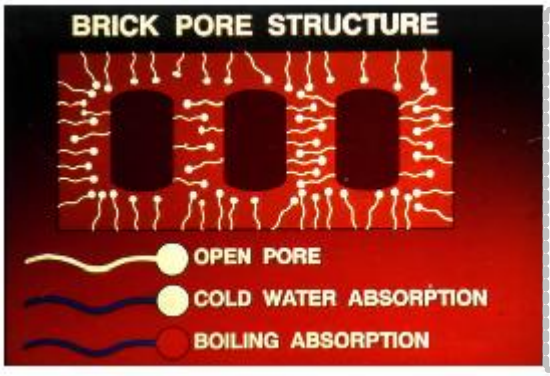
Pine Hall Brick Tech Bullet #1

Clay Paver Durability

Harsh Freeze Conditions



Water Expansion

- Cold water expands during freezing conditions.
- Pore requires extra room for expanding water.
- ASTM determined that 22% minimum of open pore area is needed to prevent spalling.
  (C/B ratio = .78 maximum)

Pine Hall Brick Pavers Average 32% Pore Area!

Water Absorption

- Low water absorption is essential to long term durability.
- ASTM determined that absorption of 8% or less is needed for a clay paver to survive in severe weather climates.

Pine Hall Brick Pavers average less than 6% water absorption!

Strength

- Compressive strength is important to withstand various types of traffic loading.
- ASTM determined that a minimum of 8,000 psi is needed to endure in severe climates.

Pine Hall Brick Pavers average more than 12,500 psi!

PINE HALL BRICK
2 1/4" PAVER
PHYSICAL PROPERTY DETAILS

	COMPRESSIVE STRENGTH* PSI	% 24 HR COLD WATER ABSORBTION	SATURATION COEFFICIENT C/B RATIO	ABRASION INDEX	DIMENSIONAL TOLERANCE (+,- W&L)
ASTM C-902 SX, TYPE 1, PS:					
	8,000	**8% MAX**	**0.78**	**0.11 MAX**	**1/8"& 1/4"**
ASTM C-902 SX, TYPE 1, PX:					
	8,000	**8% MAX**	**0.78**	**0.11 MAX**	**3/32"& 1/8"**
ASTM C-1272 TYPE R, PX:					
	8,000	**6% MAX**	**NA**	**0.11 MAX**	**3/32"& 1/8"**
PINE HALL BRICK:					
	13,344	**5.20%**	**0.67**	**0.039**	**PX**

- **INDEPENDENT LABORATORY TEST RESULTS- PSI, Nov, 2005 English Edge paver**

QUALITY BRICK STANDARDS

Clay brick have standard specifications established by ASTM (American Society for Testing and Materials) These specifications provide guidance in choosing the right clay paver for a given application environment. ASTM standards cover compressive strength, absorption, saturation coefficients and other technical requirements. In doing so, these standards are used as a measure to predict long term durability and performance. Quality control at Pine Hall Brick begins at the grass roots level with our raw material, Triassic shale. Samples of the material are collected daily and put through a combination of tests. Automatic controls insure the proper proportion of water to shale mix to achieve good extrusion properties. This data is fed to computers that warn of deviations from control set points. Unfired pavers are examined for quality and size throughout the day. Fired pavers are collected daily from strategic points on the kiln car as they exit the kiln to be tested for size and absorption qualities. In addition, fired pavers are pulled randomly from finished packages to verify earlier testing. Samples are routinely submitted to independent laboratories to confirm our high quality standards. Samples are also taken to evaluate color, color range and texture against master samples. The results of these rigid processing standards produces the highest quality pavers available and as a result, they exceed the severest ASTM standards.

Pine Hall Brick Passes Tough Canadian Freeze Thaw Test: CSA-A231.2 Canadian Freeze Thaw Test for Exposure to De-icing Salts

It is a well-known fact that brick pavers used in exterior applications can, in most locations of the country, be subject to extreme weather conditions. Clay units laid in a horizontal plane may be subject to saturation with water and exposed to freeze thaw cycles. This situation sets the stage for potential durability problems if the clay pavers are not fired to the proper degree of maturity. The severity of a potential problem is magnified by the presence of de-icing salts commonly used in winter conditions.

While most clay pavers are tested regularly for resistance to freeze thaw cycles (ASTM C67), only the Canadian freeze thaw test CSA-A231.2 calls for the test to be conducted using a 3% saline (sodium chloride) solution. The test calls for three units to be completely immersed in the salt solution for 50 complete cycles. The criteria to pass the test state that the average loss of mass should not be greater than 200grams/m2 after 25 cycles and 500grams/m2 after 50 cycles.

Recently, three Pine Hall Brick 2 ¼" clay pavers were submitted to the National Concrete Masonry Association's Research and Development Laboratory for this test. The results show that the pavers lost an average of only 6.2g/m2 in 25 cycles (standard allows 200g) and only 7.2g/m2 in 50 cycles (standard allows 500g). This phenomenal performance is testimony to the strength of Pine Hall Brick clay pavers to withstand the most rigorous environments. On your next paving project, ask for the best....ask for Genuine Clay Pavers by Pine Hall Brick.

All Pine Hall Brick Interlocking Clay Pavers are fired to meet the Test of *Time* in the worst weather possible!

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