ATLANTIC TESTING LABORATORIES

PERMEABILITY ON GRANULAR SOIL TEST REPORT UT3510SL-06-02-11

ASTM D 2434 (using a rigid wall permeameter)

PROJECT INFORMATION

CLIENT:	Norlite Corporation	DATE :	February 16, 2011
PROJECT:	Laboratory Soils Analysis	DELIVERED BY:	Client
		DATE DELIVERED:	February 7, 2011

SAMPLE IDENTIFICATION

ATL Sample No.:	UT3510S06	Client Identification:	Not Available
Sample Location:	Norlite Corporation - Stockpile	Sample Depth:	Not Available
Maximum Particle Size:	#4	Oversize Material (%):	Not Applicable
Sample Classification:	Norlite Lightweight Aggregate Geotechnical Blend (100% 88/12)		

SAMPLE INFORMATION

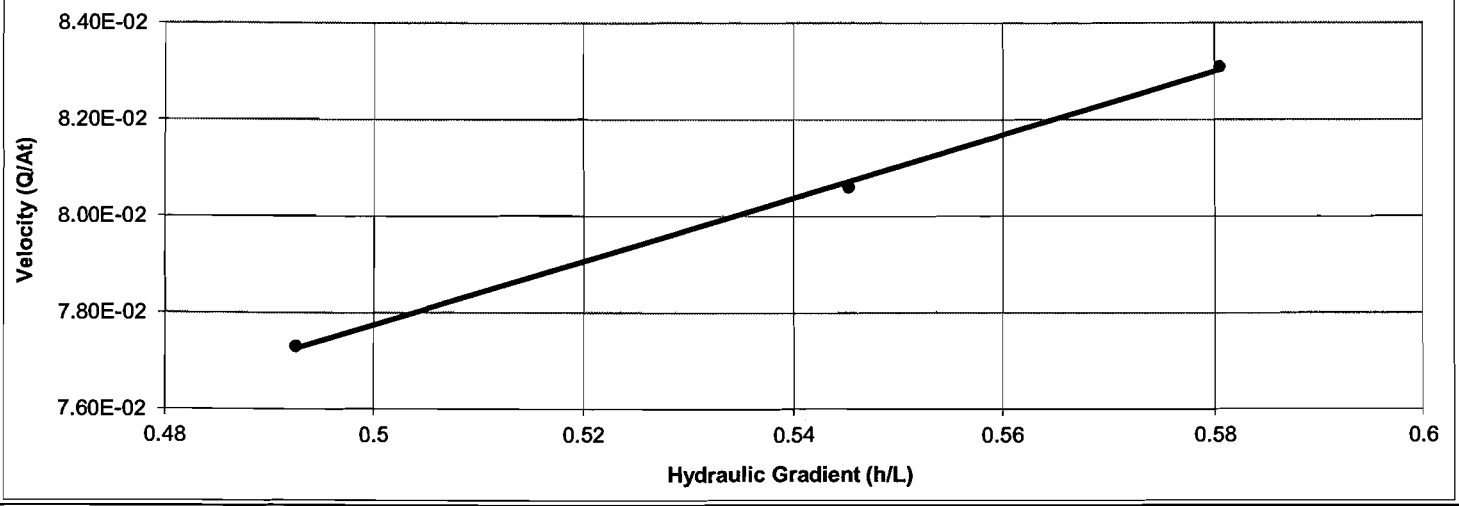
Diameter (cm):	10.160	Minimum Index Density (pcf):	Not Applicable
Area (cm^2):	81.070	Maximum Index Density (pcf):	Not Applicable
Effective Length (cm):	11.370	Relative Density:	Not Applicable
Sample Length (cm):	17.526	Maximum Dry Unit Weight (pcf):	Not Available
Sample Weight (lbs):	4.900	Dry Unit Weight (pcf):	62.6
Moisture Content (%):	55.8	Percent Compaction (pcf):	Not Applicable
Permeant Liquid:	Water	Void Ratio:	Not Applicable

TEST DATA

Test No.	Manometers h_1	Manometers h_2	Head, h(cm)	Q(cm^3)	t(sec)	Q/At	h/L	Temp (°C)	Corrected k(cm/sec)
1	22.9	17.3	5.6	94	15	0.0773	0.4925	17.5	1.7×10^{-1}
2	24.4	18.2	6.2	98	15	0.0806	0.5453	16.0	1.6×10^{-1}
3	26.2	19.6	6.6	101	15	0.0831	0.5805	15.5	1.6×10^{-1}

Average Corrected k(cm/sec): 1.6×10^{-1} Project Specifications min k(cm/sec): ---

VELOCITY vs. HYDRAULIC GRADIENT



REMARKS

At the request of the client, this sample was immersed in water for approximately 96 hours prior to testing. The saturation water was decanted over a #200 sieve prior to placing the sample into the test mold.

