



PRODUCT PROFILE

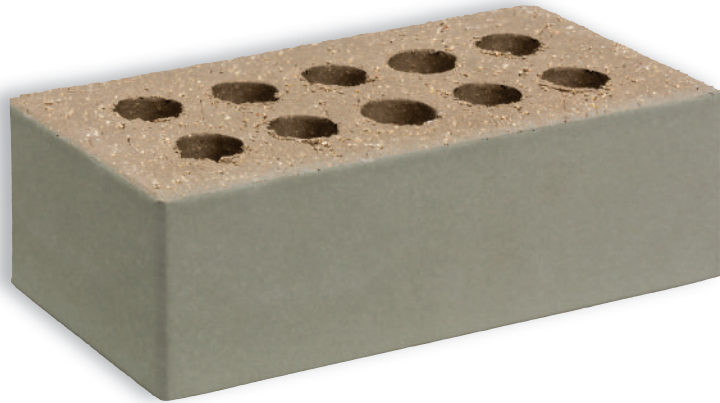


Revised 6/2020

Glen-Gery Klaycoat® Brick

General

Glen-Gery's Hanley Plant manufactures many sizes of Klaycoat brick, with a nominal four inch bed depth, in a variety of shades and textures. The Klaycoat coatings are engobes (clay in liquid form) applied to the unfired brick body that fuse to the body during firing. The Klaycoat surface coating allows water vapor to pass through the face of the brick, unlike a glaze which is typically impervious.



Unit Specifications

Glen-Gery nominal four-inch Hanley brick are manufactured to conform to the American Society for Testing and Materials Standard Specifications C 216, Grade SW, Type FBX. Glen-Gery Klaycoat brick also conform to the requirements of ASTM C 216, Grade MW and all grades of ASTM C 62. Inquiries should be made for specific applications or for conformance with standards other than C 216 or C 652.

When specifying this product, the specification should cite:

- 1) The product name and state "... as manufactured by the Hanley Plant of the Glen-Gery Corporation."
- 2) Conformance to the requirements of the appropriate specification. The Grades and Types should also be specified.
- 3) The descriptive size of the unit and the actual unit dimensions, listed as thickness x height x length.

For example: K74 as manufactured by the Hanley Plant of the Glen-Gery Corporation to conform to the requirements of ASTM C 216, Grade SW, Type FBX. The units shall be standard size having dimensions of 3-5/8" x 2-3/4" x 8".

Design Criteria

Size:

Glen-Gery Klaycoat brick are available in seven sizes.

Description	Thickness x Height x Length		
	(in.)	(in.)	(in.)
Modular	3-5/8	x 2-1/4	x 7-5/8
Eng. Modular	3-5/8	x 2-3/4	x 7-5/8
Econo	3-5/8	x 3-5/8	x 7-5/8
Standard	3-5/8	x 2-1/4	x 8
Eng. Standard	3-5/8	x 2-3/4	x 8
Norman	3-5/8	x 2-1/4	x 11-5/8
Utility	3-5/8	x 3-5/8	x 11-5/8

**Body meets requirements of ASTM C216. Other sizes may be available on special order.*



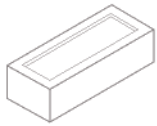
Dimensional Tolerances:

Glen-Gery Klaycoat brick are manufactured to provide specific dimensional tolerances. The tolerances for the various unit dimensions are typically:

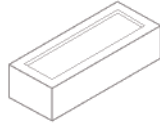
Thickness:	-3/32" to +3/32"
Height: 3" or less	-1/16" to +1/16"
3" to 4"	-3/32" to +3/32"
Length: over 6" to 8"	-5/32" to +5/32"
over 8" to 12"	-7/32" to +7/32"

Glen-Gery Brick Sizes

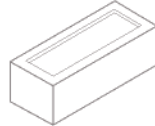
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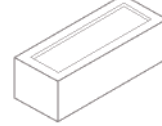
Modular
3-5/8 x 2-1/4 x 7-5/8
6.75 units/sq. ft.



Standard
3-5/8 x 2-1/4 x 8
6.55 units/sq. ft.



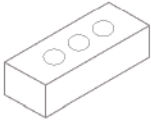
Engineer Modular
3-5/8 x 2-3/4 x 7-5/8
5.63 units/sq. ft.



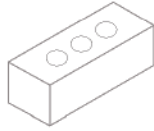
Engineer Standard
3-5/8 x 2-3/4 x 8
5.39 units/sq. ft.



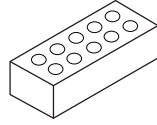
Handmade Oversized
4 x 2-3/4 x 8-1/2
5.00 units/sq. ft.



