



REF: 812/02/02/1/556

DATE: 26 JULY 2006

ATTENTION: LAB MANAGER

SUBJECT: 142nd INTER-LABORATORY PROFICIENCY TESTING PROGRAM

We are pleased to present the results of the 142nd Inter-laboratory Proficiency Testing Program involving the determination of Sand equivalent value of Soils and Fine Aggregates.

As in previous programs, we have assigned code numbers to participating laboratories in order to protect their identities. For this particular program please contact Dr. Yaser (Tel. No. 3027074) or Ms. Fatima (Tel. No. 3027071) to inform you which code number has been assigned to you.

You are also requested to pay to Dubai Accreditation Centre (DAC), an amount of (Dhs 418) in return for your participation in the Inter-laboratory Proficiency Testing Program (please note that the governmental laboratories are exempted from participation fees). We would like to draw your attention that payment can be made through DCI.D counter- ground floor by credit card. Should you intend to pay by cheque please address the cheque to Dubai Municipality. After payment, please submit a copy of the invoice to the Accreditation Center (Ms. Fatima in the administration building on the second floor office no. 314B).

You are kindly requested to pay the amount within one month from the date in which the result is sent to you.

We thank you for your participation and we would welcome any comments or suggestions on this and on future programs. Please do not hesitate to contact us if you need any clarification on the report.

Kind Regards

A handwritten signature in black ink, appearing to be 'Lina Qudah', written over a horizontal line.

ENG. LINA QUDAH**HEAD OF ACCREDITATION DECISIONS SECTION-DAC**

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DUBAI ACCREDITATION CENTER

Report on 142nd Inter-Laboratory Proficiency Testing Determination of Sand Equivalent System

Date: 25 July 2006

1. INTRODUCTION

This document presents the results of the 142nd Inter-Laboratory Proficiency Testing Program conducted during the months of June and July, involving the determination of sand equivalent value of soils and fine aggregate according to ASTM D 2419-2002.

This program is part of the Interlaboratory Comparison Programs organized by Dubai Accreditation Center of DM for monitoring the validity of test results of laboratories operating in Dubai as a requirement of the Local Order 52/1990 and ISO/IEC 17011:2004.

2. EXPERIMENTAL DESIGN

2.1 Participants:

A total of twelve laboratories participated in this program.

2.2 Samples tested:

The test items consisted of two batches of crushed rock sand. The sample specifications were such that the expected results of one batch are lower than the other.

From one batch, 24 samples, approximately 5 kg each, were prepared using appropriate subdividing procedure and similarly from the other set, another 24 samples were also prepared. The samples were randomly distributed to the twelve participating laboratories with each participant receiving four samples, two from each set. The samples were designated as Samples 1, 2, 3, and 4 with a unique identification number marked on each sample.

3. CONFIDENTIALITY

Each laboratory is given a Code number to maintain confidentiality of results and to protect their identities. Only the concerned laboratory knows its code number.

4. TEST METHOD

Instructions were given to the participants to test the samples for ASTM D 2419-2002.



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5. TEST RESULTS

Test results submitted by the participating laboratories are presented in Appendix A. The numbers in the column headings of the table represent the code numbers of the participating laboratories.

6. EVALUATION OF RESULTS

6.1 Please refer to the document **DAC-G3-03** Robust Z-Score Analysis for the methodologies of analysis.

6.2 Calculations of z-scores from the results

Appendix B gives the details of the calculation of the Z-Score. The Z score analysis is based on an internationally accepted procedure being used by accreditation bodies implementing Interlaboratory comparison programs.

6.3 Outlier results

After evaluating the Z-Score, the following results were considered outliers:

Test	Labs outside the z-scores ± 3	Type of Outlier
Sand Equivalent Value	3-1, 3-2, 8-1 & 8-2	Between Labs
	3-1, 3-2, 5-2 & 9-1	Within Labs

The test results provided by the abovementioned laboratories are outside the Z score limits of ± 3 . However since the results are within the repeatability limits of the test (as per the Internal document “Quality Control – Frequency and Control Limits” no.: RLP-13-02(EM), Rev. 2 established by Engineering Materials Section in DCLD which states that if the lab results are less than 80, then the repeatability limits shall be the median ± 12.5 , and if the lab results are more than 80, then the repeatability limits shall be the median ± 22.6), then the said results are acceptable.

