AquaBlok 3070FW Specification Sheet

AquaBlok – 3070FW

General Description

AquaBlok® is a patented, composite-aggregate technology resembling small stones that is typically comprised of a dense aggregate core. In this application of the technology, a powdered high-swell sodium bentonite coating is utilized (Figure 1) with varying percentages of an additive (bentonite) layer by percent of total weight.

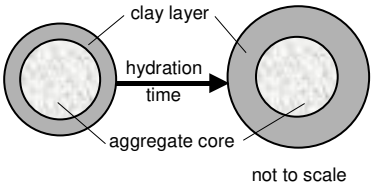

Figure 1. Configuration of AquaBlok-coated particle.

AquaBlok 3070FW is a freshwater formulation, which is approximately 30% Bentonite by weight based on the total quantity of material used in production. This product will provide a low-permeability seal in the water without mechanical compaction.

Product Specifications

Aggregate: Nominal AASHTO #8 or custom-sized to meet project-specific needs
- Limestone or non-calcareous substitute, as deemed project-appropriate

Bentonite: Powdered – Approximate 200 Mesh
- Bentonite Clay; High-Swell Wyoming Sodium Natural Mineral (Montmorillonite)
- Light Grey Powder; Odorless
- Formulation Range from 25 – 35% by weight (average)

Manufacturers – Product Designation
- Bentonite Performance Minerals – Barakade Standard
- Others that are deemed to meet the manufacturer specification

Binder: Cellulosic polymer

AquaBlok® Composite Particle System

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Laboratory Test Results for AquaBlok 3070FW Product on Back

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Laboratory Test Results for AquaBlok 3070FW Product

Note: The test results provided in this table were performed on 3070FW manufactured on a #8 crushed limestone. While additional testing and certification may not be necessary for small-scale projects (especially if the typical reported material characteristics significantly outperform the design requirements), large-scale projects may warrant additional testing to verify results, specifically with respect to incorporation of locally available materials in product manufacturing. Manufacturing tolerances will vary based on source materials and required performance designs.

Tests[1]	Method[2]	3070 FW[3]
Visual Classification - Practice for Description and Identification of Soils	ASTM D2488	Gray poorly graded gravel with bentonite coating (GP)
Moisture Content^6	ASTM D2216, AASHTO T265	10-20%*
Dry Bulk Density	ASTM C29	75-85*
Specific Gravity^7	ASTM D854, AASHTO T100	2.65*
Atterberg Limits - Liquid Limit	ASTM D4318, AASHTO T89	51%
Permeability - Flexible Wall Permeameter^13	ASTM D5084	1x10^-7 to 1x10^-9 cm/s*
Consolidation - Incremental Loading	ASTM D2435, AASHTO T216	C_c = 0.93, e_o=1.10^14 Coefficient of Consolidation = 0.05-1.60 in^2/min*
Consolidation - Constant rate of strain	ASTM D4186	C_c = 0.8^15*
Consolidation - Swell Pressure	ASTM D4546, AASHTO T258	650-760 psf^16*
Shear Strength - Direct Shear	ASTM D3080, AASHTO T236	675 psf, 21.9°
Shear Strength - Unconfined Compression^17	ASTM D2166, AASHTO T208	210*-360 psf
Shear Strength - Triaxial Unconsolidated-Undrained (Q or UU)	ASTM D2850, AASHTO T296	300 psf, 0.2°^18
Shear Strength - Triaxial Consolidated-Undrained (R or CU)	ASTM D4767, AASHTO T297	200 psf, 4.4° (total), 280 psf, 5.5° (effective)
Compaction - Standard Proctor	ASTM D698, AASHTO T99	110 pcf (MDD)*, 14% (OMC)*
Compaction - Modified Proctor	ASTM D1557, AASHTO T180	124 pcf (MDD)*, 10% (OMC)*
Compaction - 15-Blow	US Army Corps of Engineers	Optimum Moisture Content 17.8% Maximum Dry Density 101.3 pcf
Free Swell	ASTM D5890	500 ml/40g*

1. Results are based on laboratory tests for specific blends. Variability may be experienced due to manufacturing tolerances, screening, distribution of grain sizes, quality control, etc.
2. Tests were completed according to AASHTO standards when determined to be equivalent to those set by the U.S. Army Corps of Engineers.
3. Core material is typically nominal AASHTO #8 aggregate. Some variability may be expected with the use of different aggregate sizes.
6. Moisture content values are for dry material.
7. Calculated using a weighted average of the specific gravities for the material that was retained and that passed the #4 sieve. Material retained was assumed to be nominal AASHTO #8 aggregate and have a specific gravity of 2.62. Material passed was tested according to ASTM D854 to determine its specific gravity.
13. Permeability values are for freshwater scenarios. Results will vary with other permeants, and the use of other material blends may be appropriate to maintain the desired permeability.
14. Test did not strictly follow ASTM D2435, but accepted engineering applications were used to estimate settlement by analyzing the product's compression behavior under different loading conditions.
15. Constant rate of strain consolidation test was performed according to JIS A 1227.
16. Swell pressure determined based on pressure required to prevent free swell during the hydration of the material prior to consolidation testing.
17. Test is commonly performed on fine-grained homogenous material, so it may not be representative of the AquaBlok product's actual strength since the product is a mixture of fine-grained material and aggregate. It is suggested that results from the UU triaxial test may provide a more reliable undrained shear strength value and is recommended for most preliminary stability analyses.
18. Triaxial unconsolidated-undrained test was performed according to ASTM D4767, saturated.