

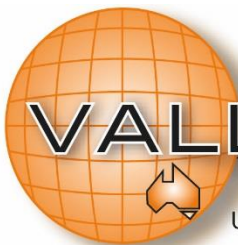


MACKA'S
SAND & SOIL
SUPPLIES

Macka's Screened Sand for
Asphalt & Concrete
2 0 1 6



*Specification Compliance with:
AS2758.1, AS4058,
B80, R53, R82, R83, RMS 3152*




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		Macka's Sand - Screened Sand - Williamtown 2016 - Result Summary - Asphalt Aggregate Specification Compliance			
Property	Units	Test Method	Result	Specification	
				AS2758.5	RMS 3152
				Asphalt Aggregates	Aggregates for Asphalt
Uncompacted Bulk Density	t/m3	AS1141.4	1.49		
Compacted Bulk Density	t/m3	AS1141.4	1.62		
Particle Density (SSD)	t/m3	AS1141.5	2.63	Project Specification	Report
Particle Density (Dry)	t/m3	AS1141.5	2.62	Project Specification	Report
Water Absorption	%	AS1141.5	0.4	Project Specification	max 1.5% (quartz sands)
Particle Size Distribution:					
% Finer Than 2.36 mm	%	AS1289.3.6.1	100		
% Finer Than 1.18 mm	%	AS1289.3.6.1	100		
% Finer Than 0.600 mm	%	AS1289.3.6.1	100		
% Finer Than 0.425 mm	%	AS1289.3.6.1	89		
% Finer Than 0.300mm	%	AS1289.3.6.1	40		
% Finer Than 0.250mm	%	AS1289.3.6.1	11		
% Finer Than 0.212mm	%	AS1289.3.6.1	3		
% Finer Than 0.150mm	%	AS1289.3.6.1	1		
% Finer Than 0.106mm	%	AS1289.3.6.1	1		
% Finer Than 0.075mm	%	AS1289.3.6.1	0		
% Finer Than 2.36 mm	%	AS1141.11.1 / T201	100	+/-6% from nominated	+/-6% from nominated
% Finer Than 1.18 mm	%	AS1141.11.1 / T201	100	+/-6% from nominated	+/-6% from nominated
% Finer Than 0.600 mm	%	AS1141.11.1 / T201	100	+/-5% from nominated	+/-5% from nominated
% Finer Than 0.425 mm	%	AS1141.11.1 / T201	89	+/-5% from nominated	+/-5% from nominated
% Finer Than 0.300mm	%	AS1141.11.1 / T201	40	+/-5% from nominated	+/-5% from nominated
% Finer Than 0.150mm	%	AS1141.11.1 / T201	1	+/-3% from nominated	+/-3% from nominated
% Finer Than 0.075mm	%	AS1141.11.1 / T201	0	+/-2% from nominated	+/-2% from nominated
% Finer Than 0.075mm	%	AS1141.12 / T201	0.4	-	Report
% Finer Than 0.002mm	%	AS1141.13	N/A	-	-
Sodium Sulphate Soundness	%	AS1141.24	0.6	max 16	max 12
Light Particles	%	AS1141.31	0		
Clay & Fine Silt	%	AS1141.33	1		
Organic Impurities		AS1141.34	FAIL		
Organic Matter Content	%	AS1289.4.1.1	<0.1		
Sugar		AS1141.35	Absent		
Methylene Blue Adsorption Value (MBV)	g/mg	T659	4.0		
MBV75 Value	-	Calculated	1.6		
Acid Insoluble Residue	%	Tex-612-J	97		
Micro-Deval Loss	%	ASTM D7428	3.7		
Flow Cone Time	s	T279	19.9		
Acid Soluble Salts:					
Chlorides	%	AS1012.20	<0.001		
Sulfates	%	AS1012.20	<0.01		
Alkali Aggregate Reactivity		T363 (Comparable to AS1141.60.1)	Slowly Reactive		
Petrographic Analysis		ASTM C295	REPORT		
Moisture	%	T120	3.3		
Linear Shrinkage	%	AS1289.3.4.1	0		
Plasticity Index	%	T109	NP		
Maximum Dry Density	t/m3	AS1289.5.5.1	1.66		
Resistivity	Ω.m	AS1289.4.4.1	22		
Salinity	mS/cm	APHA 2510B	0.014		
pH Value	pH	AS1289.4.3.1	6.5		



Macka's Sand - Screened Sand - Williamtown 2016 - Result Summary - Concrete Aggregate Specification Compliance

