

AQUAFIN®-2K/M

Flexible Cementitious Protective & Waterproof Coating/Membrane

CSI Div. 07 + 09

07 16 14 Acrylic Modified Cement Waterproofing
09 97 32 Concrete and Masonry Coatings

LEED Points

MR Credit 5.1, Regional Materials:..... Up to 2 Points
IEQ Credit 4.2, Low-Emitting Materials, Paints and Coatings: 1 Point
Using this AQUAFIN product can help contribute to LEED certification of projects in the categories shown above.

Product Description:

AQUAFIN-2K/M (in short 2K/M) is a state-of the art, asbestos free, cementitious, acrylic emulsion based, flexible protective coating and waterproof barrier. This product is two-component (powder and liquid) and resistant to water and mild abrasion.

Typical Applications:

- Above or below grade exterior applications.
- Horizontal, vertical, or overhead applications to concrete, cementitious overlays, masonry, brick and parging (render).
- Exterior waterproofing of new or old below grade foundations.
- Terraces and balconies over unoccupied space (stand-alone or under tiles), parapets, planter boxes, plaza decks, stadiums.
- Mechanical & equipment rooms.
- Underneath flexible thin-set tile mortars (i.e. shower pans, sanitary rooms, kitchens, fountains, pools, balconies, etc.).
- Potable water, wastewater, sea water and marine aquarium tanks and other reinforced concrete structures.

Advantages:

- Self curing, 2-component waterproofing membrane
- Various colors / color matching available
- Solvent Free - 0g/L VOC
- Potable water NSF/ANSI 61 certified by WQA
- Does not support the growth of mold & mildew
- Meets or exceeds ANSI A118.10 and 12
- UV, weather & freeze/thaw resistant
- Breathable (not a vapor barrier)
- Applied to moist/damp substrates
- Resists strong positive side hydrostatic pressure
- Active barrier to carbon dioxide (CO₂)
- Carbonation protection and carbon dioxide-screen:
40 mils (1 mm) 2K/M thickness warrants the same protection as 12" (300 mm) of concrete.



Substrate Preparation:

The substrate must be sound, clean, and free from voids, bug holes, gaping cracks, honey combs, or ridges and open pored (like medium grit sand paper).

- Remove bond breakers, such as oil, grease, dirt, loose particles, remains of form oils, water repellents, rust or other coatings by high pressure

- waterblasting (>5000 psi (34.5 MPa)) or wet or dry sandblasting.
- Prepare surfaces by mechanical means to obtain a surface profile of CSP 3 - CSP 5 per ICRI Guideline No. 310.2-R-2013.
- Repair holes, defects, irregular surfaces, weak mortar joints, etc. with MORTAR-V/O or MORTAR-40.
- Round edges at vertical external joints.
- Close large open pores and joint recesses of CMU blocks and joint unevenness in brick walls with MORTAR-V/O.
- Dampen substrate (excluding drywall or similar) with clean water to saturated surface dry (SSD) condition, with no standing surface water.
- Roughen fiberglass substrates using diamond grinding, zek/wire wheel, etc. and clean with acetone prior to applying 2K/M.

Mixing:

NOTE: In hot weather conditions water can be added after initial mixing to adjust application consistency as follows:

max. 10 fl.oz. (0.3 L) per 46 lb (21 kg) unit

max. 16 fl. oz. (0.5 L) per 77lb (35 kg) unit.

Mixing ratio by volume: ~ 5:3 (powder to liquid)

- **Pigmenting:** Add and mix liquid pigments with liquid Component-B or powder pigments to powder Component-A prior to mixing Component-A with Component-B.
- Pour 2/3 liquid Component-B into a clean container, add 2K/M powder (Comp-A) and mix to a lump free creamy consistency. Add remaining 1/3 liquid and mix total 2 - 3 minutes with a strong, slow speed (300 rpm) mechanical mixer.

Application:

NOTE: Do not apply 2K/M at temperatures below 40°F (5°C) or to frozen substrates. Can be applied to 3 day old concrete at >86°F (>30°C) temperature and 5 day old at 60-70°F (15-21°C), or when concrete reaches minimum 2,000 psi (13.8 MPa).