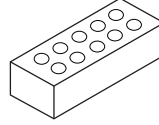
Lightweight Modular
3-1/2 x 2-1/4 x 7-5/8
6.75 units/sq. ft.



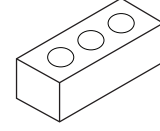
Lightweight Engineer Modular
3-1/2 x 2-3/4 x 7-5/8
5.63 units/sq. ft.



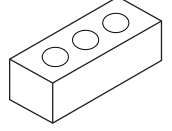
Modular
3-5/8 x 2-1/4 x 7-5/8
6.75 units/sq. ft.



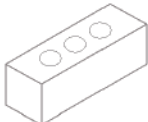
Standard
3-5/8 x 2-1/4 x 8
6.55 units/sq. ft.



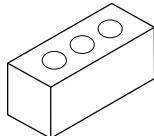
Engineer Modular
3-5/8 x 2-3/4 x 7-5/8
5.63 units/sq. ft.



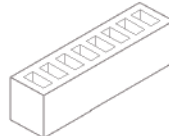
Engineer Standard
3-5/8 x 2-3/4 x 8
5.39 units/sq. ft.



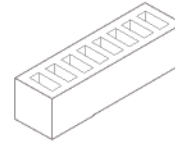
Queen
3 x 2-3/4 x 7-5/8
5.63 units/sq. ft.



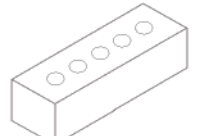
Econo
3-5/8 x 3-5/8 x 7-5/8
4.50 units/sq. ft.



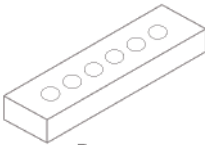
Engineer King
2-13/16 x 2-13/16 x 9-5/8
4.55 units/sq. ft.



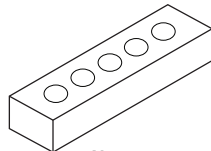
King Narrow-Bed
3-1/8 x 2-3/4 x 9-5/8
4.55 units/sq. ft.



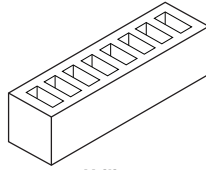
King
3-5/8 x 2-3/4 x 9-5/8
4.55 units/sq. ft.



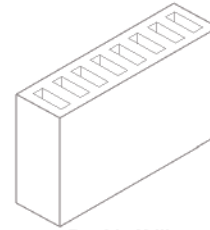
Roman
3-5/8 x 1-5/8 x 11-5/8
6.00 units/sq. ft.



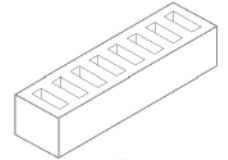
Norman
3-5/8 x 2-1/4 x 11-5/8
4.50 units/sq. ft.



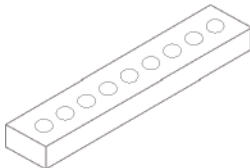
Utility
3-5/8 x 3-5/8 x 11-5/8
3.00 units/sq. ft.



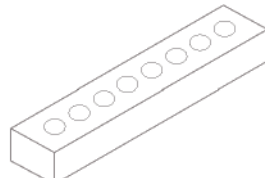
Double Utility
3-5/8 x 7-5/8 x 11-5/8
1.50 units/sq. ft.



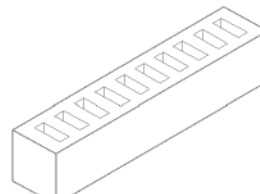
Kingston
3-5/8 x 2-3/4 x 11-5/8
3.75 units/sq. ft.



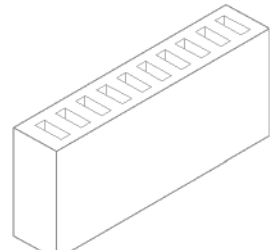
Viking
3-1/2 x 1-5/8 x 15-5/8
4.50 units/sq. ft.



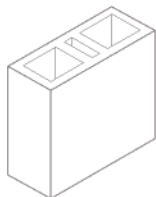
Saxon
3-5/8 x 2-1/4 x 15-5/8
3.38 units/sq. ft.



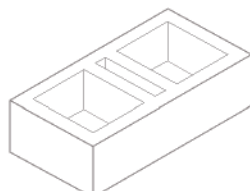
Titan
3-5/8 x 3-5/8 x 15-5/8
2.25 units/sq. ft.



