

good bricks are struck together, they should emit a metallic ring. A good brick will not absorb over 10 per cent. of its weight of water if allowed to soak for 24 hours. Brick suitable for piers and foundations of heavy buildings should not break under a crushing load of less than 4,000 pounds per square inch.

The bending strength, or modulus of rupture, of a brick is quite as important as the crushing strength. A good brick 8 inches long, 4 inches wide, and  $2\frac{1}{2}$  inches thick, should not break under a center load of less than 1,600 pounds, the brick lying flat, supported at each end only, and having a clear span of 6 inches and a bearing at each end of 1 inch. A first-class brick will carry 2,250 pounds in the center without breaking, and a brick has been tested to 9,700 pounds before breaking.

Table VI gives the average ultimate, or breaking, loads for various kinds of bricks.

TABLE VI  
STRENGTH OF BRICKS AND TERRA COTTA

Material	Weight per Cubic Foot Pounds	Compressive Strength Pounds per Square Inch	Tensile Strength Pounds per Square Inch	Modulus of Rupture Pounds per Square Inch
Soft, inferior brick . . . . .	100	1,000	40	600
Good, common brick . . . . .	120	10,000	200	600
Best, hard brick . . . . .	125	12,000	400	800
Paving brick . . . . .	130	5,000		
Philadelphia pressed brick . . . . .	150	6,000	200	600
Red sand-lime brick, Arkansas . . . . .	110	5,300		
Sand-lime face brick, Maryland . . . . .	100	3,500		
Light-gray sand-lime brick, Iowa . . . . .	115	4,800		
Light-gray sand-lime brick, North Carolina . . . . .	115	5,100		
Terra cotta . . . . .	110	5,000		

TABLE VII  
STRENGTH OF BRICKWORK  
(Age, 6 Months)

Material	Composition of Mortar Parts	Weight per Cubic Foot Pounds	Compressive Strength Pounds per Square Inch
Wire-cut brick . . . . .	1 cement, 5 sand	136	3,000
Dry-pressed brick . . . . .	1 cement, 5 sand	137	3,400
Dry-pressed brick . . . . .	1 cement, 1 lime, 3 sand	133	2,300
Recompressed brick . . . . .	1 cement, 5 sand	124	1,700
Light-hard, sand-struck brick . . . . .	1 cement, 5 sand	117	1,900
Light-hard, sand-struck brick . . . . .	1 cement, 7 sand	109	853
Hard, sand-struck brick . . . . .	1 cement, 1 sand	119	2,100
Hard, sand-struck brick . . . . .	1 cement, 1 lime, 3 sand	113	1,500
Hard, sand-struck brick . . . . .	1 cement, 5 sand	108	1,200
Sand-lime brick . . . . .	1 cement, 3 sand	112	1,100
Sand-lime brick . . . . .	1 lime, 3 sand	108	450
Sand-lime brick . . . . .	neat cement	113	1,400
Terra-cotta work . . . . .		112	2,000

TABLE VIII  
ALLOWABLE UNIT STRESSES FOR BRICK MASONRY

Material	Safe Compressive Strength Pounds per Square Inch	Safe Bending Strength Pounds per Square Inch
Brickwork, laid in Portland-cement mortar; cement 1, sand 3 . . . . .	250	50
Brickwork, laid in natural-cement mortar; cement 1, sand 3 . . . . .	150	40
Brickwork, laid in lime-and-cement mortar; cement 1, lime 1, sand 1 . . . . .	125	30
Brickwork, laid in lime mortar; lime 1, sand 4	100	15