- **Application tools:** 2K/M may be applied by brush, roller, trowel or appropriate compressed-air spray equipment. Do not pre-dampen brush or roller with water.
- **Static cracks:** Repair static (non-moving) cracks with AQUAFIN CRACK SEALING TAPE (80% elongation, JOINT SEALING TAPE-2000 - 8" (60% elongation), or rout (cut) out and fill with MORTAR-40 and cover with 2K/M, reinforced with 4x4-MESH.
- **Dynamic cracks:** Seal dynamic (moving) cracks with JOINT SEALING TAPE-2000-S (600% elongation).
- **Horizontal and vertical control joints:** Seal horizontal wall-floor joints and internal vertical corners with JOINT SEALING TAPE -2000 - 8" or 2000-S. Alternative: form cove (minimum 1.5" x 1.5" [38 x 38 mm]) with MORTAR-40 or MORTAR-V/O and embed 4x4- MESH in 2K/M coating.
- **Expansion joints:** Seal non-traffic bearing expansion joints with JOINT SEALING TAPE-2000-S.

Note: 2K/M applied over all tapes in visible areas will crack over the tape due to substrate movement. However, the tape and the structure will still be waterproof. Therefore, wherever

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aesthetics are important (i.e. walkways, decks, patios, etc.) honor all joints & cracks with an appropriate elastomeric joint sealant or pre-manufactured joint profile.

- **Construction & Movement joints under Tile:** assure that construction and movement joints in tiles or stones are foreseen as per industry standards such as per ANSI specification A108.01-3.7 "Requirements for Movement Joints: Preparations by Other Trades" or TCNA detail EJ-171 "Movement Joints-Vertical & Horizontal".
- **PVC pipe penetrations & stainless steel flanges:** Abrade (sand) PVC pipes and stainless steel flanges and degrease with isopropanol or acetone. Apply 2K/M and embed SEALING GASKET-18/18 or JOINT SEALING TAPE-2000 - 8" as per TDS.
- **Alkali sensitive substrates:** Protect and seal alkali sensitive metal substrates such as copper, aluminum, galvanized or zinc treated metal first with a primer (i.e. KRYLON Primer, or equal) prior to applying (over-coating) 2K/M.
- **Reinforcement Mesh:** If AQUAFIN-4x4-MESH is required or desired for reinforcement of coating, immediately embed into fresh (wet) 1st 2K/M coat. Assure/confirm it "wettens" (seeps) through. Using a stainless steel trowel, sponge float or similar, smooth out any wrinkles in the mesh, forcing it down. Cover with 2nd coat 2K/M after 3 - 5 hrs, or next day. Note: 4x4-MESH substantially reduces flexibility of 2K/M.
- **Protect areas not to be treated from 2K/M.** Hardened 2K/M can only be removed mechanically.

Applications:

1. **Standard Application:** Apply 2K/M in two coats as specified. High ambient temperatures can create flash setting when product leaves the spray nozzle, creating pinholes in the applied layer. If applied in full sunshine product can skin-up on the surface and de-bond, resulting in post-bubbling.
 - Apply 1st coat by brush to force material into the substrate.
 - Apply 2nd coat (or multiple coats) as soon as the 1st coat has sufficiently hardened (approx. 4-6 hrs @ 68°F (20°C)/63% RH) or max. 24 hours. Do not pre-dampen 1st or following coats. (If longer than 24 hours, 2KM surface must be prepared by high pressure water blasting or sanding/roughening and allowed to dry). Apply by brush, roller, trowel or appropriate compressed-air spray equipment. If sprayed, even out and seal surface by back-troweling, brushing, rolling to achieve a void-free membrane.
 - Thickness: 60 mils = 2x30 mils (2x0.8 mm)
80 mils = 2x40 mils (2x1.0 mm)
90 mils = 2x45 mils (2x1.1 mm).
2. **Negative Side Waterproofing, 60 mils (1.6 mm):** Apply two coats AQUAFIN-1K at 30 mils (0.8 mm) per coat to a very well saturated substrate. Pre-wet substrate several times with potable water. Follow instructions on the AQUAFIN-1K TDS.
3. **CMU Block Substrates, 120 mils [1/8"] (3.2 mm):** Positive or negative waterproofing side:
 - Apply AQUAFIN-1K at 60 mils (1.6 mm) total as per item 2.
 - Apply 2K/M in two coats at total 60 mils (1/16" (1.6 mm)) thickness as per item 1. Note: wait minimum 24 hours before top coating 1K with 2K/M.
4. **Potable water holding tanks.** Can be carefully filled after 3 days. Do not fill large tanks faster than 6½ feet per 24 hrs. (2 m/24 hrs).
5. **Marine aquarium and zoo tanks:**
 - Structure coat containing waterproofing admixtures: verify with admixture manufacturer that cementitious top coatings will bond to the concrete surface prior to installation of 2K/M. Aquafin recommends AQUAFIN-IC-ADMIX (liquid or powder).
 - Overlaying texture coat: let 2K/M cure for at least 3-5 days before applying texture coat. Assure that proper measures are taken to avoid