Property	Units	Test Method	Result	Specification			
				AS2758.1	B80	R83	R82
				Concrete Aggregates	Concrete Work for Bridges	Concrete Pavement Base	Lean-Mix Concrete Subbase
Uncompacted Bulk Density	t/m3	AS1141.4	1.49				min 1.2
Compacted Bulk Density	t/m3	AS1141.4	1.62			min 1.2	min 1.2
Particle Density (SSD)	t/m3	AS1141.5	2.63				
Particle Density (Dry)	t/m3	AS1141.5	2.62	Normal weight aggregate min 2.1, max 3.2	Normal weight aggregate min 2.1, max 3.2	Normal weight aggregate min 2.1, max 3.2	Normal weight aggregate min 2.1, max 3.2
Water Absorption	%	AS1141.5	0.4	max 2	max 2.5	max 5.0	max 5
Particle Size Distribution:							
% Finer Than 2.36 mm	%	AS1289.3.6.1	100				
% Finer Than 1.18 mm	%	AS1289.3.6.1	100				
% Finer Than 0.600 mm	%	AS1289.3.6.1	100				
% Finer Than 0.425 mm	%	AS1289.3.6.1	89				
% Finer Than 0.300mm	%	AS1289.3.6.1	40				
% Finer Than 0.250mm	%	AS1289.3.6.1	11				
% Finer Than 0.212mm	%	AS1289.3.6.1	3				
% Finer Than 0.150mm	%	AS1289.3.6.1	1				
% Finer Than 0.106mm	%	AS1289.3.6.1	1				
% Finer Than 0.075mm	%	AS1289.3.6.1	0				
% Finer Than 2.36 mm	%	AS1141.11.1 / T201	100	+/- 5% from nominated	65 to 95, +/- 10% from nominated		60 to 100, +/- 5% from nominated
% Finer Than 1.18 mm	%	AS1141.11.1 / T201	100	+/- 10% from nominated	40 to 85, +/- 10% from nominated		30 to 100, +/- 10% from nominated
% Finer Than 0.600 mm	%	AS1141.11.1 / T201	100	+/- 15% from nominated	24 to 60, +/- 10% from nominated		15 to 100, +/- 15% from nominated
% Finer Than 0.425 mm	%	AS1141.11.1 / T201	89				
% Finer Than 0.300mm	%	AS1141.11.1 / T201	40	+/- 10% from nominated	8 to 25, +/- 5% from nominated		5 to 50, +/- 10% from nominated
% Finer Than 0.150mm	%	AS1141.11.1 / T201	1	+/- 5% from nominated	1 to 8, +/- 2% from nominated		0 to 20, +/- 5% from nominated
% Finer Than 0.075mm	%	AS1141.11.1 / T201	0	0 to 5	0 to 5		0 to 5
% Finer Than 0.075mm	%	AS1141.12 / T201	0.4	0 to 5	0 to 5	Report for Calculation of Total	0 to 5
% Finer Than 0.002mm	%	AS1141.13	N/A	max 1	max 1	Report for Calculation of Total	max 1
Sodium Sulphate Soundness	%	AS1141.24	0.6	max 6	max 6	max 6.0	max 12
Light Particles	%	AS1141.31	0	max 1	max 1	max 1	max 1
Clay & Fine Silt	%	AS1141.33	1				
Organic Impurities		AS1141.34	FAIL	Pass (lighter in Colour to Reference)	PASS (lighter in Colour to Reference)	PASS or FAIL	-
Organic Matter Content	%	AS1289.4.1.1	<0.1			0.5	max 0.5
Sugar		AS1141.35	Absent	Absent	Negative (No Sugar)	< 1 part in 10000	Negative (No Sugar)
Methylene Blue Adsorption Value (MBV)	g/mg	T659	4.0			≤ 5.0	
MBV75 Value	-	Calculated	1.6			≤ 100	
Acid Insoluble Residue	%	Tex-612-J	97			min 60	
Micro-Deval Loss	%	ASTM D7428	3.7			max 15	
Flow Cone Time	s	T279	19.9			max 27	
Acid Soluble Salts:							
Chlorides	%	AS1012.20	<0.001	Report if > 0.01, Reinforced concrete max 0.4, Plain concrete max 0.15	max 0.3 kg / m3	Report if > 0.01, Reinforced concrete max 0.4, Plain concrete max 0.15	max 0.3 kg / m3
Sulfates	%	AS1012.20	<0.01	Report if > 0.01, max 5 of portland cement	Report if > 0.01, max 5% of portland cement	Report if > 0.01, max 5 of portland cement	max 5
Alkali Aggregate Reactivity		T363 (Comparable to AS1141.60.1)	Slowly Reactive	Report for assessment of reactivity	Report for assessment of reactivity, classification & action	Report for assessment of reactivity	Report for assessment of reactivity
Petrographic Analysis		ASTM C295	REPORT	Report for assessment of reactivity and classification of material	Report for assessment of reactivity & classification	Report for assessment of reactivity and classification of material	Report for assessment of reactivity and classification of material
Moisture	%	T120	3.3				
Linear Shrinkage	%	AS1289.3.4.1	0				
Plasticity Index	%	T109	NP				
Maximum Dry Density	t/m3	AS1289.5.5.1	1.66				
Resistivity	Ω.m	AS1289.4.4.1	22				
Salinity	mS/cm	APHA 2510B	0.014				
pH Value	pH	AS1289.4.3.1	6.5				
Material complies with R53 if the material complies with AS2758.1. & ASTM C295 with reference to SAAHB 79 & T363 is conducted for AAR. Material complies with AS4058 if the material complies with AS2758.1.							
Note: The material is non-conforming to B80 PSD requirements, however under clause 2.4.1 the principal may approve PSD's outside the specified limits if evidence is provided that concrete made with this PSD meets all other requirements of the B80 specification. The maximum value for the acid-soluble chloride ion content has been expressed in percentage weight of oven dried concrete as per the note in B80 table B80.5 (the minimum listed in the table kg/m3 is 0.3, divided by 0.1 kg/m3 multiplied by 0.0042 = 0.0126%).							



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Aggregate Report for Engineering Purposes

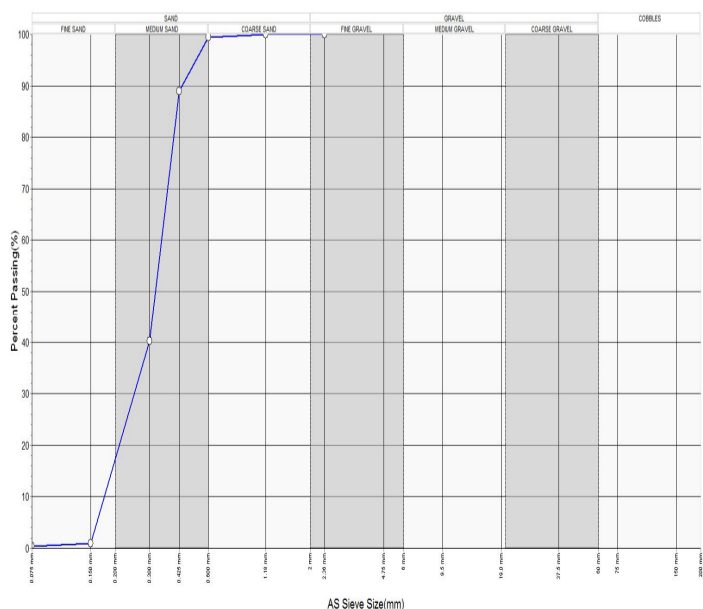
Client :	Macka's Sand & Soil Supplies	Report Number:	P203 - 88/1
Address :	2684 Nelson Bay Rd, Salt Ash, NSW	Report Date :	19/02/2016
Project Name :	Material Evaluation - Salt Ash	Order Number :	
Project Number :	P203	Test Method :	AS1141.11.1
Location:	Salt Ash Quarry , Salt Ash NSW	Page 1 of 1	

Sample Number : S16-53	Sampling Method : AS1141.3.1 (9.3)
Date Sampled : 13/01/2016	Material Source : Williamtown Quarry
Date Tested : 19/01/2016	Material Type : Screened Sand
Sampled By : James Wyatt	Remarks

SAMPLE LOCATION: Screened Sand , Site 218 , ,

Lot Number : Test Number : Specification Number :