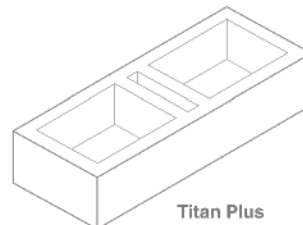
Double Titan
3-5/8 x 7-5/8 x 15-5/8
2.25 units/sq. ft.



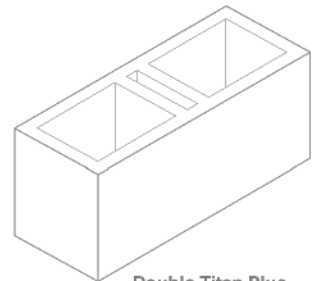
8-Square
3-5/8 x 7-5/8 x 7-5/8
2.25 units/sq. ft.



Regent
7-5/8 x 3-5/8 x 11-5/8
3.00 units/sq. ft.



Titan Plus
7-5/8 x 3-5/8 x 15-5/8
2.25 units/sq. ft.



Double Titan Plus
7-5/8 x 7-5/8 x 15-5/8
1.13 units/sq. ft.

Coring and frogs are at the manufacturer's option. Actual coring patterns may not match the illustrations. Contact plant for specific information on sizing and coring.

Generally, the product ordered may contain a number of units which are over or under the specified dimension. These dimensional variations are related to the raw materials and the forming, drying, and firing processes. Thus, for an individual order, all of the units may average slightly over or slightly under the specified dimensions. Inquiries should be made regarding the dimensional variations which might be expected if the project detailing requires precise coursing. Specialty products or gauged products may be desirable for such applications.

Configuration:

All units are normally manufactured as solid brick to conform to the requirements of the applicable ASTM standards. The solid unit may have cores, which create an aggregate void space, which may not exceed twenty-five percent of the gross cross-sectional area in every plane parallel to the bearing surface. The units may have three, five, or ten core holes. Variations in core size and configuration may be available on special orders.

Weight:

The weight of brick units varies with the raw materials, size, manufacturing process, and the amount and configuration of coring.

Description	Cored Units Typical weight (lb. /unit)
Modular	4.0
Engineer Modular	5.0
Econo	6.5
Standard	4.3
Engineer Standard	5.2
Norman	6.3
Utility	10.1

Finishes:

Glen-Gery Klaycoat brick are available smooth, wirecut, rough, stone rolled and craftsman textures. Brick having the craftsman texture may conform to Type FBS dimensional tolerances for thickness. Please note that the requirements of ASTM C 216, Paragraph 10.4, regarding distribution of color on the faces and heads of individual brick, are waived. The

number and location of finished faces must be specifically stated in the Klaycoat order.

Color:

Glen-Gery Klaycoat brick are available in a multitude of color blends. Custom color blends are available upon request. The color range includes various shades of reds, browns, grays, blues, oranges, yellows, buffs, and whites. Because all of these colors are produced by the applied engobe, through-the-body colors are not possible.

Shapes:

Standard brick shapes are shapes whose dimensions course properly with standard brick and include the S2 Jamb Quoin (coated on one stretcher face and one head) and the S80 Header (coated on one head only). Standard brick shapes are not stock items. The standard size brick shapes are described in the Glen-Gery Standard Shapes Catalog, "Brick Shapes." The typical extruded brick shapes, as described in the catalog, include various configurations of bullnose, watertable, octagon, shelf -angle, sill, and coping units. Shapes dimensioned for coursing with other brick sizes and shapes having configurations to fit specific project requirements are also available. All shapes require detailed dimension drawings, which must be submitted to Glen-Gery and confirmed. All shapes must be identified early in the project design, because certain shape configurations may require special forming, drying, or firing processes. These processes may require more time or different scheduling than the Klaycoat stretchers. Note that some shape designs may require special coring in order to achieve the effects desired by the designer.

Physical Properties of Units

Compressive Strength:

The average compressive strength of Glen-Gery Klaycoat brick exceeds 3,000 psi when tested with loads applied normal to the bedding surface. Typically, the average compressive strength of Klaycoat brick exceeds 8,000 psi and may be as high as 14,000 psi. The actual compressive strength is dependent upon the specific product selected.

Water Absorption:

The average maximum water absorption by submersion in boiling water for five hours is less than 17% and will typically be less than 5% for Glen-Gery Klaycoat brick. The average saturation coefficient will typically exceed 0.78. In these instances, the cold-water absorption is less than 8% and is often less than 4% and the units are in compliance with the requirements of ASTM C 216, Grade SW, or C 652, Grade SW.