shrinkage of the overlaying "texture coat". Internal stresses of shrinking "texture coat" can negatively affect the bond to 2K/M, or the integrity of the 2K/M.

Exposure** of Application to:

- Rain: vertical surfaces after ~3 hrs, horizontal surfaces min. 6 hrs.
 - Foot traffic: after ~24 hrs.
 - Flexible tile mortar and tiles: after ~1 day.
 - Hydrostatic pressure: after 2K/M reaches min. Shore A Hardness 80, check with "finger-nail test". Typically 3-7 days
 - Back filling: after ~3 days.
- **) at 68°F (20°C) and 60% humidity.

Sealing & Protecting:

- Clear sealer: In areas such as walkways, balconies, etc. where higher than usual surface contamination can be expected, the surface of 2K/M can be sealed with AQUAFIN-CS/250 (consult TDS), clear acrylic sealer. The 2K/M should be cured for min. 24 hrs. before applying AQUAFIN-CS/250.
- Painting: Cured 2K/M can be painted with a solvent free, "breathable" paint (non silicate) after 3 days (at 68°F (20°C)).

Clean-Up:

Clean tools and equipment with water immediately after use. Cured material can only be removed mechanically or with a soy based paint remover.

Curing & Protection:

- Self curing, do NOT use water. It may discolor pigmented applications during the fresh stage. Provide suitable protection against extreme weather conditions while curing.
- Expect prolonged setting and hardening time in rooms with high humidity, poorly ventilated areas and corners (i.e. water tanks, etc.). The use of fans will accelerate the setting and curing time.
- Attach drainage and protection boards after full curing (3 days). DO NOT mechanically attach.

Limitations:

- Do NOT use 2K/M in pools, hot tubs, or fountains unless under tile.
- Do not use as an adhesive to install ceramic tile or natural stone.
- Do not use as a roofing membrane or in lieu of a roofing membrane.
- Do not install directly over single layer wood floors.
- Protect application from direct sunlight and wind to prevent premature surface drying, bubbling and shrinkage cracks.
- Do NOT directly apply 2K/M over AQUAFIN-IC or similar crystalline waterproofing products.
- Do not use solvent based adhesives, epoxies, etc. directly on 2K/M.
- Do not expose the application to water during the setting time.
- Soft water: contact our office if water hardness is <30 mg CaO/L.
- Product can be tinted (pigmented), however, color uniformity can not be guaranteed. Note: color fading of pigmented product will occur in submerged zones with water containing increased chlorine or ozone concentrations.

Maintenance:

Mechanically damaged 2K/M can be easily repaired by thoroughly cleaning (sanding) the surface and reapplying a new coat of 2K/M.

Packaging:

- **46 lb (21 kg) Comb-unit: 5 gal pail containing bag + pail**
A-Component (powder): 33 lb (15 kg) bag
B-Component (liquid): 1.5 gal / 13 lb pail (5.7 L / 6 kg).

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- 77 lb (35 kg) Unit: bag + pail separate
A-Component (powder): 55 lb (25 kg) bag
B-Component (liquid): 2.5 gal / 22 lb pail (9.5 L / 10 kg).
- Pigments for tinting 2K/M are packaged separately.

Shelf Life:

Approx. 12 months for powder Component-A and up to 24 months for liquid Component-B in unopened packaging, stored dry, cool and frost-free.

Note:

Installer is responsible for proper product application. Site visits by Aquafin personnel or representatives are solely for the purpose of making technical recommendations, not for providing supervision or quality control.

Safety:

Refer to SDS. KEEP OUT OF REACH OF CHILDREN.

