



Certificate # 3512.05

Construction Materials Testing Laboratory **FUGRO - SUHAIMI**
Jubail Branch

P.O. Box 2165 - Tel.: (013) 341 2700
Dammam 31451 - Fax.: (013) 341 2701
Saudi Arabia - E-mail.: fsljubail@fugro-suhaimi.com

السحيمي - فيغرو

SUMMARY OF TEST REPORT

Client	A.H. Al Marhoon & Bros. Co.	Job No.	SA08-3012
Project	Concrete Batch Plant, Rahima	Lab No.	13842
Material	3/4" (20 mm) Coarse Aggregate	Date Sampled	05 May 2016
Source	Al Osais, Abuhadriya (Sampled by FSL)	Date Reported	17 May 2016

Properties:

Properties Tested	Test Method	Results	SCECO Specs.
Sieve analysis	ASTM C-136	See Attached	--
Material finer than No. 200 sieve %	ASTM C-117	0.74	5.0 Max.
Clay lumps & friable particles %	ASTM C-142	0.35	1.0 Max.
Los Angeles Abrasion	ASTM C-131		
Loss at 100 revolutions %		8.2	--
Loss at 500 revolutions %		32.8	35 Max.
Ratio 100/500 rev.		0.25	0.25 max
Magnesium sulfate soundness loss (5 cycles) %	ASTM C-88	10.4	18 Max.
Specific gravity and absorption	ASTM C-127		
Apparent		2.613	--
SSD basis		2.572	--
Dry basis		2.542	--
Absorption		1.0	2.5 max
Acid soluble chloride, (Cl), %	ASTM C 114		
(NaCl), %		0.015	0.03 max
		0.025	
Acid soluble sulphate (SO ₃), %	BS-812 Part 118		
(SO ₄), %		0.127	
		0.127	0.5 max
Flakiness index	BS-812	10.9	30 Max.
Elongation index	BS-812	14.4	45 Max.
Coal & lignite	ASTM C-123	NIL	0.5 Max.

Remarks:

Tested By: Thomas Reviewed By: Imran Ahmed
CTTA # : 0194 . CTTA # : 0556



Laboratory Manager
Muhammad Nawaz CTTA # 0037

The copyright of this document is owned by Fugro-Suhaimi Ltd. It may not be reproduced except with prior written approval from the company.



Certificate # 3512.05

**Construction Materials Testing Laboratory
Jubail Branch**

P.O. Box 2165 - Tel.: (013) 341 2700
Dammam 31451 - Fax.: (013) 341 2701

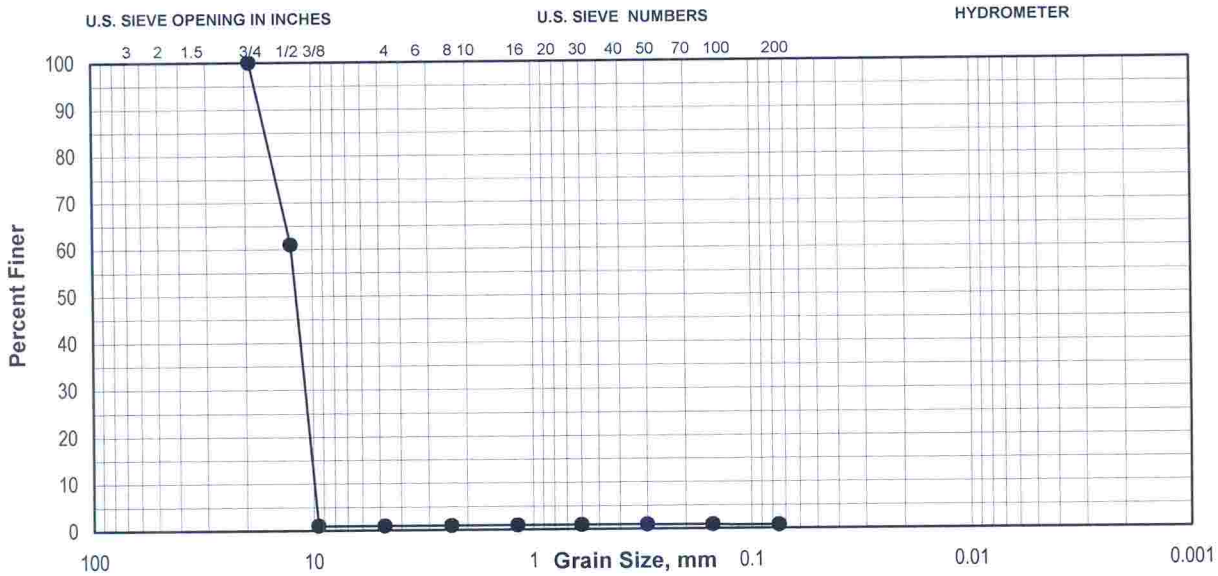
Saudi Arabia - E-mail.: fsljubail@fugro-suhaimi.com



