



Technical Services Laboratory Report  
for

**Bilco Brick**

Fire Rating  
Lancaster, Texas

AASHTO Accredited

**Bilco Brick**  
Fire Rating  
Lancaster, Texas

**INTRODUCTION**

The Technical Services Laboratories of Master Builders Solutions Admixtures US, LLC received two sets of dry-cast concrete facing brick. Testing was requested to evaluate the fire rating of the samples. The mix designs as submitted are maintained on file.

**SAMPLE PREPARATION AND METHODS**

Compressive strength, density and absorption characteristics were determined in accordance with the testing procedure outlined in ASTM C140-25, Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.

The calculation method was used to determine concrete masonry fire resistance ratings. These calculations determine fire resistance ratings based on the equivalent thickness of dry-cast concrete facing brick and the aggregate types used in their manufacture.

**RESULTS**

The results of C140 testing are summarized in Table 1; details of testing are shown in Appendix A. Both mix designs met the requirements of ASTM C1634, Standard Specification for concrete Facing Brick and Other Concrete Masonry Facing Units.

**Table 1 – Results of C140 Testing**

	<b>Gray Brick</b>	<b>White Brick</b>
Compressive Strength, psi	9510	7260
Density, lbs/ft <sup>3</sup>	135.8	132.7
Absorption, percent	7.6	7.7

The aggregate types and fractional volumes can be found in Table 2.

**Table 2 – Aggregate Volumes**

	<b>Volume %</b>	
	<b>Gray</b>	<b>White</b>
River Sand	73.47	
Limestone Sand	26.53	57.58
Silica Sand		19.70
Limestone Rock		22.72

The calculated fire ratings can be found in Table 3.

**Table 3 – Fire Resistance Rating**

	<b>Gray</b>	<b>White</b>
Equivalent thickness, inches	2.78	2.86
Fire resistance rating, hours	1.02	1.03

The ratings given are for a single wythe wall.

## **REFERENCE**

1. National Concrete Masonry Association, "Fire Resistance Ratings of Concrete Masonry Assemblies TEK 7-1C", Herndon, VA, USA 2009.

# APPENDIX A – ASTM C140 Data



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**ASTM C140/C140-25 Test Report**  
 Sampling and Testing Concrete Masonry Units and Related Units

**Work Order No.:** 25-0798

**Client:** Bilco Brick  
**Address:** Lancaster, Texas

**Testing Agency:** Master Builders Solutions US LLC  
 Physical Testing Laboratory  
 23700 Chagrin Blvd.  
 Beachwood, OH 44122

**Unit Specification:** ASTM C1634

**Unit Description:** Brick  
 2.5x2.5x9.5

**Project Identification:** Grey

**Summary of Test Results:**

ASTM C1634			
	Required	Actual	
Net Area Compressive Strength:	3500 min	9510	psi
Absorption:	10	7.6	lb/ft <sup>3</sup>
Density (Oven Dry Condition):	---	135.8	lb/ft <sup>3</sup>

**Full Size Unit Measurements**

Date Tested:		Avg. Width (in.)	Avg. Thickness (in.)	Avg. Length (in.)
10/28/2025	A	2.136	2.530	9.582
	B	2.130	2.503	9.565
	C	2.130	2.501	9.644
	D	2.118	2.493	9.539
	Average	2.129	2.507	9.583

**Compression Specimens**

Date Tested:	Avg. Width (in.)	Avg. Thickness (in.)	Avg. Length (in.)	Net Area (in. <sup>2</sup> )	Average Cap Thickness (in.)	Max. Load (lb)	Aspect Ratio R <sub>a</sub>	Aspect Ratio F <sub>a</sub>	Net (psi)	
10/28/2025	A	2.136	2.530	9.582	20.47	0.042	132670	1.18	1.30	8400
	B	2.130	2.503	9.565	20.37	0.031	154130	1.18	1.29	9780
	C	2.130	2.501	9.644	20.54	0.024	150900	1.17	1.29	9490
	D	2.118	2.493	9.539	20.20	0.020	162200	1.18	1.29	10380
	Average	2.129	2.507	9.583	20.40	0.029	149975	1.18	1.29	9510