AS Sieve Size (mm)	Sieve Analysis Percent Passing	Specification Limits	Nominal Size of Aggregate	425 micron	Test Method	Result	Specification Limits
			Nature of Bulk Sample				
100			Material Finer than 75µm		AS1141.12	0.4	
75			Density & Water Absorption (Coarse)				
63			Apparent Particle Density	t/m ³			
53			Particle Density (on a dry basis)	t/m ³			
37.5			Particle Density (on a SSD basis)	t/m ³			
26.5			Water Absorption	%			
19			Density & Water Absorption (Fine)				
16			Apparent Particle Density	t/m ³	AS1141.5	2.64	
13.2			Particle Density (on a dry basis)	t/m ³		2.62	
9.5			Particle Density (on a SSD basis)	t/m ³		2.63	
6.7			Water Absorption	%		0.4	
4.75			Bulk Density (Loose)				
2.36	100		Bulk Density (Compacted)				
1.18	100		Moisture Condition of Aggregate				
0.600	100		Particle Shape % Total Mishappen				
0.425	89		Flat	%			
0.300	40		Elongated	%			
0.150	1		Flat and Elongated	%			
0.075	0		Particle Shape % Total Mishappen				
			Flat	%			
			Elongated	%			
			Flat and Elongated	%			
			Wet / Dry Strength Variation				
			Wet Strength	kN			
			Dry Strength	kN			
			Wet / Dry Strength Variation	%			
			Size Fraction of Test portion				
			Breakdown				
			Size of Test Cylinder Used	mm			
			Average Least Dimension				
			mm				
			Weak Particles				
			%				
			Flakiness Index				
			Organic Impurities other than Sugar				
					AS1141.34	FAIL	
			Method of Determination				
			Visual				



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APPROVED SIGNATORY

James Wyatt

James Wyatt - Technician - Quarry Materials
NATA Accreditation Number
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Soil Particle Size Distribution Report

Client:	Macka's Sand & Soil Supplies	Report Number:	P203-(S16-53)-PSD
Address:	2684 Nelson Bay Road, Salt Ash, NSW	Report Date:	19/02/2016
Project Name:	Material Evaluation	Test Method:	AS1289.3.6.1
Project Number:	P203		
Location:	Williamtown Quarry, NSW		

Sample Number:	S16-53	Sample Location:	Williamtown Quarry - Site 218
Date Sampled:	13/01/2016	Sample Description:	Screened SAND fine to medium
Date Tested:	19/01/2016	Specification:	-
Sampled By:	Sampled by Client	Remarks:	-
Sampling Method:	Sampled by Client		

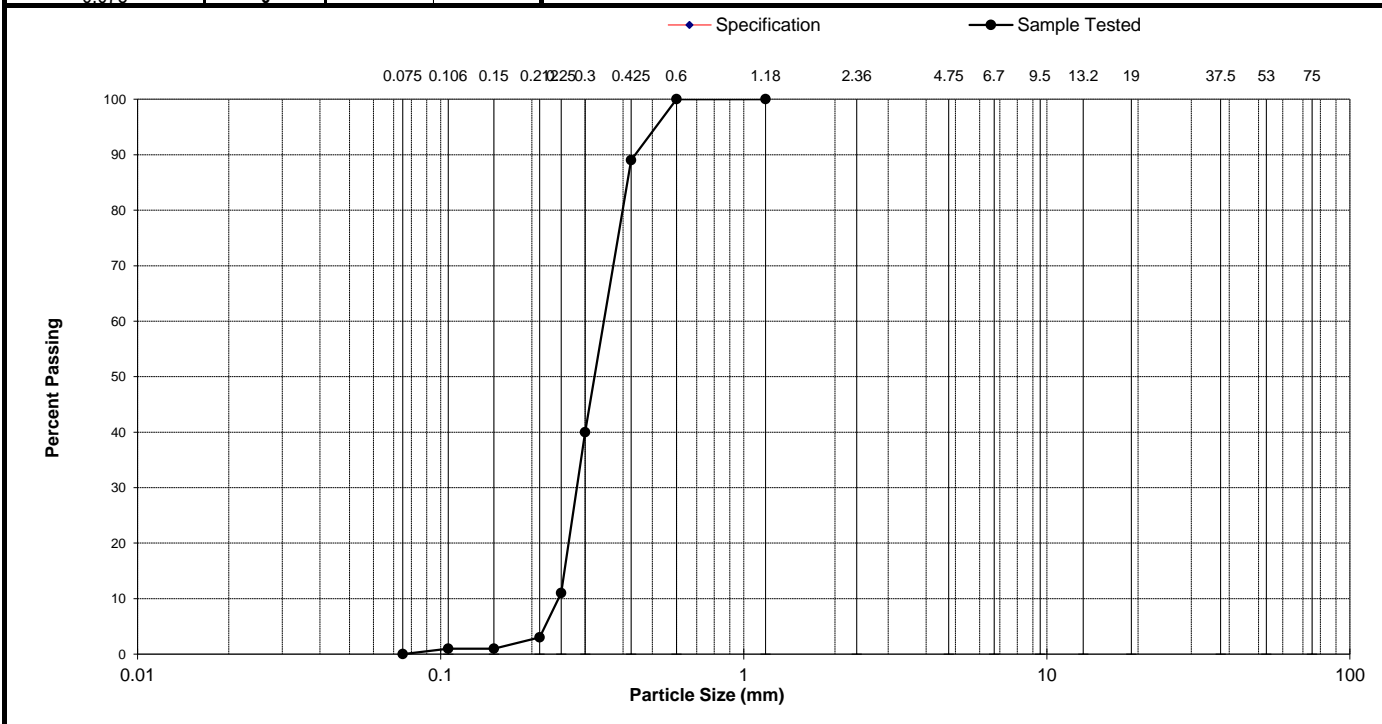
Sieve size mm	Percent Passing	Specification	
		Lower	Upper
53			
37.5			
26.5			
19			
13.2			
9.5			
6.7			
4.75			
2.36			
1.18	100		
0.60	100		
0.425	89		
0.3	40		
0.25	11		
0.212	3		
0.15	1		
0.106	1		
0.075	0		

Authorised Signatory:

James Wyatt
James Wyatt
Quarry Materials



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Light Particles

Client:	Macka's Sand & Soil Supplies	Project No:	P203
Principle:	-	Report No:	P203-(S16-53)-LP
Project:	Material Evaluation	Sample No:	S16-53
Location:	Williamtown Quarry	Sample Date:	13/01/2016

Test Method AS1141.31

Sample Detail

Material Source:	Williamtown Quarry - Site 218
Material Description:	fine to medium screened natural SAND
Nominal Size (mm):	425 micron

Result

Light Particles (%) = 0



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Authorised Signatory:

James Wyatt - Lab Manager

Date: 19/02/2016



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Methylene Blue Adsorption Value

Client:	Macka's Sand & Soil Supplies	Project No:	P203
Principle:	-	Report No:	P203-(S16-53)-MB
Project:	Materials Testing	Sample No:	S16-53
Location:	Williamtown Quarry -Site 218	Date Sampled:	13/01/2016