السحيمي - فيفرو

PARTICLE SIZE ANALYSIS TEST REPORT

Client	A.H. Al Marhoon & Bros. Co.	Job No.	SA08-3012
Project	Concrete Batch Plant, Rahima	Lab No.	13842
Material	3/4" (20 mm) Coarse Aggregate	Date Sampled	05 May 2016
Source	Al Osais, Abuhadriya (Sampled by FSL)	Date Tested	07-08 May 2016
Method	ASTM C-136/117	Date Reported	17 May 2016



Gravel		Sand			Silt or Clay
Coarse	fine	Coarse	medium	fine	

Description of Sand / Gravel Particles:

Shape	Hardness	Specific Gravity

Sieve Size Inch(mm)	Passing %	Specification	Properties Tested		
			Item	Description	Result
1 (25.0 mm)					
3/4 (19 mm)	100				
1/2 (12.5 mm)	61				
3/8 (9.5 mm)	16				
#4 (4.75 mm)	1				
#8 (2.36 mm)	0.92				
#16 (1.18 mm)	0.92				
#30 (0.600 mm)	0.92				
#50 (0.300 mm)	0.92				
#100 (0.150 mm)	0.87				
#200 (0.075 mm)	0.74				

Remarks

Tested By: Thomas Reviewed By: Imran Ahmed
CTTA # : 0194 CTTA # : 0556



Material Division
Jubail Lab (44)
Laboratory Manager
Muhammad Nawaz CTTA # 0037

The copyright of this document is owned by Fugro-Suhaimi Ltd. It may not be reproduced except with prior written approval from the company.



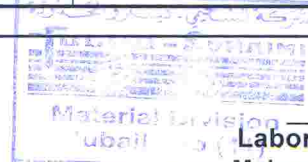
Certificate # 3512.05

**Construction Materials Testing Laboratory FUGRO - SUHAIMI
Jubail Branch**P.O. Box 2165 - Tel.: (013) 341 2700
Dammam 31451 - Fax.: (013) 341 2701
Saudi Arabia - E-mail.: fslijubail@fugro-suhaimi.com**SUMMARY OF TEST REPORT**

Client	A.H. Al Marhoon & Bros. Co.	Job No.	SA08-3012
Project	Concrete Batch Plant, Rahima	Lab No.	13843
Material	3/8" (10- mm) Coarse Aggregate	Date Sampled	05 May 2016
Source	Al Osais, Abuhadriya (Sampled by FSL)	Date Reported	17 May 2016

Properties:

Properties Tested	Test Method	Results	SCECO Specs.
Sieve analysis	ASTM C-136	See Attached	--
Material finer than No. 200 sieve %	ASTM C-117	0.85	5.0 Max.
Clay lumps & friable particles %	ASTM C-142	0.46	1.0 Max.
Los Angeles Abrasion	ASTM C-131		
Loss at 100 revolutions %		8.6	--
Loss at 500 revolutions %		34.4	35 Max.
Ratio 100/500 rev.		0.25	0.25 max
Magnesium sulfate soundness loss (5 cycles) %	ASTM C-88	15.3	18 Max.
Specific gravity and absorption	ASTM C-127		
Apparent		2.614	--
SSD basis		2.565	--
Dry basis		2.534	--
Absorption		1.2	2.5 max
Acid soluble chloride, (Cl), %	ASTM C 114		
(NaCl), %		0.018	0.03 max
Acid soluble sulphate (SO ₃), %	BS-812 Part 118		
(SO ₄), %		0.030	
Flakiness index	BS-812	10.2	30 Max.
Elongation index	BS-812	14.4	45 Max.
Coal & lignite	ASTM C-123	NIL	0.5 Max.