**Absorption Specimens**

Date Tested:	Avg. Width (in.)	Avg. Height (in.)	Avg. Length (in.)	
10/28/2025	A	2.136	2.530	9.582
	B	2.130	2.503	9.565
	C	2.130	2.501	9.644
	D	2.118	2.493	9.539
	Average	2.129	2.507	9.583

Date Tested:	Received Weight (lb)	Immersed Weight (lb)	Saturated Weight (lb)	Oven-Dry Weight (lb)	Absorption (%)	Density (pcf)	Net Volume (ft <sup>3</sup> )
10/28/2025	A	5.419	3.174	5.613	5.5	136.1	0.030
to	B	5.370	3.157	5.548	5.3	137.6	0.030
10/30/2025	C	5.261	3.044	5.481	6.1	132.3	0.030
	D	5.356	3.141	5.535	5.3	137.0	0.029
	Average	5.351	3.129	5.544	5.5	135.8	0.030

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 Manager, Analytical Services



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**ASTM C140/C140-25 Test Report**  
 Sampling and Testing Concrete Masonry Units and Related Units

**Work Order No.:** 25-0798

**Client:** Bilco Brick  
**Address:** Lancaster, Texas

**Testing Agency:** Master Builders Solutions US LLC  
 Physical Testing Laboratory  
 23700 Chagrin Blvd.  
 Beachwood, OH 44122

**Unit Specification:** ASTM C1634

**Unit Description:** Brick  
 2.5x2.5x9.5

**Project Identification:** White

**Summary of Test Results:**

ASTM C1634			
	Required	Actual	
<b>Net Area Compressive Strength:</b>	3500 min	7260	psi
<b>Absorption:</b>	10	7.7	lb/ft <sup>3</sup>
<b>Density (Oven Dry Condition):</b>	---	132.7	lb/ft <sup>3</sup>

**Full Size Unit Measurements**

Date Tested:		Avg. Width (in.)	Avg. Thickness (in.)	Avg. Length (in.)
10/28/2025	A	2.424	2.558	9.561
	B	2.414	2.561	9.494
	C	2.186	2.551	9.452
	D	2.431	2.532	9.525
	Average	2.364	2.551	9.508

**Compression Specimens**

Date Tested:	Avg. Width (in.)	Avg. Thickness (in.)	Avg. Length (in.)	Net Area (in. <sup>2</sup> )	Average Cap Thickness (in.)	Max. Load (lb)	Aspect Ratio R <sub>a</sub>	Aspect Ratio F <sub>a</sub>	Net (psi)	
10/28/2025	A	2.424	2.558	9.561	23.18	0.028	151482	1.06	1.26	8210
	B	2.414	2.561	9.494	22.92	0.041	145166	1.06	1.26	7970
	C	2.186	2.551	9.452	20.66	0.041	104369	1.17	1.29	6520
	D	2.431	2.532	9.525	23.16	0.045	117070	1.04	1.25	6330
	Average	2.364	2.551	9.508	22.48	0.039	129522	1.08	1.26	7260

**Absorption Specimens**

Date Tested:		Avg. Width (in.)	Avg. Height (in.)	Avg. Length (in.)
10/28/2025	A	2.424	2.558	9.561
	B	2.414	2.561	9.494
	C	2.186	2.551	9.452
	D	2.431	2.532	9.525
	Average	2.364	2.551	9.508

Date Tested:	Received Weight (lb)	Immersed Weight (lb)	Saturated Weight (lb)	Oven-Dry Weight (lb)	Absorption (%)	Density (pcf)	Net Volume (ft <sup>3</sup> )	
10/28/2025	A	5.432	3.126	5.572	5.317	4.8	135.6	0.034
to	B	5.382	3.098	5.599	5.275	6.1	131.6	0.034
10/30/2025	C	5.202	3.012	5.429	5.096	6.5	131.5	0.031
	D	5.354	3.074	5.561	5.253	5.9	131.8	0.034
	Average	5.342	3.078	5.540	5.235	5.8	132.7	0.033

  
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