BUILDEX
Haydite *Expanded Shale*
Lightweight Aggregate

Aggregate Physical Properties

Buildex Expanded Shale Lightweight Aggregate
Marquette Kansas Plant

Our Marquette plant is located three mile northeast of the City of Marquette, Kansas. This plant is located near a large deposit of Kiowa shale that is used in production.

Table 1
Typical Physical Properties of Production Sizes
Buildex Marquette KS Plant

Production Size	Specific Gravity (a)	Density, lb/cu ft (b)	Percent Absorption (c)
5/8" x 3/8"	1.05	35	25
3/8" x 1/4"	1.10	40	20
1/4" x 1/8"	1.15	42	16
1/8" x 0	1.50	47	10

(a) ASTM C 127 / C 128, bulk specific gravity.
(b) ASTM C 29, loose unit weight (density).
(c) ASTM C 127 / C 128, 24 hour absorption.

Table 2
Typical Gradation of Production Sizes
Buildex Marquette KS Plant

Cumulative Percent Retained

Sieve	5/8" x 3/8"	3/8" x 1/4"	1/4" x 1/8"	1/8" x 0
3/4"	0			
1/2"	19	0		
3/8"	79	3	0	
No. 4	99	98	20	0
No. 8	99	99	89	8
No. 16			98	38
No. 30			99	64
No. 50				81
No. 100				88

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These production sizes can be sold “as is,” but more often are blended before loading to meet appropriate industry specifications.

For producing pumpable structural lightweight concrete, both coarse and fine blends are normally stockpile saturated at the concrete producer’s plant. We recommend a seven to ten day soaking period, or longer if possible, for optimum pumpability.

Table 3
Typical Physical Properties of ASTM Blends
Buildex Marquette KS Plant

ASTM Blend	Specific Gravity (a)	Density, lb/cu ft (b)	Percent Absorption (c)	Saturated (d) Density, lb/cu ft
3/4" x No. 4	1.08	36	23	52
1/2" x No. 4	1.09	37	22	52
3/8" x No. 8	1.14	40	18	52
3/8" x 0	1.20	44	15	53
1/4" x 0	1.25	45	13	53

(a) ASTM C 127 / C 128, bulk specific gravity.
(b) ASTM C 29, loose unit weight (density) @ normal 6% shipping moisture content.
(c) ASTM C127 / C 128, 24 hour water absorption at ambient pressure. Please note that the 24 hour absorption figure is not appropriate for use in determining moisture content of Buildex used in pumped concrete.
(d) Unit Weight (density) when stockpile ambient saturated for 7 to 14 days for concrete pump placement.

Buildex aggregate is produced to meet or exceed applicable industry standards, including ASTM C330 "Standard Specification for Lightweight Aggregates for Structural Concrete" and ASTM C 331 "Standard Specification for Lightweight Aggregates for Concrete Masonry Units."

Table 4 - Typical Blended Aggregate Gradation
Lightweight Aggregates for Structural Concrete
ASTM C 330 - 3/4" x No. 4
Buildex Marquette KS Plant

Sieve	Percent Retained		Percent Passing	
	Typical Gradation	3/4" x No. 4 Specification*	Typical Gradation	3/4" x No. 4 Specification*
1"	0	0	100	100
3/4"	0	0-10	100	90-100
1/2"	14	---	86	---
3/8"	60	50-90	40	10-50
No. 4	99	85-100	1	0-15
No. 8	99	---	1	---

*ASTM C330 "Standard Specification for Lightweight Aggregates for Structural Concrete".

Table 5 - Typical Blended Aggregate Gradation
Lightweight Aggregates for Structural Concrete
ASTM C 330 - 1/2" x No. 4
Buildex Marquette KS Plant

Sieve	Percent Retained		Percent Passing	
	Typical Gradation	1/2" x No. 4 Specification*	Typical Gradation	1/2" x No. 4 Specification*
3/4"	0	0	100	100
1/2"	8	0-10	92	90-100
3/8"	35	20-60	65	40-80
No. 4	98	80-100	2	0-20
No. 8	99	90-100	1	0-10

*ASTM C330 "Standard Specification for Lightweight Aggregates for Structural Concrete"

Table 6 - Typical Blended Aggregate Gradation
Lightweight Aggregates for Structural Concrete
ASTM C 330 - 3/8" x No. 8
Buildex Marquette KS Plant

Sieve	Percent Retained		Percent Passing	
	Typical Gradation	3/8" x No. 8 Specification*	Typical Gradation	3/8" x No. 8 Specification*
1/2"	0	0	100	100
3/8"	3	0-20	97	80-100
No. 4	85	60-95	15	5-40
No. 8	97	80-100	3	0-20
No. 16	99	90-100	1	0-10

*ASTM C330 "Standard Specification for Lightweight Aggregates for Structural Concrete"

Table 7 - Typical Blended Aggregate Gradation
Lightweight Aggregates for Structural Concrete
ASTM C 330 - 3/8" x 0
Buildex Marquette KS Plant

Sieve	Percent Retained		Percent Passing	
	Typical Gradation	3/8" x 0 Specification*	Typical Gradation	3/8" x 0 Specification*
1/2"	0	0	100	100
3/8"	0	0-10	100	90-100
No. 4	12	10-35	88	65-90
No. 8	45	35-65	55	35-65
No. 16	66	---	34	---
No. 30	81	---	19	---
No. 50	89	75-90	11	10-25
No. 100	93	85-95	7	5-15

*ASTM C330 "Standard Specification for Lightweight Aggregates for Structural Concrete".

Table 8 - Typical Blended Aggregate Gradation
Lightweight Aggregates for Structural Concrete
ASTM C 330 - 1/4" x 0
Buildex Marquette KS Plant

Sieve	Percent Retained		Percent Passing	
	Typical Gradation	1/4" x 0 Specification*	Typical Gradation	1/4" x 0 Specification*
3/8"	0	0	100	100
No. 4	6	0-15	94	85-100
No. 8	32	---	68	---
No. 16	56	20-60	44	40-80
No. 30	75	---	25	---
No. 50	87	65-90	13	10-35
No. 100	91	75-95	9	5-25

*ASTM C330 "Standard Specification for Lightweight Aggregates for Structural Concrete"

Table 9 - Typical Blended Aggregate Gradation
Lightweight Aggregates for Concrete Masonry
ASTM C 331 - 1/4" x 0
Buildex Marquette KS Plant

Sieve	Typical Cumulative Grading	Typical Individual Grading	Suggested Individual Grading*
3/8"	0	0	0-2
No. 4	6	6	0-10
No. 8	32	26	15-35
No. 16	56	24	15-35
No. 30	75	19	5-20
No. 50	86	12	5-15
No. 100	91	5	5-15
Pan	100	9	8-20

*ASTM C331 "Standard Specification for Lightweight Aggregates for Concrete Masonry Units".