Remarks:Tested By: Thomas Reviewed By: WN
CTTA # : 0194 . CTTA # : -**Laboratory Manager**
Muhammad Nawaz CTTA # 0037

The copyright of this document is owned by Fugro-Suhaimi Ltd. It may not be reproduced except with prior written approval from the company.



Certificate # 3512.05

Construction Materials Testing Laboratory **FUGRO - SUHAIMI**
Jubail Branch

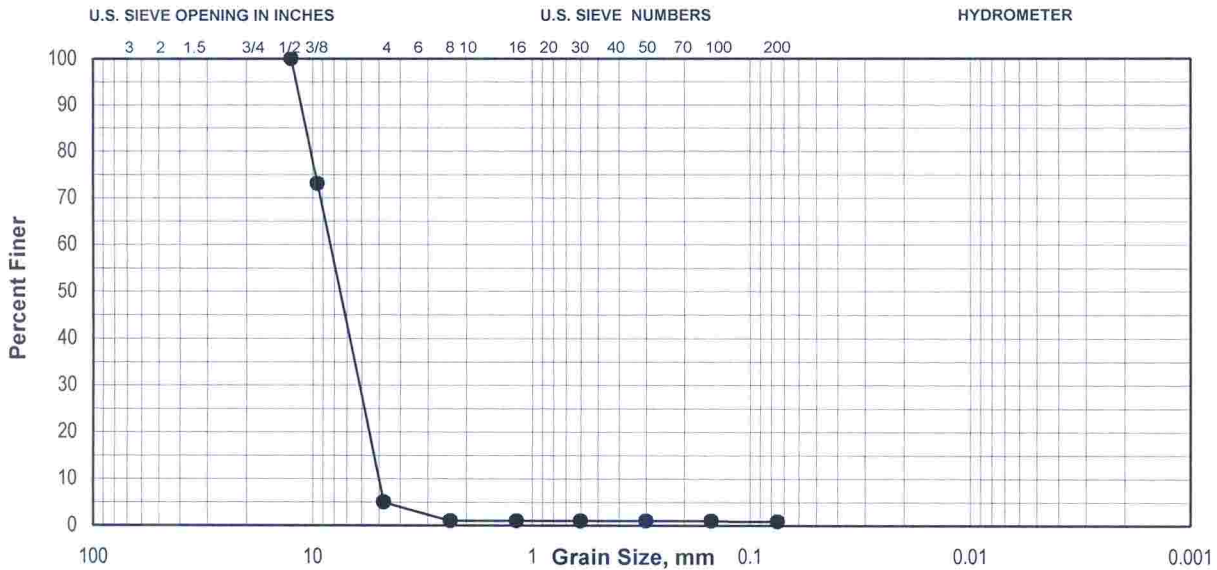
P.O. Box 2165 - Tel.: (013) 341 2700
Dammam 31451 - Fax.: (013) 341 2701

Saudi Arabia - E-mail: fsljubail@fugro-suhaimi.com



PARTICLE SIZE ANALYSIS TEST REPORT

Client	A.H. Al Marhoon & Bros. Co.	Job No.	SA08-3012
Project	Concrete Batch Plant, Rahima	Lab No.	13843
Material	3/8" (10 mm) Coarse Aggregate	Date Sampled	05 May 2016
Source	Al Osais, Abuhadriya (Sampled by FSL)	Date Tested	07-08 My 2016
Method	ASTM C-117/136	Date Reported	17 May 2016



