

PRODUCT SPECIFICATION 1-1
"ANTI-HYDRO®"

Admixture for Integrally Waterproofing Concrete

Rev. 06/15



ANTI-HYDRO INTERNATIONAL, INC.

Concrete and Masonry Products and Problem Solving Worldwide Since 1904

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DESCRIPTION:

"ANTI-HYDRO®" is extensively recommended for integrally waterproofing concrete. It has been successfully used since 1904 in all types of structures to waterproof concrete and to improve its workability, strength, hardness, and durability. Installations include foundations, elevator pits, sewage and water treatment plants, seawall construction, tunnels, underground utility construction, slabs-on-grade, exposed exterior concrete, tanks, tilt-ups, countertops, pre-casts and pavements, etc.

"ANTI-HYDRO®" is a non-corrosive solution of organic and inorganic chemicals that reacts with Tpe-1/Type-2 portland cement to produce more complete hydration. Water requirements, bleed water, capillaries and shrinkage are reduced. The increased hydration provides internal curing and a much denser, harder and tougher cement paste that binds the aggregates together. "ANTI-HYDRO®" increases the early and ultimate strength of concrete. These combined reactions produce impermeable concrete that is hard, non-dusting. "ANTI-HYDRO®" is suitable for use with potable water and is compatible with subsequent finishes.

SPECIFICATIONS:

All areas, as indicated on plans and specifications, shall be integrally waterproofed with "ANTI-HYDRO®", as manufactured by Anti-Hydro International, Inc., in strict accordance with manufacturer's specifications. Refer to our [AIA Master Guide Spec.](#) <- (click on me [MGS.1-1](#).) [Waterproofing Systems Design Considerations Tech. Bulletin W-1-1](#) and [Waterproofing & Industrial Floor Details.](#) <- (click on me to view the detailed book)

DESIGN CONSIDERATIONS:

Joint Details-

A complete waterproofing system requires particular attention to joint details. Refer to our [Waterproofing & Industrial Floor Details](#) <- (click on me [W-1-1](#)) Control joint spacing should be as recommended in ACI Standard 302-3.2.5, Concrete Floor and Slab Construction.

Mixing-

The mix shall consist of Type-1/Type-2 portland cement, clean well graded, fine and coarse aggregates, conforming to ASTM C 33, designed for maximum strength with a minimum of 3,000-psi compressive strength. Each cubic yard shall contain a minimum of 526 pounds (5.6 bags) of Type-1/Type-2 portland cement and 1½ gallons of "ANTI-HYDRO®" and a water/cement ratio (w/c) between 0.44 and 0.56 and not more than 35 gallons of total liquid. Maximum slump shall be 4".

Mix designs incorporating pozzolans will allow portland cement substitution as follows:

- GGBF Slag40% maximum
- Fly ash – Type C 30% maximum
- Fly ash – Type F 20% maximum

When substituting pozzolans (p), adjustment shall be made for water demand, yield and water/cement ratio= $w/(c+p)$. ANTI-HYDRO® shall be added with mixing water or to the concrete while partially mixed and mixed for a minimum 1 minute per cubic yard. Addition of "ANTI-HYDRO®" shall be at the jobsite. Where greater plasticity or slump is required, add [A-H® SUPER P](#) <- (click on me [Spec.3-8](#)) instead of water. Do NOT retemper the mix.

INSTALLATION:

Placing Concrete-

All concrete shall be properly vibrated or consolidated and wood spreaders must be removed as the concrete rises in the forms. Whenever possible, concrete shall be placed continuously until the placement is completed. Construction joints shall be keyed with a 2" x 4" key. When placing is about to be resumed, the joint shall be thoroughly cleaned and treated with a "ANTI-HYDRO®" Slush Coat composed of 1 part "ANTI-HYDRO®", 3 parts water and sufficient Type-1/Type-2 portland cement to form a thick, creamy mixture. Concrete shall be placed before the "ANTI-HYDRO®" Slush Coat dries. Refer to ACI. 304R, Chapter 5.4 Placing Concrete.

