LAB REPORT

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Requested By:	**Mr. Bill Wolfe**
Company:	**Norlite Corporation**
Customer ID:	**NRLBW**
Filename:	**NRLBW-61230N**
Work Approved By:	**R. Batson**
Date Reported:	**February 3, 2017**
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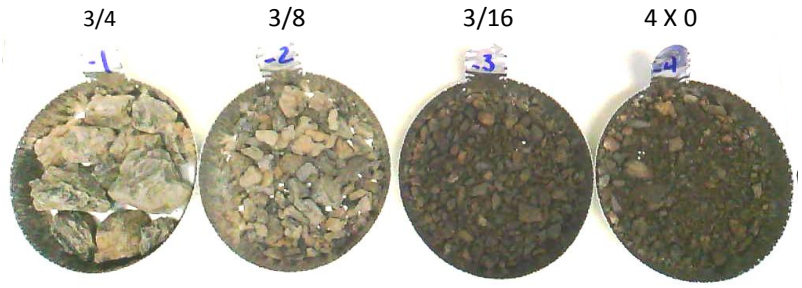
Background

Aggregate materials from Norlite Corporation were submitted for analysis.

The samples were identified as:



Analysis Objective

Analyze the BET surface area, EGME surface area and perform a sieve analysis on the samples.

Analytical Techniques

BET Surface Area

The aggregate samples were degassed at 120°C under nitrogen atmosphere overnight. Samples were degassed in a Micromeritics Flo Prep station.

The larger aggregate samples were fractured so that pieces could fit into the 0.276" BET tube openings.

A Micromeritics Gemini 2375 Surface Area Analyzer was used for the BET surface area analysis. A multipoint BET analysis was done using the following analysis parameters:

Adsorbate Gas:	UHP Nitrogen
Cryogen:	Liquid Nitrogen
Pressure Sequence:	0.05, 0.10, 0.15, 0.20, 0.25 P/Po
Evacuation Time:	3 minutes
Analysis Mode:	Equilibration
Equilibration Time:	5 seconds
Sample Weights:	2.0 - 2.5 g

EGME Surface Area

EGME surface area was performed in accordance with the method per *Cerato, A. and Lutenegger, A., "Determination of Surface Area of Fine-Grained Soils by the Ethylene Glycol Monoethyl Ether (EGME) Method," Geotechnical Testing Journal, Vol. 25, No. 3, 2002, pp. 315-321*

EGME Test Parameters:

Sample quantity:	3 grams
Drying regime:	24 hours at 120C
Sample Size:	Coarser materials were broken to a size of 0.276" (same as BET)
Weighing Intervals:	16 hrs, 24 hrs, 48 hrs
Apparatus:	Vacuum dessicator accommodating all 13 samples in weigh pans Analytical balance with 0.0001 g capability
Vacuum pressure	30 in. Hg
Reagents:	100g dried, anhydrous calcium chloride mixed with 20cc of EGME

Sieve Analysis

Sieve analysis was performed in accordance with *ASTM C136-01 Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.*

Sieve Analysis Test Parameters:

Sieves Used:	8-inch sieves -		
	5/8 (16mm)	#16 (1.18mm)	#200 (0.075mm)
	3/8" (9.52mm)	#40 (0.425mm)	
	#4 (4.76mm)	#140 (0.106mm)	

Apparatus:	Ro-Tap™ Sieve Shaker for 8-inch sieves
Sample weight:	10 kg (tested in 1 kg increments)
Sieving Time:	3 minutes

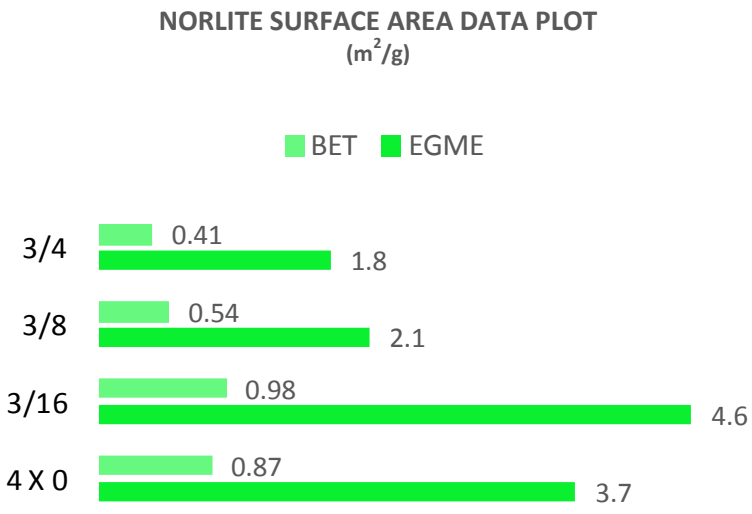
Results

BET Surface Area

and

EGME Surface Area

NORLITE SURFACE AREA DATA		
Material	BET Surface Area (m^2/g)	EGME Surface Area (m^2/g)
3/4	0.41	1.8
3/8	0.54	2.1
3/16	0.98	4.6
4 X 0	0.87	3.7



Results

Sieve Analysis

Norlite Sieve Analysis

Weight Percent Retained
(10 kg initial weight)

Sieve #	5/8	3/8	4	16	40	140	200	> 200	Median Particle Size (mm) Estimated from Cumulative Curve
Sieve Opening (mm)	16	9.52	4.75	1.18	0.425	0.106	0.075	<0.075	
3/4	7.4	83.0	7.4	0.8	0.5	0.8	0.1	0.0	13
3/8	0.0	3.0	60.0	33.6	0.1	1.1	2.2	0.0	6
3/16	0.0	0.0	4.8	79.5	11.8	3.8	0.0	0.0	2
4x0	0.0	0.0	3.6	60.6	26.4	9.2	0.2	0.0	2

Results

Sieve Analysis