

Ongoing or upcoming TESTS for MillenniumBlok® with result values or expected results values based on prior testing on a prior similar product

Parameter	Rating/Value	Remarks
Compressive strength of Starthron	53 psi	Depending on density.
Tensile strength of Starthron®	44 psi	Depending on density.
Flexural Strength	206 lbs	A 4" x 4" x 110" block was made for this test. This was paced on two rods suspending the element in the middle. Hydraulic pressure was applied to the center to discover at what pressure the block would break/fail. This was done three times and the three pressures that caused failure were averaged,
Water vapor transmission	6.1 / inch	This is a (dimensionless) factor to measure possibility of condensation in the wall, particularly in cooler periods or with high air conditioning; the low value of Starthron is a guarantee that no condensation will occur.
Fire endurance	4 hours rating (ASTM E119)	A 10" unplastered MILLENNIUMBLOK® wall will be tested for 4 hours under a load of 10,000 lbs/in.ft.; two tests will be performed with an additional positive and negative load perpendicular to the wall, simulating a 35 mph wind pressure; with a temperature in excess of 2000°F on the exposed side the surface temperature on the unexposed side of the wall did not increase for more than 7°F; a high pressure water stream directed towards the wall immediately after burning will not penetrate the wall. These results expected are based on prior testing on similar products and will be repeated in the MillenniumBlok® Product.
Thermal barrier (Room fire test)	no flame spread, no smoke development, wall meets UBC 26-3	A wood crib will be burned in a corner built with unplastered MILLENNIUMBLOK® walls exposing it to appr. 1700°F; flame spread, smoke and any damage of the wall is monitored. These results expected are based on prior testing on similar products and will be repeated in the MillenniumBlok® Product.
Surface burning characteristic	flame spread index 0 smoke development index 5 NFPA class A UBC class 1 ASTM E 84 (NFPA 255, UBC 8-1)	4" thick Starthron® panels will be exposed to flame. Spreading of the flame front and smoke density, compared to red oak, was measured. The flame front was proceeding less than 0.5ft, which is within the flame spread of the burner. For smoke development light absorption is measured. The test will show some very low absorption, for a test result values are always rounded to the next figure divisible by 5. These results expected are based on prior testing on similar products and will be repeated in the MillenniumBlok® Product.

Frost resistance	highly frost resistant	Starthron® specimens will be been soaked in boiling water and frozen at -4°F; after 50 cycles no reduction of compressive strength was found.
Toxicity	low toxic	Testing conducted using Leaching Procedure by EPA SW-846 method 1311, metals by method 6010 & 7470, volatiles by method 8240; metals are less than 1/20 of regulatory limit, only traces of 4 volatiles out of 40 tested found. These results expected are based on prior testing on similar products and will be repeated in the MillenniumBlok® Product.
Formation of mildew	mildew & fungus growth is not anticipated	Test cubes were kept under moist conditions for 40 days after inoculation of test germs (aspergillus niger, rhizopus nigricans). No growth of cultures could be observed; formation of mycel or konidien culture did not take place. These results expected are based on prior testing on similar products and will be repeated in the MillenniumBlok® Product.
Water transmission	meets requirements ASTM E331, ASTM E514, meets UBC 14-1 (grade "C" craft paper)	10" thick MILLENNIUMBLOK® wall with skim coat has been exposed to a water spray with a minimum flow rate of 5.0 US gal/ft ² .hr at a differential pressure to simulate a 125mph. (Extended time testing will be done by US Navy and met standards).
Average wall humidity	average 2.5% by volume	Samples will be taken in use from areas where most humidity is expected.
Expansion	0.0018inch/ft (as standard concrete)	Even as MILLENNIUMBLOK® elements without concrete grout show shrinking and swelling in changing humidity, shrinkage is minimal once the concrete is poured.
Thermal performance	dynamic R-values 20 to 49 h.°F.sqft/Btu	European testing on a 5ft by 5ft, and US testing of 8ft by 8ft walls revealed heat conductivities of 0.084 to 0.053 Btu/h.°F.ft of dry, grouted 10", 12" and 14" walls of a similar product. DBMS values between 1.79 and 2.17 have been established for 6 US climate zones. Energy usage shows even better efficiency.
Sound insulation	>50dB(a)	Measurements have been taken in laboratories and in real buildings of similar products; dB is a value measured on a logarithmic scale, therefore, f.i. the difference between 27dB (a good value for a 2x6 framed wall) and a 50dB MILLENNIUMBLOK® wall result in a 199 times lower sound intensity. The value indicated in test results is an average measure on a band width of 100 to 3150 Hz. Another aspect is sound absorption which a MILLENNIUMBLOK® wall provides.
Dade County Projectile Test	50 feet per second	A 2" x 4" wood stud is pneumatically fired at a 48" x 96" wall at 50 feet per second. The projectile did not pass from one side of the wall to the other. This test and result is required in Miami, and most of Florida.

TESTING OF THE BLOCK STRUCTURAL PARAMETERS/WITH THE INTERIOR CELLS FILLED WITH 2500 PSI CONCRETE

Parameter	Rating/Value	Remarks
Pillar strength	> 70 kips/lin.ft (failure load)	Tested was a pillar consisting of 6" cylindrical element; concrete strength 3000psi, no reinforcement. These results are based on prior testing on similar products and will be repeated in the MillenniumBlok® Product.
Cyclic shear	10ft x 10ft: ±68 kips 5ft x 10ft high: ±20 kips	Walls will be constructed with reinforcement on 15" centers not centered in the cavity. In order to simulate high wind or earthquake loads cyclic loading in plane and a constant axial load of 10000 plf has been applied. The wall showed extreme good ductility and a deflection of 1.14" re. 1.24". Failure will occurred near the base connection to the foundation. These results expected are based on prior testing on similar products and will be repeated in the MillenniumBlok® Product.
Cyclic narrow shear wall	30" x 10ft high load at 60": 11kips load at 75": 10kips load at 90": 9kips	To investigate shear resistance on very short elements of a wall specimen consisting of only 1 std and 2 end elements will be tested on a similar product. Boundary reinforcement has been increased to avoid premature failure due to flexural forces. A constant axial load of 10000plf has been used. Shear load will be applied in 3 heights to gain information about pillars with different aspect ratios. These results are based on prior testing on similar products and will be repeated in the MillenniumBlok® Product.
Slender wall	axial load 1000plf, 7.5" out of center, width 45" (4 col.) flexural load at failure: wall 16ft high: 2800lbs wall 20ft high: 2200lbs	Specimens will be loaded with a constant out-of-center load to simulate roof loads introduced by ledgers. The out-of-plane load was applied on 1/3 rd points on the side to increase the eccentricity of all loads. The walls will be able to sustain the applied axial and out-of-plane loads through the deflection limits given in the codes and beyond. These results expected are based on prior testing on similar products and will be repeated in the MillenniumBlok® Product.
Out of plane load	9ft span: 9kips	Load will be applied in 1/3 rd points on a 10" MILLENNIUMBLOK element laying flat. No brittle failure will occur even as test was continues beyond 80% peak load . Deflections at peak load were 2.44". These results expected are based on prior testing on similar products and will be repeated in the MillenniumBlok® Product.
Lintels & beams	height:1 element (2 pillars) 10ft span: 21kips 5ft span: 26kips	One MILLENNIUMBLOK element will used capped on the lower side to simulate a lintel design as it may be used in the field. Support was free at 10ft distance, loaded at 1/3 rd points.