7. APPENDICES

7.1 Appendix A: Raw Data

7.2 Appendix B: Calculation of z-scores and other statistics

7.3 Appendix C: Charts

Sand Equivalent Value %

Lab#	1	2	3	4
Lab1	82.0	82.0	62.0	62.0
Lab2	81.0	82.0	60.0	61.0
Lab3	80.0	81.0	56.0	54.0
Lab4	82.0	82.0	61.0	61.0
Lab5	80.0	79.0	60.0	61.0
Lab6	81.0	82.0	60.0	61.0
Lab7	82.0	83.0	63.0	62.0
Lab8	85.0	86.0	65.0	66.0
Lab9	83.0	82.0	58.0	59.0
Lab10	81.0	82.0	61.0	62.0
Lab11	82.0	82.0	60.0	61.0
Lab 12	82.0	82.0	62.0	62.0

Appendix B:Z-scores

Sand Equivalent Value%

Result#	S1 S2	S3 S4	S1+S3 S2+S4	S1-S3 S2-S4	Between Labs z- score	Within Labs z- score
Lab1-1	82.00	62.00	144.00	20.00	0.450	-1.349
Lab1-2	82.00	62.00	144.00	20.00	0.450	-1.349
Lab2-1	81.00	60.00	141.00	21.00	-0.899	0.000
Lab2-2	82.00	61.00	143.00	21.00	0.000	0.000
Lab3-1	80.00	56.00	136.00	24.00	-3.148	4.047
Lab3-2	81.00	54.00	135.00	27.00	-3.597	8.094
Lab4-1	82.00	61.00	143.00	21.00	0.000	0.000
Lab4-2	82.00	61.00	143.00	21.00	0.000	0.000
Lab5-1	80.00	60.00	140.00	20.00	-1.349	-1.349
Lab5-2	79.00	61.00	140.00	18.00	-1.349	-4.047
Lab6-1	81.00	60.00	141.00	21.00	-0.899	0.000
Lab6-2	82.00	61.00	143.00	21.00	0.000	0.000
Lab7-1	82.00	63.00	145.00	19.00	0.899	-2.698
Lab7-2	83.00	62.00	145.00	21.00	0.899	0.000
Lab8-1	85.00	65.00	150.00	20.00	3.148	-1.349
Lab8-2	86.00	66.00	152.00	20.00	4.047	-1.349
Lab9-1	83.00	58.00	141.00	25.00	-0.899	5.396
Lab9-2	82.00	59.00	141.00	23.00	-0.899	2.698
Lab10-1	81.00	61.00	142.00	20.00	-0.450	-1.349
Lab10-2	82.00	62.00	144.00	20.00	0.450	-1.349
Lab11-1	82.00	60.00	142.00	22.00	-0.450	1.349
Lab11-2	82.00	61.00	143.00	21.00	0.000	0.000
Lab12-1	82.00	62.00	144.00	20.00	0.450	-1.349
Lab12-2	82.00	62.00	144.00	20.00	0.450	-1.349

No. of Results	24.0	24.0	24.0	24.0
Median	82.000	61.000	143.000	21.000
Q 1	81.000	60.000	141.000	20.000
Q 3	82.000	62.000	144.000	21.000
Inter Q Range	1.000	2.000	3.000	1.000
Normalzd IQR	0.741	1.483	2.224	0.741
Robust CV,%	0.904	2.430	1.555	3.530
Minimum	79.000	54.000	135.000	18.000
Maximum	86.000	66.000	152.000	27.000
Range	7.000	12.000	17.000	9.000

Appendix C: Charts