Initial Rate of Absorption (IRA):

The initial rate of absorption (suction) of Glen-Gery Klaycoat brick normally does not exceed 20 grams per 30 square inches per minute under laboratory conditions. However, all brick should be checked to determine if wetting is necessary, unless familiarity with the product has demonstrated that wetting is not required. The procedure for determining wetting requirements should be in accordance with the field test procedure described in ASTM C 67. Because of the generally low suctions of Klaycoat brick, it is imperative that the handling instructions contained in this profile be precisely followed to reduce the possibility of brick floating during cool, damp, and still conditions.

Properties of Walls

Compressive Strength:

The minimum assumed compressive strength for a wall constructed of Glen-Gery Klaycoat units, using good workmanship and Type "S" portland cement/lime mortar is 735 psi. Most Glen-Gery Klaycoat brick, when used with good workmanship and Type "S" portland cement/lime mortar, will provide a minimum compressive strength of 1,435 psi. Specific products may provide assumed compressive strengths as high as 2,600 psi. Reference: Brick Institute of America (BIA) Recommended Practice for Engineered Brick Masonry.

Thermal Performances:

The thermal resistivity of Glen-Gery's Klaycoat brick is approximately 0.15 (hr. • sq. ft. • deg F) / (BTU • in.). A nominal four-inch wythe, excluding air films will provide a thermal resistance of approximately 0.54. The thermal resistivity

is used to predict the thermal performance of wall elements under steady state conditions. The mass and the specific heat of the product provides additional benefits when subjected to the dynamic conditions of the natural environment. As described in the American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) Standard 90, the effects of mass, specific heat, and the color of the brick should be considered. Reference: BIA Technical Notes on Brick Construction: 4 "Introduction to Energy Performance of Brick Masonry;" and 4B Revised, "Energy Code Compliance of Brick Masonry Walls."

Sound Transmission:

A nominal four-inch wythe of brickwork has a sound transmission classification (STC) of approximately 45. Reference: BIA Technical Notes on Brick Construction: 5A "Sound Insulation – Clay Masonry Walls."

Fire Resistance:

A nominal 3-5/8" wythe of load bearing brickwork has an ultimate fire resistance period of approximately 1-1/4. hours. This provides a one-hour rating. Reference: BIA Technical Notes on Brick Construction: 16, "Fire Resistance of Brick Masonry."

Coefficient of Thermal Expansion:

Brick walls constructed of Glen-Gery Klaycoat brick-have a coefficient of thermal expansion of approximately 0.000004 in./in • deg F). A wall one hundred feet long (or high) constructed of Glen-Gery Klaycoat brick and exposed to an annual extreme temperature difference of 100 degrees F would be expected to experience a total thermal movement of approximately one-half inch.

Coefficient of Moisture Expansion:

The coefficient of moisture expansion of Glen-Gery Klaycoat brick is typically less than 0.00065 in./in. (0.065%). Much of the moisture expansion of Glen-Gery Hanley Klaycoat brick occurs shortly after the brick have been fired and before the brick arrive on the job site. The maximum expected moisture expansion of a wall 100 feet long (or high) may be three-quarters of an inch.

Construction

Storage:

It is imperative that Klaycoat brick be stored off of the ground to avoid contamination by mud, dust, water, or materials likely to cause staining, charging with soluble salts, or other defects.

Protection:

It is imperative that Klaycoat brick be covered with a waterproof membrane held securely in place or be otherwise protected from the elements.

Wetting:

As deemed necessary, wet units prior to laying. However, wetting is rarely required for Klaycoat units. Wetting typically consists of saturating the units three to twenty-four hours before laying the units. Units which have been wet should be surface dry when laid.

Cold Weather:

Follow the procedures developed by the International Masonry Industry All-Weather Council (IMIAC). Reference: IMIAC "Recommended Practice and Guide Specifications for Cold Weather Masonry Construction" and BIA Technical Notes on Brick Construction, 1, "Hot and Cold Weather Construction."

Installation:

Place units in full mortar joints. The mortar used to lay Klaycoat brick must be mixed from ASTM C 150 portland cement, ASTM C 207, Type S, hydrated lime, ASTM C 144 sand, and clean, potable water. Except for ASTM C 979 mineral aggregate pigments, there must be no substitutions, additions or deletions to these ingredients. Depending upon the design conditions and the installation conditions, such as weather, the mortar may be proportioned to meet the requirements of ASTM C 270 Type S or Type N mortar. Note that Type N mortars provide greater resistance to water penetration, while Type S mortars provide greater resistance to flexural stresses. A prepackaged mortar mix conforming to these specifications is Glen-Gery Color Mortar Blend. Reference: Glen-Gery Color Mortar Product Profile.