A-Component (powder) contains sand (crystalline silica) and Portland cement and is highly alkaline (irritant) in contact with water. Prevent inhalation of dust before and during mixing with liquid Component-B.

B-Component (liquid) contains no hazardous materials. Use rubber gloves and goggles during mixing and application. Avoid contact with eyes and skin. After contact with skin, wash with plenty of water. In case of eye contact, rinse immediately with plenty of water and seek medical advice. In case of handling large quantities, provide good ventilation if indoors.

KEEP OUT OF REACH OF CHILDREN.

LIMITED WARRANTY: AQUAFIN, INC. warrants its products to be manufactured free of defects for one year and to be consistent with its standard high quality. We will replace or, at our election, refund the purchase price of, any product which is proven to be defective, provided that the product was properly applied. Our product recommendations are based on Industry Standards and testing procedures. We assume no warranties either written, expressed or implied as to any specific methods of application or use of the product. AQUAFIN, INC. MAKES NO WARRANTY AS TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED. AQUAFIN, INC. shall not be liable for damages of any sort including remote or consequential damages, down time, or delay.

For Professional Use Only.

Physical & Technical Data	
AQUAFIN-2K/M: Dry Powder Component-A	
Aggregate State:	Gray, white & base white powder
Bulk Density:	~88 lb/ft ³ (~1.4 kg/dm ³)
Liquid Component-B	
Aggregate State:	White liquid
Density at 68°F (20°C):	~8.74 lb/gal (~1.05 kg/L)
pH-value:	7.5

AQUAFIN-2K/M: Wet Mix	
Density of wet mix:	~100 lb/ft ³ (~1.6 kg/dm ³)
Pot life (approximate):	60 min. at 73° F (23° C) 60% RH 20 min. at 95° F (35° C) 65% RH
Application Temperature:	40° F to 95° F (+5° C to +35° C)
VOC:	0% (0 g/L)
AQUAFIN-2K/M: Cured	
Color:	Gray, white or pigmented
Shore 'A' Hardness:	~85 (ASTM D-2240)
Service Temperature:	• Traffic: 5° F - 122° F (-15° C - +50° C) • Non-traffic: -4° F - 140° F (-20° C - +60° C)
Elongation at rupture at 80 mils (2 mm) thickness: (ASTM D-412-98a)	70% Gray at 73° F (23° C) 40% White (all without fabric)
Crack Bridging Capacity:	1/16" (1.6 mm) at 60 mils DFT
Tensile Strength: (ASTM D- 412-98a)	600 psi (4.2 MPa) @ 80 mils (2 mm) thickness at 73° F (23° C)
Adhesion to concrete: (ASTM C-297 modified)	145 psi (1.0 MPa) @ 7 d 215 psi (1.5 MPa) @ 28 d
Abrasion Resistance: (ASTM D-4060)	109 mg/1000 cycles, CS-17 wheel (Taber 5150 Abrader)
Rapid Chloride Permeability	Chloride Penetration:
• Untreated control:	3750 Coulombs
• 80 mils (2 mm) thickness:	509 Coulombs
Percentage Reduction:	86% (ASTM C-1202.97)
Flammability: (ASTM E-108)	Passed: Class A, Spread of Flame
Static Coefficient of Friction:	Non-slip - (ASTM C-1028) 1.2 (ADA: 0.8 for ramps) 0.9 (ADA: 0.6 or higher)
Vapor Permeability	(ASTM E-96)
• Untreated control:	10.3 perms (100%)
• 1/16" (1.6 mm) thickness:	2.3 perms (22.3%)
• 3/32" (2.4 mm) thickness:	1.4 perm (13.6%)
Water Permeability: (CRD-C 48-92 at 1/16" (1.6 mm) thickness)	No measurable leakage up to 200 psi (460 feet (140 m)) head pressure (positive side).
Root Resistance: (EMPA test)	No punctures, tested with Lupinus albus

Adhesion of Tiles: ANSI A118.10 Results	
Fungus & Micro-Organism Resistance: test period 14 d	Fungus: Aspergillus Niger Pass. No growth was observed
Seam Strength: (ASTM-D 751)	14.9 lb (6.8 kg) = Pass Requirement 8 lb (3.6 kg)
Breaking Strength: (ASTM-D 751)	677 psi (4.7 MPa) = Pass Requirement 170 psi (1.2 MPa)

