 1 day | | 3200 psi |
| 3 days | | 3720 psi |
| 7 days | | 6100 psi |
| 28 days | | 6660 psi |
| Flexural strength, ASTM C78 | | |
| 7 days | | 900 psi |
| 28 days | | 1810 psi |
| Rapid chloride permeability in coulombs, ASTM C1202 | | 89 (negligible) |
| Volume of permeable voids, ASTM C642 | | 12% |
| Rapid freeze/thaw durability factor after 99 cycles, 100 cylinders, ASTM C666 | | 93 |
| SPECPOOL | SPECPOOL MS | SPECPOOL MSA |
| Compressive strength, ASTM C42 | | |
| 1 day | 3200 psi | 1260 psi |
| 3 days | 3270 psi | 3010 psi |
| 7 days | 6100 psi | 4720 psi |
| 56 days | 6660 psi | 6380 psi |
| Flexural strength, ASTM C78 | | |
| 7 days | 900 psi | 720 psi |
| 28 days | 1200 psi | 960 psi |
| Hardened air content, ASTM C457 | | 6% (±2%) |
| Spacing factor | | 300 µm |
| Rapid chloride permeability in coulombs, ASTM C1202 | 90 (negligible) | 545 (very low) |
| Volume of permeable voids, ASTM C642 | 12% | 12% |
| Rapid freeze/thaw durability factor, ASTM C666 | 93 | 93 |
| SPECFINISH | | |
| Compressive strength, ASTM C42 | | |
| 1 day | | 6540 psi |
| 3 days | | 6600 psi |
| 7 days | | 7940 psi |
| 28 days | | 7970 psi |
| 56 days | | 8270 psi |
| Rapid chloride permeability in coulombs, ASTM C1202 | | 782 |
| Volume of permeable voids, ASTM C642 | | 11.6% |

¹ Data was compiled from manufacturer's in-house laboratory, and field trials and represents achievable results. Actual results may vary due to workmanship, regional material variations and jobsite conditions.

4. Technical Data

APPLICABLE STANDARDS

ASTM International (ASTM)

- ASTM C42/C42M Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
- ASTM C78 Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading)
- ASTM C348 Standard Test Method for Flexural Strength of Hydraulic-Cement Mortars
- ASTM C457 Standard Test Method for Microscopical Determination of Parameters of the Air-Void System in Hardened Concrete
- ASTM C642 Standard Test Method for Density, Absorption, and Voids in Hardened Concrete
- ASTM C666/C666M Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing
- ASTM C1116 Standard Specification for Fiber-Reinforced Concrete and Shotcrete
- ASTM C1202 Standard Test Method for Electrical Indication of Concrete's Ability to Resist Chloride Ion Penetration

American Concrete Institute (ACI) - ACI 506R Specification for Shotcrete

PHYSICAL PROPERTIES

See Table 1.

ENVIRONMENTAL CONSIDERATIONS

The SPEC MIX System is environmentally friendly and can contribute points toward LEED certification. SPEC MIX bulk bags and pallets are recycled, and the silo system eliminates the use of disposable paper bags, thus reducing landfill impact. Raw materials are typically extracted, and products are manufactured within 500 miles of the job site. SPECSHOT products often contain recycled materials.

5. Installation

PREPARATORY WORK

Handle and store product according to SPEC MIX recommendations. SPEC MIX products are custom packaged to specification and must be stored dry, covered and protected from weather and other damage. Substrate preparation is critical for promoting good bond. When applying SPECPATCH to concrete surfaces, any deteriorated concrete should be removed until sound concrete is exposed. The exposed surface should be free of dust and loose or friable material.



METHODS

Shotcrete must be installed in accordance with the provisions of national or local building codes and ACI 506R and should be applied only by an experienced, certified nozzleman.

SPEC MIX SPECSHOT 5000 MS and MSA are dry, preblended products that may be used in either wet or dry processes. If predampening is not feasible, contact a SPEC MIX representative prior to project setup.

SPEC MIX SPECPATCH and SPECNAIL are dry, preblended products that may be used in either wet or dry processes. SPEC MIX, Inc., recommends predampening of the shotcrete materials for dry-process applications. If predampening is not feasible, a SPEC MIX representative should be contacted prior to project setup.

Mixing

When combining water with the shotcrete mixture, either during mixing for wet process application or at the nozzle for dry process applications, use only clean, potable water. Once the water is combined with the shotcrete mixture, all of the batched shotcrete should be installed before a loss of consistency is experienced. This time period may be shorter in hot weather conditions. Dry conditions may cause the shotcrete to harden more rapidly.

Prior to application of the shotcrete, the substrate should be cleaned and evenly moistened, but not saturated.

Although SPEC MIX Shotcrete reduces

rebound, some rebound is to be expected. Do not incorporate rebound material back into the applied shotcrete.

Silo Mixing

When using one of the patented SPEC MIX silo systems, bulk bags are delivered to the project site with a silo. The portable silo is loaded with a job site forklift, and the product is dispensed into the mechanical batch mixer. As much or as little material can be mixed to suit project needs.

Application & Curing

Once the shotcrete is applied, a variety of finishing techniques can be used to achieve the desired surface texture. After the desired finish is achieved, provide sufficient moisture to permit continuous hydration of the cementitious materials for optimum curing.

SPECNAIL is designed for a gun finish only. If another finish is desired, contact a SPEC MIX representative

Safety

This product contains greater than 0.1% crystalline silica. Avoid breathing dust; use a NIOSH-approved dust respirator and only with adequate ventilation to keep dust below permissible levels. Product also contains cementitious materials injurious to eyes. Contact with freshly mixed product can cause severe burns. Avoid eye contact or prolonged contact with skin. Wash thoroughly after handling. In case of eye contact, flush with plenty of water for 15 minutes. Consult a physician. Keep out of reach of children.

BUILDING CODES

Installation must comply with requirements of all applicable local, state and federal code jurisdictions. Good workmanship, coupled with proper detailing and design, ensures durable, functional and watertight construction.

6. Availability & Cost

SPEC MIX products, as well as the SPEC MIX silo delivery system, are available through a network of nationally licensed manufacturers with local distribution to every major U.S. market and select regions of Canada. Contact SPEC MIX, Inc., for more information or visit the www.specmix.com website to find a local manufacturer.

Because project needs and local product pricing varies from market to market, budget or installed cost information may be obtained from a local SPEC MIX manufacturer or from SPEC MIX, Inc. by calling 888-773-2649.

7. Warranty

SPEC MIX LIMITED PRODUCT WARRANTY: SPEC MIX, Inc. warrants this product to be of merchantable quality when used or applied in accordance with the instructions. The 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 the product (as purchased) if found to be defective, or at the shipping companies' option, to refund the purchase price. All claims under



this warranty must be written and submitted to SPEC MIX, Inc.

8. Maintenance

Properly mixed and installed shotcrete requires little or no maintenance.

9. Technical Services

For technical assistance, contact SPEC MIX, Inc., or a local SPEC MIX manufacturer.

10. Filing Systems

- Smart Building Index
- MANU-SPEC®
- Additional product information is available from the manufacturer upon request.