Wall Finishing-

After the forms are removed, all ties or spreaders shall be cut back on both wall faces to a depth of approximately 1½". Any cracks or honeycombed concrete shall be cut back to sound concrete. These areas shall be treated with "ANTI-HYDRO®" Slush Coat, then filled with a mortar consisting of 1 part Type-1/Type-2 portland cement and 2 parts sand, mixed with a solution of 1 part "ANTI-HYDRO®" to 10 parts water. All parts are measured by volume.

PRECAUTIONS:

Installation-

No concrete shall be placed on wet or soggy ground without first laying and compacting a bed of broken stone or gravel of adequate thickness to prevent the mud from mixing with the concrete. A pump of sufficient capacity to keep water below the poured concrete shall be operated continuously during the placement and for at least 24 hours thereafter. The excavated area must be so prepared that the water will easily drain to the pump without washing cement out of the newly placed concrete.

If saw cutting is required, then apply [A-H® 3 WAY SEALER AIM](#) <- (click on me [Spec. 6-9](#)) or [A-H® ACURICON](#) <- (click on me [Spec. 6-1](#)) as soon as work is completed, and when the area is clean and dry, apply masking tape over all saw cuts to keep dirt and debris out. Wait 28 days for sufficient vapor reduction and fill all saw cuts with either [A-H® EPOXY CRACK FILLER #131](#) <- (click on me [Spec.9-3](#)) or [A-H® GROOVE & CRACK FILLER #250](#) <- (click on me [Spec.9-6](#)). Refer to ACI 302-9.10.

"ANTI-HYDRO®" conforms to the requirements of ACI 318-4.4.1 and ACI 318-3.6.3. "ANTI-HYDRO®", when tested following ASTM C 876-91, exhibited no corrosion (See to our [Technical Bulletin W-1-2](#)) <- (click on me). However, DO NOT use "ANTI-HYDRO®" in pre-stress or post-tension applications or where chlorides are not acceptable.

Testing for set time is recommended before use as a result of recent globalization of cement sources.

For ambient and substrate temperatures in excess of 80°F, use "[ANTI-HYDRO[®]-R](#)" <- (click on me [Spec.1-1A](#)) in place of "ANTI-HYDRO[®]". Where job specifications require, "[ANTI-HYDRO[®]-NC](#)" <- (click on me [Spec.1-1B](#)) or "[ANTI-HYDRO[®]-NCR](#)" <- (click on me [Spec.1-1C](#)) may be substituted for "ANTI-HYDRO[®]".

Water Pressure-

In dealing with any structure subject to hydrostatic pressure, careful consideration must be given to the design of the members. Thickness and reinforcing must be capable of withstanding maximum potential heads. Possible flotation should be checked.

Curing Under Adverse Conditions-

If concrete slabs are to be placed at temperatures over 80°F, in the direct rays of the sun, or exposed to drying winds, care should be taken to prevent water loss. Dampen sub-base, erect wind barriers, finish concrete promptly, and start curing immediately by the use of [F-H[®] 3 WAY SEALER AIM](#) <- (click on me [Spec.6-9](#)) or [F-H[®] ACURICON](#) <- (click on me [Spec.6-1](#)), water curing, or sheet materials. Continue curing for a minimum of 7 days.

Safety-

Use approved safety goggles, rubber gloves, coveralls and work boots. Protect animals, vegetation and food items. Refer to the product Material Safety Data Sheet (MSDS) for details.

Storage-

Store in a dry, cool place. Keep containers tightly closed. KEEP AWAY FROM CHILDREN. Refer to the MSDS for details.

TYPICAL PROPERTIES/PERFORMANCE DATA:

Concrete/mortar specimens, with "ANTI-HYDRO[®]" admixture, tested by various independent laboratories has shown:

