

ARCHITECTURAL STONE SALES, INC.

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Product Data Sheet

physical properties and performance characteristics

Being a natural product, Indiana Limestone's physical properties such as strength values will vary. The physical properties depend upon texture, cementing material, and degree of moisture.

The following test results are based on many samples tested over a period of years by the industry, the Indiana Geological Survey and the U.S. Bureau of Standards. Committee C-18 of American Society for Testing and Materials (ASTM) has developed many of the test methods used by the testing laboratories reporting these values.

performance tables

table I

In most cases, the design of Indiana Limestone for building requires the consideration of these three properties only. Values shown in Tables II and III are given for special reference. A Technote on safety factors governing Indiana Limestone design is available on request from ILI or member companies.

PROPERTY	VALUE	TEST PROCEDURE
Ultimate compressive strength dry specimens	4,000 psi minimum (see note a)	ASTM C170
Modulus of rupture dry specimens	700 psi minimum (see note a)	ASTM C99
Absorption	7 1/2% maximum (see note b)	ASTM C97

Compression and MOR results are for specimens loaded perpendicular to grain direction.

See pp. 16 and 20 for design load calculations and tables

Note a: Most Indiana Limestone production possesses values higher than these minimums, which are listed for engineering reference.

Note b: Indiana Limestone is available with lower values. Consult ILI for particulars.

Indiana Limestone is classified as a Type II Dimension Limestone under ASTM C-568, and meets or exceeds the strength requirements set forth in this classification. The flexure test often specified, ASTM C-880, was developed for stones thinner than the 2" which is the stated minimum for Indiana Limestone. As statements about limestone in C-568 embody the C-99 test for modulus of rupture, the inclusion of C-568 in specifications makes the numbers from C-880 meaningless. ILI recommends and uses ASTM test C-99 for modulus of rupture and believes this is more applicable to typical limestone uses.

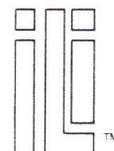


table II

When used for flooring, paving, or steps, the abrasion resistance should be specified.

PROPERTY	VALUE RANGE (Abrasive Hardness)	TEST PROCEDURE
Abrasion resistance	6 minimum to 17 maximum (see note c)	ASTM C241

Note c: Factors in addition to abrasion resistance determine good performance in Indiana Limestone paving. Stone preparation and installation details are important in assuring acceptable performance. See pp. 30 and 63 for treatment of paving. Specify abrasive hardness of 8 for areas of heavy traffic such as bottlenecks and other pedestrian funnel areas. Specify abrasive hardness of 6 for light traffic such as plazas, patios, wide sidewalks and other such areas of light traffic expectation.

table III

Additional Properties

PROPERTY	VALUE RANGE
Bulk specific gravity	2.1 minimum to 2.75 maximum
Coefficient of thermal expansion	.0000024in/in/degrees F to .0000030in/in/degrees F
Modulus of elasticity	3,300,000 psi min. to 5,400,000 psi max.
Ultimate Shear Strength	900 psi min. to 1,800 psi max.
Ultimate Tensile Strength	300 psi min. to 715 psi max.
Thermal Conductivity (k)	6.5 B.T.U./hr./ft. ² /degrees F/in.
Weight	144 lbs./cubic foot
Fire Endurance—4" Thick Stone	1 hr. 12 min. plus hose stream (ASTM-E119)
Light Reflection (Interior Use)	50-55%

thermal properties

'U' factor (the heat transmission coefficient) is the reciprocal of the total resistance (R) to heat transmission of all the materials which make up a finished wall, measured over an area of 1 sq. ft. The formula is expressed

as $U = 1/R$ total. In these examples, a constant figure for 4" stone is used to show the comparative values of three types of wall construction:

4" stone 1" airspace 3 ⁵ / ₈ " glass-wool bats 1/2" drywall	} 'U' factor = .0517
4" stone 1" airspace 8" concrete 3/4" M. L. and plaster	} 'U' factor = .32
4" stone 2" urethane 1/2" drywall	} 'U' factor = .06