Test Method - RMS -T659

Sample Detail

Material Description: fine to medium screened natural SAND

Material Source: Williamtown Quarry -Site 218

Stockpile No: -

Batch / Mix No: -

For use as: Construction Purposes

Result

Methylene Blue Adsorption Value Result 1 (mg/g)= 4

Methylene Blue Adsorption Value Result 2 (mg/g)= 4

Average Methylene Blue Adsorption Value (mg/g)= 4

Note: (mg/g) refers to milligrams of dye per grams of test portion)

Remarks:



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Authorised Signatory:

James Wyatt

Date:

4/05/2015



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Atterberg Limits Report

Client :	Macka's Sand & Soil Supplies	Report Number:	P203 - 90/1
Address :	2684 Nelson Bay Rd, Salt Ash, NSW	Report Date :	19/02/2016
Project Name :	Material Evaluation - Salt Ash	Order Number :	
Project Number :	P203	Test Method :	T108, T109, T113
Location:	Salt Ash Quarry , Salt Ash NSW	Page 1 of 1	

Sample Number :	S16-53		
Test Number :			
Date Sampled :	13/01/2016		
Date Tested :	19/01/2016		
Sampled By :	James Wyatt		
Sampling Method :	AS1141.3.1 (9.3)		
Material Source :	Williamtown Quarry		
Material Type :	Screened Sand		
Sample Location :	Screened Sand Site 218		
Lot Number :			
Moisture Method :	T120		
Sample History :	Oven Dried		
Sample Preparation :	Dry		
Notes :	No Cracking or Crumbling		
Mould Length (mm) :	250		
Liquid Limit (%) :	NP		
Plastic Limit (%) :	NP		
Plasticity Index (%) :	NP		
Linear Shrinkage (%) :	0		

SPECIFICATION DETAILS

Specification Number :			
Liquid Limit - Max :			
Plasticity Index - Max :			
Linear Shrinkage - Max :			
Remarks :	-		



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Sugar in Aggregates

Client:	Macka's Sand & Soil Supplies	Project No:	P203
Principle:	-	Report No:	P203-(S16-53)-S
Project:	Materials testing	Sample No:	S16-53
Location:	Williamtown Quarry	Date:	13/01/2016

Test Method AS1141.35

Sample Detail

Date Sampled: 13/01/2016
Sample Description: fine to medium natural screened SAND
Material Source: Williamtown Quarry - Site 218
Client reference: -
Fraction Tested: As Received

Result

Presence of Sugar in Aggregate Detected (Yes/No): N

Remarks:



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Authorised Signatory:

James Wyatt - Lab Manager

Date: 19/02/2016



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Sodium Sulphate Soundness Report

Client :	Macka's Sand & Soil Supplies	Report Number:	P203 - 92/1
Address :	2684 Nelson Bay Rd, Salt Ash, NSW	Report Date :	19/02/2016
Project Name :	Material Evaluation - Salt Ash	Order Number :	
Project Number :	P203	Test Method :	AS1141.24
Location:	Salt Ash Quarry , Salt Ash NSW	Page 1 of 1	

Sample Number :	S16-53		
Test Number :			
Sampling Method :	AS1141.3.1 (9.3)		
Date Sampled :	13/01/2016		
Date Tested :	22/01/2016		
Material Type :	Screened Sand		
Material Source :	Williamtown Quarry		
Lot Number :			
Sample Location :	Screened Sand Site 218		
Percent Loss 53.0 to 37.5mm:	-		
Percent Loss 37.5 to 26.5mm:	-		
Percent Loss 26.5 to 19.0mm:	-		
Percent Loss 19.0 to 13.2mm:	-		
Percent Loss 13.2 to 9.5mm:	-		
Percent Loss 9.5 to 4.75mm:	-		
Percent Loss 4.75 to 2.36mm:	-		
Percent Loss 2.36 to 1.18mm:	-		
Percent Loss 1.18 to 0.60mm:	-		
Percent Loss 0.60 to 0.30mm:	0.6		
Sodium Sulphate Soundness (%) :	0.6		
Remarks :	-		



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pH Value Report

Client :	Macka's Sand & Soil Supplies	Report Number:	P203 - 94/1
Address :	2684 Nelson Bay Rd, Salt Ash, NSW	Report Date :	19/02/2016
Project Name :	Material Evaluation - Salt Ash	Order Number :	
Project Number :	P203	Test Method :	AS1289.4.3.1
Location:	Salt Ash Quarry , Salt Ash NSW		Page 1 of 1

Sample Number :	S16-53			
Test Number :				
Sampling Method :	AS1141.3.1 (9.3)			
Date Sampled :	13/01/2016			
Date Tested :	4/02/2016			
Material Type :	Screened Sand			
Material Source :	Williamtown Quarry			
Lot Number :				
Sample Location :	Screened Sand Site 218			
pH Value :	6.5			
Remarks :	-			



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Clay and Fine Silt Report Report

Client :	Macka's Sand & Soil Supplies	Report Number:	P203 - 96/1
Address :	2684 Nelson Bay Rd, Salt Ash, NSW	Report Date :	19/02/2016
Project Name :	Material Evaluation - Salt Ash	Order Number :	
Project Number :	P203	Test Method :	AS1141.33
Location:	Salt Ash Quarry , Salt Ash NSW	Page 1 of 1	

Sample Number :	S16-53			
Test Number :				
Sampling Method :	AS1141.3.1 (9.3)			
Date Sampled :	13/01/2016			
Date Tested :	3/02/2016			
Lot Number :				
Material Source :	Williamtown Quarry			
Material Type :	Screened Sand			
Sample Location :	Screened Sand Site 218			
Clay and Fine Silt (%) :	1			
Remarks :	-			



Accredited for compliance with ISO/IEC 17025. The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

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Minimum Maximum Report

Client :	Macka's Sand & Soil Supplies	Report Number:	P203 - 98/1
Address :	2684 Nelson Bay Rd, Salt Ash, NSW	Report Date :	19/02/2016
Project Name :	Material Evaluation - Salt Ash	Order Number :	
Project Number :	P203	Test Method :	AS1289.5.5.1
Location:	Salt Ash Quarry , Salt Ash NSW		Page 1 of 1

Sample Number :	S16-53			
Test Number :	-			
Sampling Method :	AS1141.3.1 (9.3)			
Sampled By :	James Wyatt			
Date Sampled :	13/01/2016			
Date Tested :	18/01/2016			
Material Type :	Screened Sand			
Material Source :	Williamtown Quarry			
Sample Location :	Screened Sand Site 218			
Lot Number :	-			
Moisture Method :	AS1289.2.1.1			
Vibrating Table Type :	Vibratory			
Mould Size (cm ³) :	1002			
Tested By :	Craig Sharp			
Maximum Density (t/m ³) :	1.66			
Minimum Density (t/m ³) :	1.49			
Remarks :	-			



