

ACON PRODUCTS



Technical Memo 100-am, Alpha Mix

As this unique product label name implies, **Alpha Mix** provides portland cement concrete mix water with unique ability to consistently reach its highest attainable degree of hydration, generating increased volumes of beneficial products of hydration (C-S-H), which eventually occupy concrete capillary and gel porosity voids, providing greatly increased density that will significantly lower concrete permeability factors. Plus, **Alpha Mix** is safe to use, odorless, non-toxic, non-flammable, environmentally-safe, and user-friendly. Furthermore, **Alpha Mix** is a unique one-of-a-kind product which changes ordinary concrete mixes to high-performance ones without the need for complex / special cure techniques, storage and / or handling procedures.

Alpha Mix adds some extremely unique attributes to concrete including significantly-reduced permeability, greatly increased workability, noticeably reduced bleed-water production, natural shrinkage compensation, greatly reduced drying shrinkage, increased surface abrasion resistance, etc.

Here are some laboratory-proven conclusions:

- 1) The addition of **Alpha Mix** increase concrete workability/lubricity, compressive/flexural strengths, and set modulus of elasticity.
- 2) **Alpha Mix** specimens have proven more effective in both normal and "severe environments".
- 3) Flexural strengths for **Alpha Mix** specimens were significantly higher than for control specimens.
- 4) Percentage reduction in air-void content between **Alpha Mix** specimens and control specimens were about 50%.
- 5) The coulomb permeability of **Alpha Mix** specimens showed a reduction of 29% in comparison to control specimens.
- 6) Control specimens in the "severe environment" testing experienced rust, leaching, and longitude cracking at the level of the steel, while no such cracks or rusting were observed in beams made with **Alpha Mix**.
- 7) The creep was significantly higher in control specimens, confirming **Alpha Mix** enhances behavior of concrete in terms of creep.
- 8) After beam specimens in "severe environment" testing had been placed in a 15%, by weight of water, salt solution for 360 days, it was observed that at a depth of 50 mm (2in.) at the level of steel reinforcement, percentages of chloride ion penetration, by weight, in **Alpha Mix** specimens were significantly lower than were control specimens.

NOTES: (a) The accelerated test results are based on concrete specimens exposed to severe environment exposure. (b) Prior to testing, specimens were placed in three environments: normal environment (moisture room with 100% humidity and constant temperature of 23^o C (73°F), "severe environment" (tank with 15% by weight of water sodium chloride solution), and laboratory conditions. (c) The specimens incubated in the "severe environment" vessel were subjected to continuous wetting and drying cycles.

As was demonstrated, **Alpha Mix** utilization favorably affected portland cement concrete in virtually all aspects of its most critical performance criteria, converting conventional / normal concrete mixes to superior high-performance ones, while at the same time converting its ultimate durability factors to extraordinarily extended ones, which translates to greatly-extended useful lifespan for concrete utilizing **Alpha Mix**. This product will be significantly beneficial to your Company's future concrete, where utilized. **Alpha Mix** is especially affected where installing retaining walls and/or flood wells, or anywhere durability is extremely important.