MANTA

Technical Data Sheet

Version: 1.0

Manta WS170

Silicone Waterproofing Admixture

Description

Manta WS170 is an eco-friendly silicone-based waterproofing admixture designed for cement mortars and concrete. It uniquely combines excellent waterproofing, water-reducing, and strength-enhancing properties into a single, highly effective formulation.

Waterproofing Mechanism

When mixed with cement mortar and water, the active silane compounds first hydrolyze to form reactive silanol groups. Under the highly alkaline conditions of the hydrating cement, these silanol groups undergo a cross-linking reaction with the silicates in the cement matrix, forming a three-dimensional network. This network physically blocks the capillary pores generated during cement hydration. Simultaneously, the hydrophobic alkyl groups line the walls of these pores and the material's surface with a water-repellent film. This synergistic action delivers a highly effective, dual-barrier waterproofing effect.

Water-Reducing Mechanism

The emulsion is formulated with specialized non-ionic surfactants that significantly reduce the internal friction of the cement mortar or concrete during the mixing process. This improves flowability and workability while acting as an effective water reducer. Furthermore, during the concrete curing process, it helps retain internal moisture (internal curing), which eliminates the need for additional watering, densifies the cement matrix, and ultimately increases the structural strength of the final product.

Applications

Integral Waterproofing: Widely used as a high-performance waterproofing admixture for concrete and cement mortars in various construction projects, offering enhanced crack resistance and structural integrity.

Surface Treatment: Highly effective when applied as a surface waterproofing and moisture-proofing treatment for diverse substrates, including concrete, clay products, gypsum, masonry (bricks), and thermal insulation materials.

Specifications

Appearance: Milky white aqueous dispersion. It will not alter the original appearance or color of the substrate after application.

Hazard Class: Aqueous solution; Non-hazardous substance.

pH Value: 5.0 – 7.0

Active Content: ≥ 40%

Mechanical Stability: Excellent (no phase separation after centrifugation at 3,000 rpm for 5 minutes).
Storage Stability: 12 months without phase separation.
Dilution Stability: Readily dispersible in water, highly stable against separation.
Performance Data: When dosed at 1.0%–2.0% by weight of cement into the mortar mix, the water absorption rate of the cured concrete drops by over 85% after 48 hours of water immersion (results may vary depending on specific mix designs). For surface treatments, the penetration depth on horizontal surfaces ranges from 2mm to over 10mm, depending on substrate porosity.

Application Areas

Transportation Infrastructure: Waterproofing for high-speed rail projects and highway pavements.
Bridge Structures: Concrete piers, abutments, and bridge decks.
Underground Construction: Culverts, tunnels, subways, and underground parking garages.
Marine Engineering: Seawalls, docks, and coastal structures.
Water Retaining Structures: Reservoirs, dams, hydroelectric stations, and water diversion channels.
Precast Concrete: Manufacturing of water-resistant cement tiles and blocks.
Residential & Commercial Wet Areas: Swimming pools, rooftops, bathrooms, and kitchens.

Instructions: Cement Mortar Mixing (Admixture)

Dry Mixing: Weigh the cement and aggregates according to your mix design and mechanically mix them until uniform.
Water Preparation: Dose the waterproofing agent at 1.0% to 2.0% of the total cement weight. Add the agent to the gauging water and stir evenly. (Note: The recommended water-to-cement ratio is typically 0.35–0.40).
Wet Mixing: Slowly add the agent-water mixture to the dry cement blend under continuous mechanical stirring until a homogeneous, lump-free consistency is achieved.
Application: Apply the modified mortar by pouring or troweling (scraping).
Pot Life & Compatibility: Use the prepared mixture within 3 hours. Prolonged standing in a highly alkaline environment may cause premature cross-linking, reducing the waterproofing efficacy. Standard additives, such as water reducers and water-retaining agents (e.g., HPMC at 0.2%), should be added as usual.
Curing: Protect the applied area from rain and direct sunlight for the first 24 hours (minimum 8 hours). A preliminary surface water repellency test can be conducted after 48 hours.
Optimum Performance: Allow 7 days of natural curing to achieve the maximum waterproofing effect.

Instructions: Brush or Spray (Surface Treatment)

Surface Preparation: Prior to application, thoroughly clean the substrate to remove all dust, laitance, loose particles, and oily residues.
Moisture Requirement: The substrate surface must be visibly dry to ensure maximum penetration of the active ingredients and optimal waterproofing performance.
Dilution & Application: Dilute the waterproofing agent with clean water at a ratio of 1:8 to 1:15 and stir well. Apply evenly using a low-pressure sprayer, brush, or roller in a cross-hatch pattern, ensuring

complete coverage without missing spots. A single saturating coat is usually sufficient. For highly porous substrates or stricter waterproofing requirements, a second coat can be applied wet-on-wet or immediately after the first coat appears dry.

Storage of Dilution: Prepare fresh dilutions as needed. Do not store the diluted solution for extended periods. If unavoidable, keep it tightly sealed and use within 6 months. (Note: This product cannot bridge macroscopic cracks. All visible cracks must be repaired and filled prior to the waterproof treatment.)

Weather Conditions: Apply only when the ambient temperature is between 4°C and 40°C. Low temperatures significantly retard the formation of the hydrophobic film, while high temperatures cause rapid evaporation, limiting penetration depth. Protect the treated surface from rain for at least 24 hours. A complete hydrophobic network typically forms within 4 hours in summer and 10 hours in winter.

Precautions

Due to different proportions of materials and different working conditions, please test it on a small scale before using it in large quantities to confirm the effect before using it in large quantities.

Packaging

In 50kg, 180kg plastic drum

Safety and Storage

Keep in a cool and dry place and avoid storage in direct sunlight. Place it out of reach of children. Shelf life is 12 months, Once diluted, the solution remains stable for up to 6 months if kept in a tightly sealed container.

Contact Information

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