Accredited for compliance with ISO/IEC 17025. The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

APPROVED SIGNATORY

Karl Dawes - General Manager
NATA Accreditation Number
14975

Document Code RF116-7



ABN: 50 103 355 531

VALLEY CIVIL LAB

Geotechnical, Testing & Engineering Services

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Moisture Content Report

Client :	Macka's Sand & Soil Supplies	Report Number:	P203 - 100/1
Address :	2684 Nelson Bay Rd, Salt Ash, NSW	Report Date :	19/02/2016
Project Name :	Material Evaluation - Salt Ash	Order Number :	
Project Number :	P203	Test Method :	AS1289.2.1.1
Location:	Salt Ash Quarry , Salt Ash NSW	Page 1 of 1	

Sample Number :	S16-53			
Test Number :				
Sampling Method :	AS1141.3.1 (9.3)			
Date Sampled :	13/01/2016			
Date Tested :	14/01/2016			
Material Type :	Screened Sand			
Material Source :	Williamtown Quarry			
Lot Number :				
Sample Location :	Screened Sand Site 218			
Oven Temperature (°C) :	105-110			
Soil Description :	fine to medium screened SAND			
Moisture Content (%) :	3.3			
Remarks :				



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APPROVED SIGNATORY

James Wyatt - Technician - Quarry Materials
NATA Accreditation Number
14975



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TEST REPORT

CLIENT: VALLEY CIVILAB

FILE NO: 629/16

PROJECT: Testing of Screened Sand.

REQUEST NO: 66248

TEST PROCEDURE: AS1141 - Methods for Sampling and Testing Aggregates;
RMS – Materials Test Methods Vol.1;
ASTM 7428-08e1, Standard Test Method for Resistance of Fine Aggregate to Degradation by Abrasion
in the Micro-Deval Apparatus

Sample Description:		Screened Sand – Site 218
Location:		Valley Civilab
Job No:		P203
Client sample No:		S16-53
Date Sampled:		13.1.16
Laboratory Sample No:		175089
Test Method:	Test:	Results
AS1141.5	Particle Density (Dry) t/m ³	2.62
	Particle Density (SSD) t/m ³	2.63
	Apparent Particle Density t/m ³	2.64
	Water Absorption (%)	0.2
ASTM D7428*1	Micro-Deval Abrasion Test % Loss The % loss of the control Agg. tested closest to the time at which the sample was tested = 19.6	3.7
RMS T279*2	Method of determining voids content	
	% of voids	43.6
	The mean flow time (sec.)	19.9

Sample submitted by client.

NOTE: *1 Sample tested without preparing standard grading as per ASTM D7428 Clause 8 Note 2 & Sample tested to ASTM D7428 and reported. (Test is not NATA Accredited.)

*2 Sample tested to RMS T279 and reported. (Test is not NATA Accredited.)

J. Wyatt, Q C File, File

Kamal Ali



Approved Signatory

Date 29.2.16 Serial No. 144000

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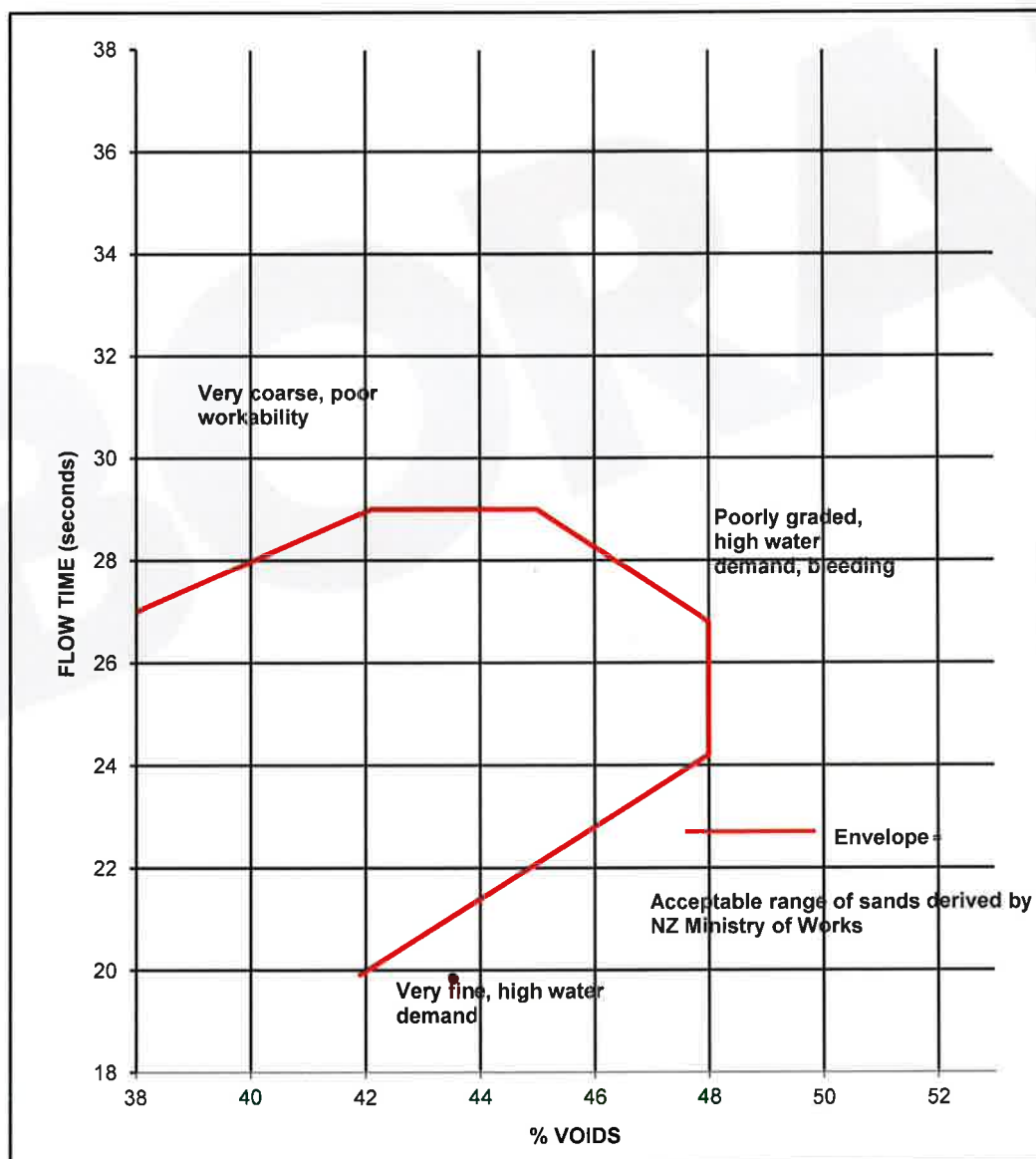
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Method for Determining Voids Content - Flow Time
RMS T279, Oct. 2012

CLIENT: VALLEY CIVILAB
PROJECT: Testing of Screened Sand
SAMPLE DESCRIPTION: Screened Sand - Site 218
TEST METHOD: RMS – Materials Test Methods Vol.1

FILE NO: 629/16
REQUEST NO: 66248
LAB SAMPLE NO: 175089
DATE SAMPLED: 13.1.16



Sample submitted by client

Kamal Ali 
SECTION HEAD – AGGREGATES
26th February 2016
J. Wyatt, Q.C. File, File.