- **Impermeability/Waterproofing-** Impermeable¹ at 20 psi (46' head of water).²
- **Vapor Transmission/Dampproofing-** Produced 85% reduction in transmission of vapor.⁹
- **ACI 318/Non-Corrosive-** Greatly exceed the requirements (non-corrosive).^{1,12} No sign of steel corrosion in concrete with "ANTI-HYDRO[®]".¹
- **Durability-** Highest durability (over a 15 year, freeze/thaw, durability test) of any material tested.³
- **Integral Curing-** Concrete cured internally, survived durability tests of 719 freezing-thawing cycles without any damage.¹⁴
- **Acceleration-** High range accelerator.^{1,13} 30% reduction in concrete setting times at 32°F.⁵
- **High Strength/Compressive Strength-** Concrete showed compressive strength significantly higher at all ages.^{4,6} Concrete exhibited 27% increase in 3 days and 23% in 7 days.⁵ Mortar exhibited 14% increase in 1 day, 11% in 3 days and 12% in 7 days.⁷
- **Bonding Shear Strength-** Poured topping with "ANTI-HYDRO[®]" bonded as an integral part of the old floor slab and the bond found to be stronger than the original concrete.⁶ (Double the bond strength).^{1,8}
- **Tensile Shear Strength-** Bonded to old concrete, in all cases, the failure occurred in the old concrete, and no failure occurred in the bond.¹¹

- **Abrasion Resistance-** Produced 85% increase in abrasion resistance.¹⁰
- **Shrinkage Reduction-** 20-25% reduction in shrinkage.⁶
- **Plasticity-** Produced a 29% increase in plasticity.⁶
- **ASTM Specification-** Meets ASTM C-494, Types A, C & E

* The above laboratory results may vary dependent on real or field conditions.

Test References:

1. Bulletin of the Board of Standards and Appeals, City of New York, Vol. XXVIII, No. 21.
2. US Department of Commerce, Bureau of Standards Tests of Integral and Surface Waterproofings for Concrete, Research Paper No. 394 (20 psi - 46' Head of Water).
3. US Army Corps of Engineers, Report No. 5, Technical Memorandum No. 6-226 - 15 Year Freeze/Thaw Test.
4. W. R. MacIntosh, C. E., University of Louisville Louisville, KY.
5. Shimel and Sor Testing Laboratories, Inc. Report No. 90-6515.
6. War Department, United States Engineer Office.
7. Fairway Testing Co., Sports Complex Building, West Point, NY.
8. Raymond G. Osborne, Bureau of Tests & Inspection Los Angeles.
9. Shimel and Sor Testing Laboratories, Inc. Report No. 88-2114.
10. Pittsburgh Testing Laboratory - 7512545A/3Y-3160-S.
11. Smith-Emery Company - P-28318, Los Angeles.
12. Shimel and Sor Testing Laboratories, Inc. Report No. 84-273 R
13. Herman G. Protze, Materials Technologist, Highlands, MA
14. War Department, Corps of Engineers, Mississippi River Commission Technical Memorandum No. 6-226

MAINTENANCE:

All due diligence must be exercised to provide a regular and frequent maintenance plan to clean and protect the finished surface from severe or prolonged assault from chemical attack, abrasive attack or similar abuse.

PACKAGING:

1-quart, 1-gallon, 5-gallon, 55-gallon or 220-gallon containers.

SERVICES:

Our technical staff is available to review product selection and detailing during the design stage, provide proper field guidance during the installation stage, evaluate concrete construction problems on-site and make recommendations.

ESTIMATOR'S DATA GUIDE:

1½ gallons of "ANTI-HYDRO[®]" per cubic yard of concrete.

1 gallon of "ANTI-HYDRO[®]" per 150 sq. ft. of Slush Coat.

WARRANTY: Anti-Hydro International, Inc. (Anti-Hydro) warrants its products to be free of manufacturing defects at the time of delivery to its customer and will, at its option, replace or refund the invoiced price of any materials proven to be defective. This limited warranty is in lieu of any other warranty or guarantee, expressed or implied, including warranties of merchantability and fitness for a particular purpose. Anti-Hydro disclaims liability for any incidental, consequential, or other damages, including but not limited to, loss of profits or damages to a structure or its contents, arising under any theory of law whatsoever beyond the invoiced price of the material to its customer.

To the best of our knowledge, the information contained herein is accurate. However Anti-Hydro International, Inc. does not assume liability whatsoever for the accuracy or completeness of information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present known or unknown hazards, please refer to the Material Safety Data Sheet (MSDS) for this product. This notification may not be detached from the specification. Any copying and redistribution of the specification shall also include copying and redistribution of this notice. Our sales persons or representatives, distributors and their personnel have no authority to change the recommendations contained herein.