

DOCUMENT TRANSMITTAL

Ref. No.	: FSL JUBAIL : SA08-3012	Date	: 18 June 2016
To	: A.H. Al Marhoon & Bros.Co Rahima, Saudi Arabia Fax: (03) 667-4721		
Attention	: Plant Manager		
Re	: Monthly Aggregate Testing – June 2016		

Please find enclosed the following documents:

Quantity	Document Reference	
1 each	3/4" Coarse Aggregate	Lab.No. 14227
-do-	3/8" Coarse Aggregate	Lab.No. 14228
-do-	Dune Sand	Lab.No. 14229
-do-	Summary Combined Aggregate	Lab No. 14227 – 14228
-do-	Chemical Analysis, Water	Lab No. 14230
	Invoice #	
Remarks:	ARAMCO & SCECO Specs.	

We request you to return a signed copy of this document transmittal form by facsimile transmission on
03 341-2701

Regards,

Receipt confirmation of document(s)

FUGRO-SUHAIMI LTD.


Muhammad Nawaz
Lab. Manager
050-6800943



Signature :

Name (print) :

Date :

Company Stamp:



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



SUMMARY OF TEST REPORT

Client	A.H. Al Marhoon & Bros. Co.	Job No.	SA08-3012
Project	Concrete Batch Plant, Rahima	Lab No.	14227
Material	3/4" (20 mm) Coarse Aggregate	Date Sampled	06 June 2016
Source	Al Osais, Abuhadriya (Sampled by FSL)	Date Reported	16 June 2016

Properties:

Properties Tested	Test Method	Results	S. Aramco Specification
Sieve analysis	ASTM C-136	See Attached	--
Material finer than No. 200 sieve %	ASTM C-117	0.5	5.0 max.
Clay lumps & friable particles %	ASTM C-142	0.41	5.0 Max.
Los Angeles Abrasion	ASTM C-131		
Loss at 100 revolutions %		8.2	--
Loss at 500 revolutions %		32.9	40 max.
Ratio 100/500 rev.		0.25	--
Magnesium sulfate soundness loss (5 cycles) %	ASTM C-88	10.5	25.0 max.
Specific gravity and absorption	ASTM C-127		
Apparent		2.617	--
SSD basis		2.572	--
Dry basis		2.544	--
Absorption		1.1	2.5 max
Acid soluble chloride, (Cl), %	ASTM C 114		
(Cl), %		0.015	0.03 max
Acid soluble sulphate (SO ₃), %	BS-812 Part 118		
(SO ₃), %		0.121	0.40 Max
Flakiness index	BS-812	9.9	--
Elongation index	BS-812	11.4	--
Coal & lignite	ASTM C-123	Nil	--

Remarks: All test results indicate compliance with the Saudi Aramco standard 09-SAMSS-088.