Keys to Successful Performance:

Extraneous water must be kept from saturating the brickwork. This is successfully done by:

1) Placing flashings above window and door heads, under window sills, at the top of the brickwork, below the first course of Klaycoat brick (as a dampproof course), at shelf angles, at changes in construction, and wherever conditions require protection of the brickwork from water.

2) Avoiding parapet walls, but if they must be used, taking special care in design, construction, and workmanship.

NOTE: Venting cavities at the top and bottom has been proven to allow the wall to weep, breathe, and dry quicker.

3) Following the recommendations discussed in other parts of this document.

Tooling:

Tool all joints when thumbprint hard to produce a concave joint profile. Do not use struck, flush, or raked joints.

Protection of the Work:

At the end of each day or shut down period, it is imperative that all partially completed masonry work, including work at window and door sills and jambs and under unroofed areas, be covered with a strong waterproof membrane held securely in place.

Cleaning:

Clean with wooden paddles and stiff fiber bristle brushes using clean water. If a cleaning agent is necessary, contact your local Glen-Gery Sales office. If a cleaning agent is to be used, test the cleaning agent on a small sample area to observe the effectiveness of the cleaning agent and, most importantly, to detect possible deleterious effects or changes in appearance. Always presoak the wall prior to applying the cleaning agent and thoroughly rinse the wall with clean water after cleaning. Diedrich 202V Vana-Stop will generally perform effectively, but your local Glen-Gery Sales office should be consulted before the selection of a

cleaning chemical is made. Cleaning should never occur prior to 7 calendar days after work is completed to assure appropriate curing of the mortar. Reference: BIA Technical Notes on Brick Construction 20, "Cleaning Brickwork."

Estimating:

The quantities of brick and mortar required for a project vary with the wall construction, the number of field cuts necessary, the coring configuration of the units, and the workmanship. Table 1

provides the quantities of brick and mortar per square foot of wall and mortar quantities per 1000 brick units. These figures are based upon the units being placed in the wall as stretchers in stack or running bond. The values provided are estimates of the quantities in the finished wall and do not account for waste. The values found in Table 2 may be useful for approximating the number of units for caps, sills, bands, etc. These values represent the actual number of units per linear foot for the most frequently used positions of the brick in the wall.

For further information contact:
 Glen-Gery Technical Services
 433 South Pottsville Pike
 Shoemakersville, PA 19555
 (610) 562-3076

TABLE 1
Brick and Mortar Quantities¹
 Nominal 3/8 Inch Mortar Joints

Descriptive Unit Size	Vertical Coursing in courses per inch	Units per square foot	Cubic Foot per 100 square foot	Quantity of Mortar per 1000 units (bags*)
Modular	3 Courses per 8"	6.75	5.46	8.10
Engineer Modular	5 Courses per 16"	5.63	4.79	8.52
Econo	2 Course per 8"	4.50	4.12	9.15
Standard	3 Courses per 8"	6.55	6.55	6.29
Engineer Standard	5 Courses per 16"	5.39	4.75	8.81
Norman	3 Courses per 8"	4.50	5.06	11.24
Utility	1 Course per 4"	3.00	3.69	12.29

¹ These values are actual quantities and must be increased for waste and any possible construction requirements which may necessitate additional quantities.

* Bags includes cement mixed with 3 parts of sand.

TABLE 2
Units Per Linear Foot in Various Positions
 Nominal 3/8 Inch Mortar Joints

Brick Size	Stretcher	Rowlock	Soldier	Header
Modular	1.50	4.50	4.50	3.00
Engineer Modular	1.50	3.75	3.75	3.00
Econo	1.50	3.00	3.00	3.00
Standard	1.43	4.50	4.50	3.00
Engineer Standard	1.43	3.75	3.75	3.00
Norman	1.00	4.50	4.50	3.00
Utility	1.00	3.00	3.00	3.00



610.374.4011
info@glengery.com
www.glengery.com

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Seller warrants title to said goods and that the goods supplied shall meet applicable specifications where such are designated in the Buyer's order. Should the said goods fail to conform to the foregoing warranty, Seller will, at its option replace the same, F.O.B. job site or refund the portion of purchase price paid for such non-conforming goods. SELLER SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR ANY BREACH OF THESE WARRANTIES. THE FOREGOING WARRANTIES ARE IN LIEU OF ALL OTHER WARRANTIES WHETHER EXPRESS OR IMPLIED, WRITTEN OR ORAL, INCLUDING, WITHOUT LIMITATION, WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.