Gravel		Sand			Silt or Clay
Coarse	fine	Coarse	medium	fine	

Description of Sand / Gravel Particles:

Shape	Hardness	Specific Gravity

Sieve Size Inch(mm)	Passing %	Specification	Properties Tested		
			Item	Description	Result
3/4 (19.0 mm)	100				
1/2 (12.5 mm)	73				
3/8 (9.5 mm)	5				
#4 (4.75 mm)	1				
#8 (2.36 mm)	1				
#16 (1.18 mm)	1				
#30 (0.600 mm)	1				
#50 (0.300 mm)	1				
#100 (0.15 mm)	1				
#200 (75 mm)	0.85				

Remarks	
----------------	--

Tested By: Thomas
CTTA # : 0194

Reviewed By: Imran Ahmed
CTTA # : 0556



Laboratory Manager
Muhammad Nawaz CTTA # 0037

The copyright of this document is owned by Fugro-Suhaimi Ltd. It may not be reproduced except with prior written approval from the company.

SUMMARY OF TEST REPORT

Client	A.H. Al Marhoon & Bros. Co.	Job No.	SA08-3012
Project	Concrete Batch Plant, Rahima	Lab No.	13844
Material	Dune Sand	Date Sampled	05 May 2016
Source	Baladiyah, Jubail (Sampled by FSL)	Date Reported	17 May 2016

Properties:

Properties Tested	Test Method	Results	SCECO Specs.
Sieve analysis	ASTM C-136	See Attached	--
Material finer than No. 200 sieve %	ASTM C-117	1.1	2.0 Max.
Clay lumps & friable particles %	ASTM C-142	N/A	2.0 Max.
Magnesium sulfate soundness loss (5 cycles) %	ASTM C-88	6.2	15 Max.
Specific gravity and absorption	ASTM C-127		
Apparent		2.650	--
SSD basis		2.617	--
Dry basis		2.596	--
Absorption		0.8	1.0 max
Acid soluble chloride, (Cl), %	ASTM C 114		
(NaCl), %		0.007	0.05 max
(SO ₃), %		0.012	
Acid soluble sulphate (SO ₃), %	BS-812 Part 118		
(SO ₄), %		0.083	0.4 Max
(SO ₄), %		0.083	
Organic impurities	ASTM C-40	Light then std.	

Remarks: Not applicable: Material is finer than test size i.e. retained on Sieve No.16 hence the test is not applicable

Tested By: Thomas Reviewed By: WN
CTTA # : 0194 CTTA # : -



Laboratory Manager
Muhammad Nawaz CTTA # 0037

The copyright of this document is owned by Fugro-Suhaimi Ltd. It may not be reproduced except with prior written approval from the company.