Tested By: Thomas
CTTA #: 0194

Reviewed By: Imran Ahmed
CTTA #: 0556



Sr. Laboratory Supervisor
Muhammad Nawaz CTTA # 0037



Certificate # 3512.05

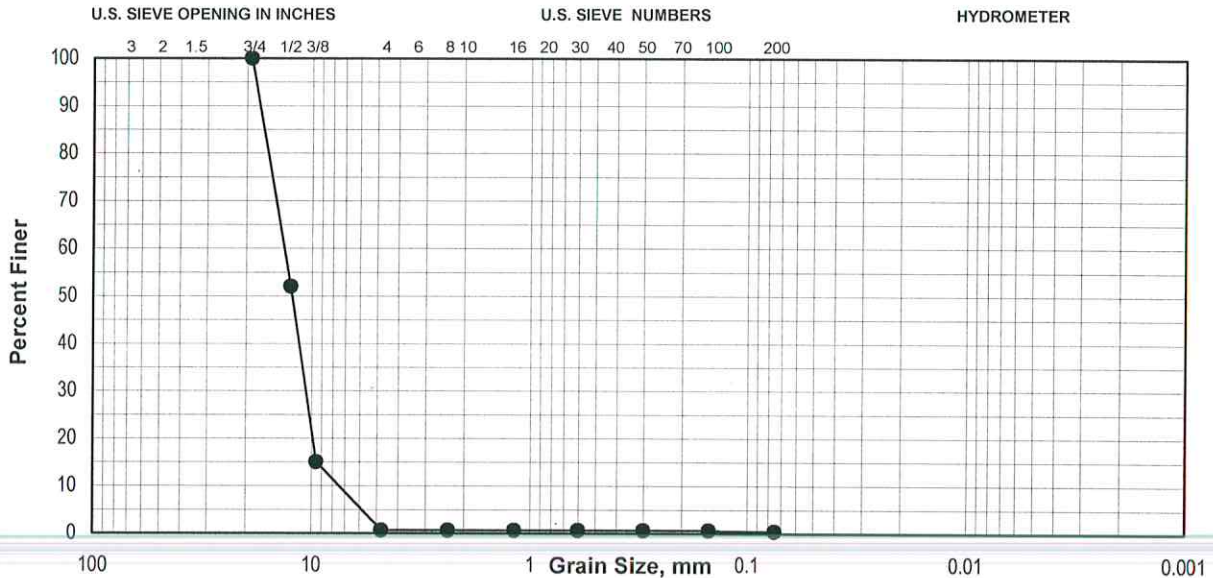
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PARTICLE SIZE ANALYSIS TEST REPORT

Client	A.H. Al Marhoon & Bros. Co.	Job No.	SA08-3012
Project	Concrete Batch Plant, Rahima	Lab No.	14227
Material	3/4" (20 mm) Coarse Aggregate	Date Sampled	06 June 2016
Source	Al Osais, Abuhadriya (Sampled by FSL)	Date Tested	07 June 2016
Method	ASTM C-136/117	Date Reported	16 June 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)	52				
3/8 (9.5 mm)	15				
#4 (4.75 mm)	0.7				
#8 (2.36 mm)	0.7				
#16 (1.18 mm)	0.7				
#30 (0.600 mm)	0.7				
#50 (0.300 mm)	0.7				
#100 (0.150 mm)	0.7				
#200 (0.075 mm)	0.5				

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



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SUMMARY OF TEST REPORT

Client	A.H. Al Marhoon & Bros. Co.	Job No.	SA08-3012
Project	Concrete Batch Plant, Rahima	Lab No.	14228
Material	3/8" (10- mm) Coarse Aggregate	Date Sampled	06 June 2016
Source	Al Osais, Abuhadriya (Sampled by FSL)	Date Reported	16 June 2016

Properties:

Properties Tested	Test Method	Results	S. Aramco Specification
Sieve analysis	ASTM C-136	See Attached	--
Material finer than No. 200 sieve %	ASTM C-117	1.0	5.0 max.
Clay lumps & friable particles %	ASTM C-142	0.35	5.0 max.
Los Angeles Abrasion	ASTM C-131		
Loss at 100 revolutions %		8.5	--
Loss at 500 revolutions %		34.5	40 max.
Ratio 100/500 rev.		0.25	--
Magnesium sulfate soundness loss (5 cycles) %	ASTM C-88	16.0	25.0 max.
Specific gravity and absorption	ASTM C-127		
Apparent		2.617	--
SSD basis		2.564	--
Dry basis		2.531	--
Absorption		1.3	2.5 max
Acid soluble chloride, (Cl), %	ASTM C 114	0.011	0.03 max
Acid soluble sulphate (SO ₃), %	BS-812 Part 118	0.175	0.40 Max
Flakiness index	BS-812	9.2	--
Elongation index	BS-812	11.3	--
Coal & lignite	ASTM C-123	Nil	--

Remarks: All test results indicate compliance with the Saudi Aramco standard 09-SAMSS-088.