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TEST REPORT

Client: VALLEY CIVILAB
Address: P.O.BOX 284, THORNTON, NSW 2322

File N°: 629/16**Req N°:** 65868**Date Received:** January 2016**Date Sampled:** 13/01/2016**Project:** Testing of Sand Samples For AAR RMS T363, Job No. P203**Test Method:** Accelerated Mortar Bar Test for AAR Assessment - RMS T363

LAB SAMPLE N°	SAMPLE DESCRIPTION	LOCATION
174263	Screened Sand - Site 218 Sample N° S16-53	Valley Civilab
N/A	Boral GP/SL Cement	Berrima

RESULTS:

Flow: 12% W/C Ratio: 0.41

Age (Days)	Expansion % (Average of 3 specimens)
3	0.015
7	0.038
10	0.071
14	0.123
17	0.170
21	0.208

Aggregate Reactivity Classification:

Mortar Bar Expansion (%) in 1M NaOH (80°C)		Classification
10 days	21 days	
< 0.10*	< 0.10*	Non Reactive
< 0.10*	≥ 0.10*	Slowly Reactive
≥ 0.10*	>> 0.10*	Reactive

*0.15% for naturally occurring Fine Aggregates

Notes: N/A

Karl. Dawes, Mat. File, File



Approved Signatory _____

Safwan Fawal

Date

4/03/2016

Serial No.

144135

NATA Accredited Laboratory

Accredited for compliance with ISO/IEC 17025

Number: 547

SOIL CHEMICAL PROPERTIES REPORT

Client:	Valley Civilab	Source:	S16 - 53 Site 218 Screened Sand
Address:	62 Sandringham Avenue, Thornton NSW 2322	Sample Description:	SAND
Project:	P203	Report No:	B25352-SCP
Job No:	S16022	Lab No:	B25352 (S8248)

Test Procedure:	<input type="checkbox"/>	AS1289 4.2.1	Soil Chemical Tests - Determination of a sulfate content of a natural soil and the sulfate content of the groundwater - Normal Method
	<input type="checkbox"/>	AS1289 4.3.1	Soil Chemical Tests - Determination of the pH value of a soil - Electrometric method
	<input checked="" type="checkbox"/>	AS 1289 4.4.1	Soil Chemical Tests - Determination of the electrical resistivity of a soil - Method for sands and granular material
	<input type="checkbox"/>	RMS T123	pH value of a soil (electrometric method)
	<input type="checkbox"/>	RMS T185	Resistivity of sands and granular road construction materials
	<input type="checkbox"/>	RMS T200	Chloride content of roadbase
	<input type="checkbox"/>	RMS T1010	Quantitative determination of chlorides in soil
	<input type="checkbox"/>	RMS T1011	Quantitative determination of sulphates in soil
	<input type="checkbox"/>	BS1377(1990 pt.3)	Water soluble sulphate content
	<input type="checkbox"/>	APHA 4500 H+B	pH
	<input type="checkbox"/>	APHA 4500 SO4 2-B	Sulphate
	<input type="checkbox"/>	APHA 4500 Cl-B	Chloride
	<input type="checkbox"/>	APHA 2510 & 2520-B	Electrical Conductivity
	<input type="checkbox"/>	TAI B117	Sulphides Present (This service Not Covered by NATA Accreditation)

Sampling: Sampled by Client **Date Sampled:** 13/01/2016

Preparation: Prepared in accordance with the test method

Sulphides Present	-
Sulphate content (ppm)	-
Sulphate content (%)	-
Chloride ion content (ppm)	-
Chloride ion content (%)	-
pH	-
Electrical Conductivity (uS/cm)	-
Mean Resistivity Ω .m	22
(Resistivity) Density ratio (R_D)	90
(Resistivity) Density index (I_D)	-



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NATA Accredited Laboratory Number: 14874

Authorised Signatory:

Bradley Morris

4/02/2016

Date:



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Laboratory:
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Fax: (02) 9838 8919
A.C.N. 003 614 695
A.B.N. 81 829 182 852
NATA No: 1884

ANALYTICAL REPORT for:


VALLEY CIVILAB

PO BOX 3127
THORNTON 2322

ATTN: RICHARD BADIOR

JOB NO: SAL25760C
CLIENT ORDER: P203
DATE RECEIVED: 21/01/16
DATE COMPLETED: 05/02/16
TYPE OF SAMPLES: SANDS
NO OF SAMPLES: 2




.....
Issued on 05/02/16
Lance Smith
(Chief Chemist)

ANALYTICAL REPORT

**JOB NO: SAL25760C
CLIENT ORDER: P203**

SAMPLES		SO4 % as SO3	Cl %	O.M. %	COND. uS/cm
1	S16-52	<0.01	<0.001	<0.1	25
2	S16-53	<0.01	<0.001	<0.1	14
MDL		0.01	0.001	0.1	10
Method Code		C33	C32	C4	WA2
Preparation		P5	P5	P5	P5

RESULTS ON DRY BASIS

ANALYTICAL REPORT

JOB NO: SAL25760C
CLIENT ORDER: P203

METHODS OF PREPARATION AND ANALYSIS

The tests contained in this report have been carried out on the samples as received by the laboratory.