Reviewed by: Gary Grippe Date: 2/16/11

ATLANTIC TESTING LABORATORIES

PERMEABILITY ON GRANULAR SOIL TEST REPORT UT3510SL-07-02-11

ASTM D 2434 (using a rigid wall permeameter)

PROJECT INFORMATION

CLIENT:	Norlite Corporation	DATE :	February 16, 2011
PROJECT:	Laboratory Soils Analysis	DELIVERED BY:	Client
		DATE DELIVERED:	February 7, 2011

SAMPLE IDENTIFICATION

ATL Sample No.:	UT3510S07	Client Identification:	Not Available
Sample Location:	Norltie Corporation - Stockpile	Sample Depth:	Not Available
Maximum Particle Size:	1/2"	Oversize Material (%):	Not Applicable
Sample Classification:	Norlite Lightweight Aggregate Geotechnical Blend (50% 88/12, 50% 3/4)		

SAMPLE INFORMATION

Diameter (cm):	22.860	Minimum Index Density (pcf):	Not Applicable
Area (cm^2):	410.400	Maximum Index Density (pcf):	Not Applicable
Effective Length (cm):	24.200	Relative Density:	Not Applicable
Sample Length (cm):	30.480	Maximum Dry Unit Weight (pcf):	Not Available
Sample Weight (lbs):	30.850	Dry Unit Weight (pcf):	50.5
Moisture Content (%):	38.3	Percent Compaction (pcf):	Not Applicable
Permeant Liquid:	Water	Void Ratio:	Not Applicable

TEST DATA

Test No.	Manometers h_1	Manometers H_2	Head, h(cm)	$Q(cm^3)$	t(sec)	Q/At	h/L	Temp (°C)	Corrected k(cm/sec)
1	15.7	15.0	0.7	109	15	0.0177	0.0289	19.0	6.3×10^{-1}
2	15.7	15.0	0.7	112	15	0.0182	0.0289	18.5	6.5×10^{-1}
3	15.7	15.0	0.7	114	15	0.0185	0.0289	18.5	6.6×10^{-1}
4	18.0	17.3	0.7	149	15	0.0242	0.0289	18.0	8.8×10^{-1}
5	18.0	17.3	0.7	150	15	0.0244	0.0289	17.5	9.0×10^{-1}
6	18.0	17.3	0.7	148	15	0.0240	0.0289	17.0	8.9×10^{-1}
7	21.4	20.3	1.1	187	15	0.0304	0.0455	15.5	7.5×10^{-1}
8	21.4	20.3	1.1	187	15	0.0304	0.0455	14.5	7.7×10^{-1}
9	21.4	20.3	1.1	186	15	0.0302	0.0455	14.0	7.7×10^{-1}

Average Corrected k(cm/sec): 7.7×10^{-1} Project Specifications min k(cm/sec): ---

REMARKS

At the request of the client, this sample was immersed in water for approximately 100 hours prior to testing. The saturation water was decanted over a #200 sieve prior to placing the sample into the test mold.

Reviewed by: Gary Gripp Date: 2/16/11

ATLANTIC TESTING LABORATORIES

PERMEABILITY ON GRANULAR SOIL TEST REPORT UT3510SL-08-02-11

ASTM D 2434 (using a rigid wall permeameter)

PROJECT INFORMATION

CLIENT:	Norlite Corporation	DATE :	February 16, 2011
PROJECT:	Laboratory Soils Analysis	DELIVERED BY:	Client
		DATE DELIVERED:	February 7, 2011

SAMPLE IDENTIFICATION

ATL Sample No.:	UT3510S08	Client Identification:	Not Available
Sample Location:	Norltie Corporation - Stockpile	Sample Depth:	Not Available
Maximum Particle Size:	1/2"	Oversize Material (%):	Not Applicable
Sample Classification:	Norlite Lightweight Aggregate Geotechnical Blend (100% 3/4)		

SAMPLE INFORMATION

Diameter (cm):	22.860	Minimum Index Density (pcf):	Not Applicable
Area (cm^2):	410.400	Maximum Index Density (pcf):	Not Applicable
Effective Length (cm):	24.200	Relative Density:	Not Applicable
Sample Length (cm):	30.480	Maximum Dry Unit Weight (pcf):	Not Available
Sample Weight (lbs):	25.000	Dry Unit Weight (pcf):	42.9
Moisture Content (%):	32.0	Percent Compaction (pcf):	Not Applicable
Permeant Liquid:	Water	Void Ratio:	Not Applicable

TEST DATA

Test No.	Manometers h_1	Manometers H_2	Head, h(cm)	$Q(cm^3)$	t(sec)	Q/At	h/L	Temp (°C)	Corrected k(cm/sec)
1	16.8	16.7	0.1	145	15	0.0236	0.0041	16.5	6.3
2	16.8	16.7	0.1	150	15	0.0244	0.0041	15.5	6.7
3	16.8	16.7	0.1	144	15	0.0234	0.0041	15.5	6.4
4	18.3	18.2	0.1	170	15	0.0276	0.0041	15.0	7.6
5	18.3	18.2	0.1	178	15	0.0289	0.0041	14.5	8.1
6	18.3	18.2	0.1	172	15	0.0279	0.0041	14.5	7.8
7	19.5	19.4	0.1	192	15	0.0312	0.0041	14.0	8.9
8	19.5	19.4	0.1	198	15	0.0322	0.0041	13.5	9.3
9	19.5	19.4	0.1	189	15	0.0307	0.0041	13.0	9.0

Average Corrected k(cm/sec): 7.8 Project Specifications min k(cm/sec): ---

REMARKS

At the request of the client, this sample was immersed in water for approximately 97 hours prior to testing. The saturation water was decanted over a #200 sieve prior to placing the sample into the test mold.

Reviewed by: Gary Grippe Date: 2/16/11