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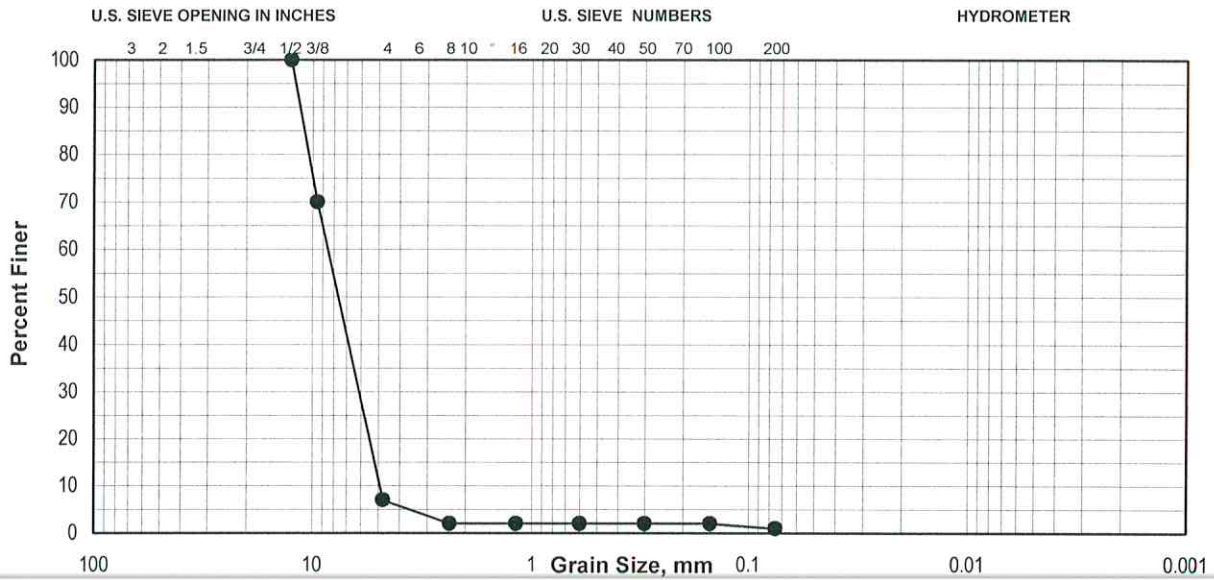
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PARTICLE SIZE ANALYSIS TEST REPORT

Client	A.H. Al Marhoon & Bros. Co.	Job No.	SA08-3012
Project	Concrete Batch Plant, Rahima	Lab No.	14228
Material	3/8" (10 mm) Coarse Aggregate	Date Sampled	06 June 2016
Source	Al Osais, Abuhadriya (Sampled by FSL)	Date Tested	07 June 2016
Method	ASTM C-117/136	Date Reported	16 June 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)	70				
3/8 (9.5 mm)	7				
#4 (4.75 mm)	2				
#8 (2.36 mm)	2				
#16 (1.18 mm)	2				
#30 (0.600 mm)	2				
#50 (0.300 mm)	2				
#100 (0.15 mm)	2				
#200 (0.075 mm)	1.0				

Remarks	
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Client	A.H. Al Marhoon & Bros. Co.	Job No.	SA08-3012
Project	Concrete Batch Plant, Rahima	Lab No.	14229
Material	Dune Sand	Date Sampled	06 June 2016
Source	Baladiyah, Jubail (Sampled by FSL)	Date Reported	16 June 2016

Properties:

Properties Tested	Test Method	Results	S. Aramco Specification
Sieve analysis	ASTM C-136	See Attached	--
Material finer than No. 200 sieve %	ASTM C-117	1.2	5.0 Max.
Clay lumps & friable particles %	ASTM C-142	N/A	3.0 Max.
Magnesium sulphate soundness loss (5 cycles) %	ASTM C-88	5.8	25.0 Max.
Specific gravity and absorption	ASTM C-127		
Apparent		2.652	--
SSD basis		2.614	--
Dry basis		2.591	--
Absorption		0.9	
Acid soluble chloride, (Cl), %	ASTM C 114	0.007	0.06 max
Acid soluble sulphate (SO ₃), %			
	BS-812 Part 118	0.359	0.40 Max
Organic impurities			
	ASTM C-40	Lighter than std	Light then std.