P5 Sample dried, split and crushed to -150um
C33 Acid Soluble Sulphate - AS1012.20
C32 Acid Soluble Chloride - AS1012.20
C4 Organic Matter - AS1289.4.1.1
WA2 Conductivity - 1:5 soil/water extract
 Determined by APHA 2510B

**SYDNEY
ANALYTICAL
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Page 1 of 3

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A.B.N. 81 829 182 852
NATA No: 1884


ANALYTICAL REPORT for:

VALLEY CIVILAB

PO BOX 3127
THORNTON 2322

ATTN: RICHARD BADIOR

JOB NO: SAL25760D
CLIENT ORDER: P203
DATE RECEIVED: 16/02/16
DATE COMPLETED: 24/02/16
TYPE OF SAMPLES: SAND
NO OF SAMPLES: 1


.....
Issued on 24/02/16
Lance Smith
(Chief Chemist)

**SYDNEY
ANALYTICAL
LABORATORIES**

ANALYTICAL REPORT

JOB NO: SAL25760D
CLIENT ORDER: P203

SAMPLES	RESIDUE %
1 S16-53	97

MDL	1
Method Code	C69
Preparation	P5

RESULTS ON DRY BASIS

ANALYTICAL REPORT

JOB NO: SAL25760D
CLIENT ORDER: P203

METHODS OF PREPARATION AND ANALYSIS

The tests contained in this report have been carried out on the samples as received by the laboratory.

- P5 Sample dried, split and crushed to -150um

- C69 Acid Insoluble Residue
 Determined by Method Tex-612-J

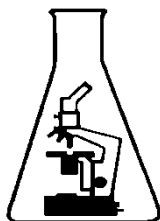
GEOCHEMPET SERVICES, BRISBANE

Geochempet Services

ABN 980 6945 3445

PETROLOGICAL and GEOCHEMICAL CONSULTANTS

Principals: K.E. Spring BSc (Hons), MAppSc and H.M. Spring B.Sc



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PETROGRAPHIC ANALYSIS ON A SCREENED SAND SAMPLE (S16-53)

prepared for

**VALLEY CIVILAB
THORNTON, NSW**

Purchase Order: VC01076A
Invoice Number: 00006968
Client Ref: James Wyatt

Issued By:

A handwritten signature in black ink, appearing to read 'L. Pearson'.

L Pearson, B.Sc (Hons)
3 February, 2016

February, 2016

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Page 1 of 5

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GEOCHEMPET SERVICES, BRISBANE

Sample Number: S16-53 **Date Sampled:** 13/01/16

Sample Type: Screened sand **Date Received:** 20/01/16

Sample Location: Screened Sand - Site 218

Project #: P203

Work Requested Petrographic analysis in relation to use in concrete; petrographic assessment of potential for alkali-silica reactivity

Methods Account taken of ASTM C295 Standard Guide for *Petrographic Assessment of Aggregates for Concrete*, the AS2758.1 – 2014 *Aggregates and rock for engineering purposes part 1; Concrete aggregates (Appendix B)*, the AS1141 Standard Guide for the *Method for sampling and testing aggregates*, of the content of the 1996 joint publication of the Cement and Concrete Association of Australia and Standards Australia, (HB 79-1996) entitled *Alkali Aggregate Reaction - Guidelines on Minimising the Risk of Damage to Concrete Structures in Australia*.

Identification Medium to fine quartz sand

Description

The sample consisted of about 0.5 kg of greyish orange, quartzose, free flowing, fine, clean sand. Clasts are mainly sub-rounded to rounded. In a crude, dry sieving test of small subsample these results were tabulated;

Sieve Size	Wt % of sample
Coarse (>1.18mm)	0.0%
Medium (>0.3mm)	70.7%
Fine (>0.075mm)	29.3%
Silt (<0.075mm)	0.0%

Clasts range up to 5mm. The sand consists predominately of quartz. The sand is clean and binocular microscopy revealed no apparent deleterious grain coatings but iron-staining is evident in the supplied sample.

When swirled in water, the sand generated no turbidity, implying that there is no free clay or silt component present.



Figure 1: Image of screened sand sample.

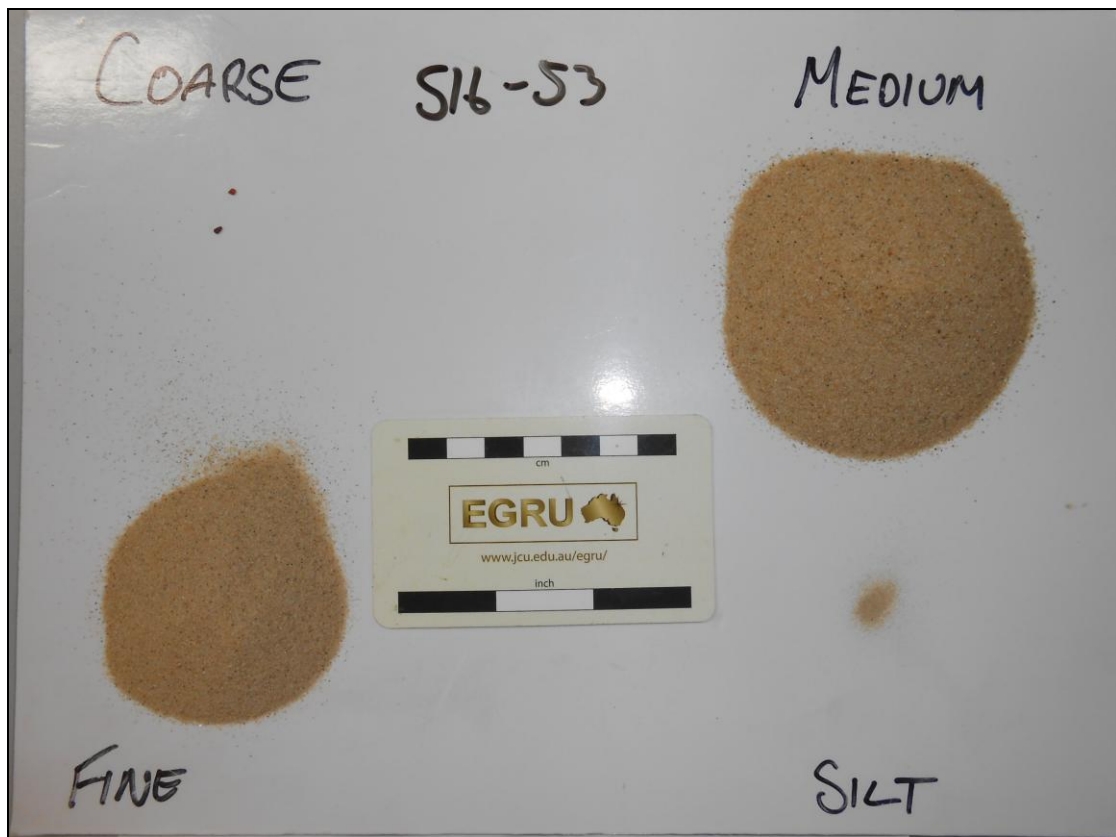


Figure 2: Image of the sieved fractions

GEOCHEMPET SERVICES, BRISBANE

A thin section was prepared for microscopic examination in transmitted polarized light. A count of 100 widely spaced points falling within sectioned sand clasts gave the following composition:

- 83% quartz as single, free, unstrained to mildly strained grains (75%) or as simple composite crystalline aggregates of quartz grains (8%)
- 10% quartz as moderately strained simple or crystalline composite grains
- <1% chert
- <1% quartzite (composed of moderately strained quartz grains and occasional muscovite flakes and iron straining)

- 4% feldspars as free grains (orthoclase and plagioclase)
- <1% heavy minerals (rutile, zircon and tourmaline)

- <1% lithic clasts of acid tuffaceous rock
- 1% lithic clasts of intermediate volcanic rock
- 1% lithic clasts of granitic rock
- 1% meta-siltstone/sandstone
- <1% lithic clasts of greenstone
- <1% volcanoclastic arenite
- trace plant matter and charcoal

In thin section the sand is seen to consist predominantly of quartz, comprising 75% quartz as single, free, unstrained to mildly strained grains and 8% quartz as similarly unstrained crystalline composite grains. Moderately strained simple and polycrystalline grains of quartz amount to 10%. Finely microcrystalline, siliceous lithic clasts of chert are present (<1%) along with <1% moderately strained quartzite.

There are 4% feldspars composed of orthoclase and slightly weathered plagioclase. Less than 1% of heavy mineral such as rutile, hornblende and tourmaline are noted.

Rounded lithic clasts of acid tuffaceous rock amount to <1%. Other lithic clasts include 1% each of volcanoclastic arenite, intermediate volcanics, meta-siltstone/sandstone, granitic rock.

Comments and Interpretations

The supplied sample of Sand (labelled S16-53) is considered to be clean, fine to medium quartz sand. It is considered to be fairly narrowly graded with about 70.7% with a grain size between 0.3 to 1.18 mm.

The sand has a **free silica content** of **about 93%**, comprising 93% as free sand grains and quartz locked in crystalline composite grains as well as an additional <1% locked within a lithic clasts of quartzite and <1% finely microcrystalline quartz in lithic clasts of acid tuffaceous tuff and chert.

Because the sand consists of mainly common quartz rounded to sub-rounded, essentially fine, mainly siliceous, quite hard, strong, and durable fragments, it is predicted to be **physically suitable for use as fine concrete sand**.

In relation to potential for alkali-silica reactivity in concrete it is noted that the sand carries about 10% of moderately strained quartz (as free grains and crystalline composite grains and in quartzite) and <1% of finely microcrystalline quartz (within clasts of chert and acid volcanic/tuffaceous rock). Thus, the sand as a whole is predicted to have **potential for mild and/or slow deleterious alkali-silica reactivity in**

GEOCHEMPET SERVICES, BRISBANE

concrete. Accordingly, it is recommended that appropriate precautions be taken in mix and engineering design.

Guidance on appropriate precautions can be obtained from the 1996 joint publication of the Cement and Concrete Association of Australia and Standards Australia, entitled *Alkali Aggregate Reaction - Guidelines on Minimising the Risk of Damage to Concrete Structures in Australia*.

Free Silica Content

The free silica content is about 93%.

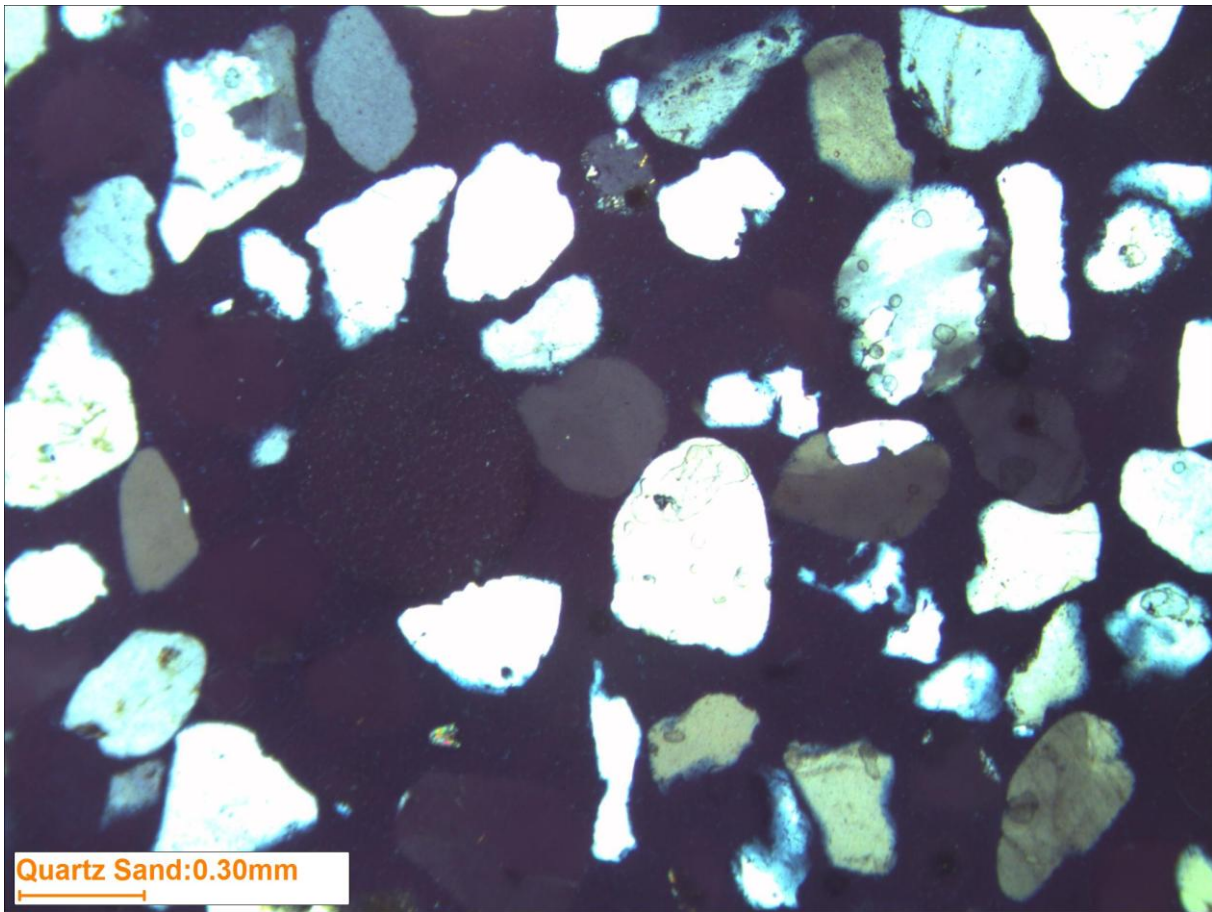


Figure 3: Image at 40x magnification in cross polarised light of the quartz grains in the sample.