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Consumption & Yield Do not exceed total thickness of 100 mils (2.5 mm) for 2K/M.			
Application Condition <i>Note: All coverage rates are listed at 2 coats. Do not apply 2K/M thicker than 45 mils per coat. (Thickness: 60 mils = 2x30 mils [2x0.8 mm], 80 mils = 2x40 mils [2x1.0 mm], 90 mils = 2x45 mils [2x1.1 mm].)</i>	Min. coating thickness DFT (dry film thickness) inch [mils] (mm)	46 LB UNIT Appx. Yield ft ² (m ²)	77 LB UNIT Appx. Yield ft ² (m ²)
<ul style="list-style-type: none"> Exposed applications: walkways, balconies, mechanical rooms, planters Waterproofing, exterior above & below grade applications with water depth less than 13 ft. 	~1/16" [60] (1.6)	75 (7.0)	125 (11.6)
<ul style="list-style-type: none"> Applications under tile: balconies, plaza decks, pools Waterproofing, exterior above & below grade applications with water depth more than 13 ft. 	~1/12" [80] (2.0)	56 (5.1)	94 (8.7)
<ul style="list-style-type: none"> Waterproofing, interior below grade structures & all in-ground fountains, water tanks, etc.: Base coat: AQUAFIN-1K (50 lb bag [22.7 kg]) Top coat: AQUAFIN-2K/M applied in 2 coats 	~1/16" [60] (1.6)	98 (9.1)	98 (9.1)
	~1/16" [60] (1.6)	75 (7.0)	125 (11.6)
<ul style="list-style-type: none"> Aquarium & Zoo Tanks: Refer to Spec Sketch No.1.1.3-10. 	~3/32" [90] (2.25)	50 (4.7)	84 (7.8)

Refer to waterproofing specification sketches no. 1.1.3. All above values theoretical. Variations may apply due to substrate conditions or conversion factors.

Dimensional Stability: +158 °F (70 °C) -15 °F (-26 °C) (ASTM-D 1204)	Pass 0.000% 0.000% Requirement: 0.7% maximum
Waterproofness: (ASTM-D 4068-99)	Pass 2'(0.6 m) water column over 48 hr
7-Day Shear Strength: (ASTM-C 482-1996)	107 psi (0.74 MPa) = Pass Required = 50 psi
7-Day Water Immersion Shear Strength: (C 482)	86 psi (0.59 MPa) = Pass Required = 50 psi
4-Week Shear Strength: (ASTM-C 482-1996)	107 psi (0.74 MPa) = Pass Required = 50 psi
7-Week Shear Strength: (ASTM-C 482-1996)	114 psi (0.79 MPa) = Pass Required = 50 psi
100-Day Water Immersion Shear Strength: (C 482)	166 psi (1.15 MPa) = Pass Required = 50 psi
Adhesion of Tiles: ANSI A118.12 Results	
Point Load Resistance Test:	Pass (after 28 day cure)
Compressive Strength:	5,000 psi (34.5 MPa) calculated from Point Load Resistance Test
System Crack Resistance Test:	Standard Performance Requirement 1/16" (1.6 mm) = Pass
Adhesion to Steel: (ASTM D-4541)	250 psi (1.7 MPa) cohesive failure (in-house testing)
All data are averages of several tests under laboratory conditions. In practice climatic variations such as temperature, humidity, and porosity of substrate may affect these values.	

Citric acid, Formic acid, Fuel (hydrocarbons, benzene containing), Inorganic acids, Mineral oil	-
* = Slight discoloration after 48 hrs (ASTM D-543 spot test) + = Short Term Resistance - splashes and spills ++ = Long Term - Permanent Resistance - = Not Resistant	



Chemical Resistance	
Acid Solution (pH 2.5), Alkali Solution (pH 11.5), Solvent (90% Acetone)	*
Aqueous ammonia, Aqueous sodium hydroxide, Silage	+
Aqueous magnesium sulfate, Aqueous sodium chloride solution, Aqueous sodium sulfate, Diesel, Hydraulic Oil, Olive oil, Salt water (Sea water) & Marsh Water, Sewage (domestic), Transformer oil, Water	++