Remarks: All test results indicate compliance with the Saudi Aramco standard 09-SAMSS-088.Tested By: Thomas
CTTA # : 0194Reviewed By: Imran Ahmed
CTTA # : 0556**Sr. Laboratory Supervisor**
Muhammad Nawaz CTTA # 0037



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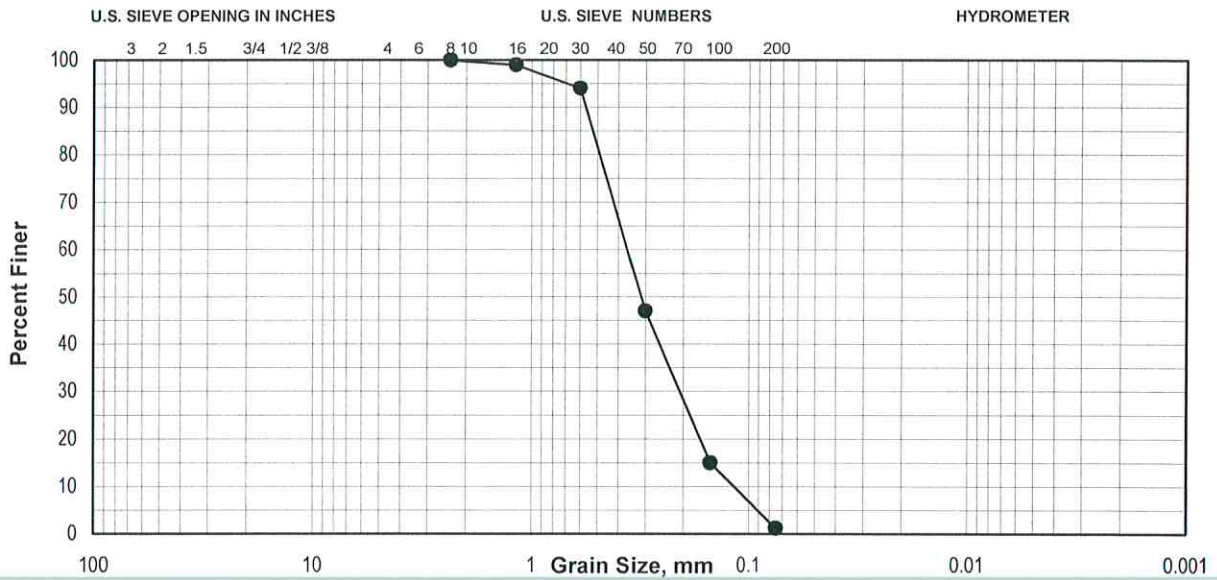
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السحيمي - فيغرو

PARTICLE SIZE ANALYSIS TEST REPORT

Client	A.H. Al Marhoon & Bros. Co.	Job No.	SA08-3012
Project	Concrete Batch Plant, Rahima	Lab No.	14229
Material	Sand	Date Sampled	06 June 2016
Source	Baladiyah, Jubail (Sampled by FSL)	Date Tested	07 June 2016
Method	ASTM C-117/136	Date Reported	16 June 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)	99				
#30 (0.600 mm)	94				
#50 (0.300 mm)	47				
#100 (0.15 mm)	15				
#200 (0.075 mm)	1.2				

Remarks	
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Tested By: Thomas
CTTA # : 0194

Reviewed By: Imran Ahmed
CTTA # : 0556



(Signature)
Sr. Laboratory Supervisor
Muhammad Nawaz CTTA # 0037

TEST REPORT FOR CHEMICAL ANALYSIS ON WATER

Client	A.H. Al Marhoon & Bros. Co.	Report Date	16 June 2016
Project	Concrete Batch Plant, Rahima	Job No.	SA08-3012
Source	Sampled by FSL/ Al Kawther	Lab No.	14230
		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	S. Aramco Specification
2.	pH	6.52	6 - 8
3.	Chloride as Cl ⁻ , ppm	3.90	--
4.	Sulfate as SO ₃ , ppm	6.0	--
5.	Total Dissolved Solids- TDS, ppm	149.4	500 max

Remarks: All test results indicate compliance with the Saudi Aramco standard 09-SAMSS-088.

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Reviewed By: Imran Ahmed
CTTA # : 0556



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