

DUBAI ACCREDITATION DEPARTMENT

REPORT ON PTP 178TH INTER-LABORATORY PROFICIENCY TESTING PROGRAM DETERMINATION OF GOLD IN GOLD JEWELLERY ALLOYS

Date: 29 June 2009

1. INTRODUCTION

This document presents the results of the 178th inter-laboratory proficiency-testing program conducted during the month of June involving the determination of **gold in gold jewellery alloys** with four laboratories participating.

This program is part of the Inter-laboratory Comparison Programs organized by Dubai Accreditation Department (DAC) of Dubai Municipality (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.

For this inter-laboratory comparison proficiency testing program DAC used an approved subcontractor for the supply of samples. All other activities are undertaken by Dubai Accreditation Department.

2. EXPERIMENTAL DESIGN

2.1 Participants:

A total of four laboratories participated in this program. One of them is governmental laboratory.

2.2 Samples Tested:

The samples, consisted of gold of approximately 2 grams each, were distributed to all participating laboratories. The test samples were prepared from one gold bar divided into four samples, which were randomly assigned to the four participating laboratories with each participant being given one gold strip with a unique identification number provided during the time of collection.

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. If you have doubt about your code number please don't hesitate to contact Dr. Yaser Saleh Rahag (Tel: 302 7074) to know your code number.

DUBAI ACCREDITATION DEPARTMENT

4. TEST METHOD

Instructions were given to the participants to test the samples for determination of Gold in Gold Jewellery alloys-Cupellation Method (Fire Assay) as per BS EN ISO 11426:1999.

5. TEST RESULTS

The test results submitted by the participating laboratories are presented in Appendix A. In order to protect the identity of the participating laboratories, each one was assigned a code number. The numbers in the column headings, Lab #, of the tables represents the code numbers for the participating laboratories.

6. EVALUATION OF RESULTS

6.1 Method of Analysis

The analysis of the participant's results is based on *ISO 13528:2005 (Statistical Methods for the Use in Proficiency Testing by Inter-laboratory Comparisons)*

6.2 Calculations of Z- scores

Appendix B gives the details of the calculation of the laboratories results and their Z-Scores which are obtained from the raw data. Also Z- Score and participant's results are represented in a bar chart and X-Y scattered plots C. The Z-Score calculation is based on an international Standard (*ISO 13528:2005*).

6.3 Outlier Results

After evaluating the Z-Score, the results from all participating laboratories are found within the Z-score limits of ± 3 , therefore, all the results are acceptable.

However, one participating laboratory has showed Z-score values higher than **two** which representing **not outlier** but a warning limit, this laboratory is advised to investigate the potential root cause of such results.

7. APPENDICES

7.1 Appendix A: Raw Data

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

7.3 Appendix C: Charts

---- End of Report ----

رؤيتنا: بناء مدينة متميزة تتوفر فيها رفاهية العيش ومقومات النجاح.
Our Vision : To create an excellent city that provides the essence of success and comfort of living.

Gold in Gold Jewellery Alloys

Appendix A: Raw Data

Lab #	Results
CPLS 1	917.000
LAB 5	916.700
LAB 10	916.800
LAB 53	916.667

Gold in Gold Jewellery Alloys

Appendix B: Calculation of z-scores and other statistics

Iteration	0		1		2		3		4		5		6		Z Score
$\delta = 1.5 s^*$	---	$\bar{x} - x^*$	0.15	$(\bar{x} - x^*)^2$	0.14	$(\bar{x} - x^*)^2$	0.14	$(\bar{x} - x^*)^2$	0.14	$(\bar{x} - x^*)^2$	0.14	$(\bar{x} - x^*)^2$	0.14	$(\bar{x} - x^*)^2$	
$x^* - \delta$	---		916.60		916.62		916.62		916.62		916.62		916.62		916.62
$x^* + \delta$	---		916.90		916.91		916.91		916.91		916.91		916.91		916.91
LAB 53	916.667	0.08	916.67	0.01	916.67	0.01	916.67	0.01	916.67	0.01	916.67	0.01	916.67	0.01	-1.04
LAB 5	916.700	0.05	916.70	0.00	916.70	0.00	916.70	0.00	916.70	0.00	916.70	0.00	916.70	0.00	-0.69
LAB 10	916.800	0.05	916.80	0.00	916.80	0.00	916.80	0.00	916.80	0.00	916.80	0.00	916.80	0.00	0.35
CPLS 1	917.000	0.25	916.90	0.02	916.90	0.02	916.90	0.02	916.90	0.02	916.90	0.02	916.90	0.02	2.45

Average	916.79		916.77	0.03	916.77	0.03	916.77	0.03	916.77	0.03	916.77	0.03	916.77	0.03
SD	0.15		0.10	0.01	0.10	0.01	0.10	0.01	0.10	0.01	0.10	0.01	0.10	0.01
New x^*	916.75	0.07	916.77	0.08	916.77	0.08	916.77	0.08	916.77	0.08	916.77	0.08	916.766	0.08
New s^*	0.10		0.10		0.10		0.10		0.10		0.10		0.095	

N 4

Target value	916.766
Low Acceptable	916.480
High Acceptable	917.053
Acceptable Range	916.480 - 917.053

Gold in Gold Jewellery Alloys

Appendix C:Charts