Certificate # 3512.05

Construction Materials Testing Laboratory
Jubail Branch

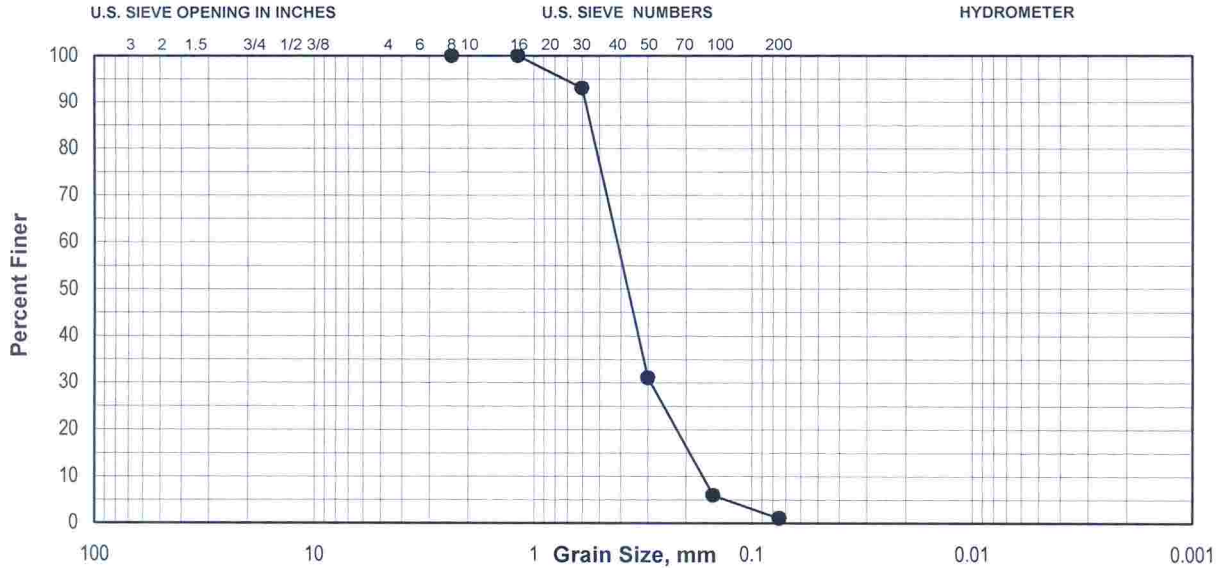
P.O. Box 2165 – Tel.: (013) 341 2700
 Dammam 31451 – Fax.: (013) 341 2701
 Saudi Arabia – E-mail.: fsljubail@fugro-suhaimi.com



السَّحْمِي - فيفرو

PARTICLE SIZE ANALYSIS TEST REPORT

Client	A.H. Al Marhoon & Bros. Co.	Job No.	SA08-3012
Project	Concrete Batch Plant, Rahima	Lab No.	13844
Material	Sand	Date Sampled	05 May 2016
Source	Baladiyah, Jubail (Sampled by FSL)	Date Tested	07-08 May 2016
Method	ASTM C-117/136	Date Reported	17 May 2016



Gravel		Sand			Silt or Clay
Coarse	fine	Coarse	medium	fine	

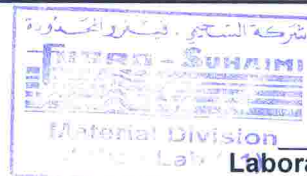
Description of Sand / Gravel Particles:

Shape	Hardness	Specific Gravity

Sieve Size Inch(mm)	Passing %	Specification	Properties Tested		
			Item	Description	Result
#8 (2.36 mm)	100				
#16 (1.18 mm)	100				
#30 (0.600 mm)	93				
#50 (0.300 mm)	31				
#100 (0.15 mm)	6				
#200 (0.075 mm)	1.1				

Remarks	
----------------	--

Tested By: Thomas Reviewed By: Imran Ahmed
 CTTA # : 0194 CTTA # : 0556



Laboratory Manager
 Muhammad Nawaz CTTA # 0037

The copyright of this document is owned by Fugro-Suhaimi Ltd. It may not be reproduced except with prior written approval from the company.

TEST REPORT FOR CHEMICAL ANALYSIS ON WATER

Client	A.H. Al Marhoon & Bros. Co.	Report Date	17 May 2016
Project	Concrete Batch Plant, Rahima	Job No.	SA08-3012
Source	Sampled by FSL	Lab No.	13845
Sample Location	From Batch Plant	Sampled by	Sampled by FSL

Fugro-Suhaimi Ltd. (FSL) has performed chemical analysis on a water sample based on client request. The testing was carried out in accordance with the relevant ASTM and APHA Methods. The results and pertinent information are as follows:

Test results

Serial No.	Determination	Test Results	SCECO Specs.
1.	pH	7.24	7 – 8.5
2.	Chloride as Cl ⁻ , ppm	56.72	300 max
3.	Sulfate as SO ₃ , ppm	17.0	300 max
4.	Total Dissolved Solids- TDS, ppm	173.5	500 max

Remarks: Test results indicate compliance with the SCECO Standard 71-SMSS-5, Rev.4.

Tested By: Thomas **Reviewed By:** WN
CTTA # : 0194 CTTA # : -



Laboratory Manager
Muhammad Nawaz CTTA # 0037