

Test Scope: Soil Matrix Comparison Tests**Sample Information and Methods:**

Assigned value; It will be determined based on the median value of results for up to 4 participants and the average result value for more than 4 participants in accordance with ISO 17043 and ISO 17025 requirements. ISO 13528 conditions will be followed in the statistical calculations to be used. Soil samples obtained from agricultural lands or industrial zones in Turkey were used as samples. Homogenization and stability conditions will be determined before the samples are sent to the participants. The most suitable transportation and storage conditions will be determined according to the sample matrix and parameter, and the participants will be informed. Spike method can be applied to determine the parameters. Only laboratories that are accredited or in the process of accreditation from the parameters to which results will be presented participate in our comparison tests.

Test Condition for Samples:

The samples will be sent to the participants at the same time, and the participants should start the analysis within 48 hours, if possible, or if there are samples to be kept during this period, they should be kept at 22 - 24 oC, in an environment not exposed to moisture. Before starting the analysis, the bottle should be mixed with some shaking to re-homogenize the sample. Participants will perform their analyzes in accordance with their own analysis methods.

1. pH Tests:

The minimum weight of 50 g sample to be used for the studies is 7 g. 7 gr soil sample is weighed and 35 ml of 1 mol/l KCl solution is added on it. This heterogeneous solution is shaken with a mechanical shaker (180 rpm) for 1 hour. After the temperature of the solution is stabilized at 20 oC, the pH of the solution is measured from the upper level of the solution. This sample was sieved to a particle size less than or equal to 500 µm and mixed according to the in-house procedure to ensure homogeneity. Protect the sample from moisture to achieve sufficient homogeneity.

2. Conductivity Tests:

The minimum weight of 50 g sample to be used for the studies is 7 g. 7 g of soil sample is weighed and 35 ml of ultrapure water is added. This heterogeneous solution is shaken with a mechanical shaker (180 rpm) for 30 minutes. The sample is kept and stored until the soil settles. After the temperature of the solution is stabilized at 25 oC, the conductivity of the solution is measured from the top of the solution. This sample was sieved to a particle size less than or equal to 500 µm and mixed according to the in-house procedure to ensure homogeneity. Protect the sample from moisture to achieve sufficient homogeneity.

3. Total Organic Matter Test:

This 25 g sample in the unopened container should be shaken vertically and horizontally. Then you can perform your analysis in accordance with your method. All precautions should be taken to prevent contamination and moisture of the material during bottle opening and sample handling. The bottle cap should not be left open for a long time. This sample was sieved to a particle size of less than or equal to 250 µm and mixed according to the in-house procedure to ensure homogeneity. Protect the sample from moisture to achieve sufficient homogeneity.

Data Entry:

On the Excel-formatted "Result-Entry-Form" that will be sent to you by e-mail, you only need to fill in the blank fields and send it to us. The fields you will fill in order; Your results (using only numbers without units and commas for decimal places), your analysis method, and your uncertainty value (if any).

Range of Parameters:

Parameters	Unit	Range
pH	pH Unit	5 - 10
Conductivity	uS/cm	50 - 3000
Total Organic Matters	%	2 - 20

Privacy Policy:

All information about participants and results are saved in our own digital records. Any part of this report is never shared with other participants or 3. part share holders with participant name. Representation of Lab ID codes are just known by Labsert.

Objections:

Participants can appeal the entire test program or the test results. The objection period is 3 working days following the publication of the report. Objections can be made by e-mail or postal mail.

Compatibility:

This report was published to show the results have Z' score of < 1, Z'score of ≥ 1 and < 2 and Z'score of > 2 according to ISO 17043 scopes. Within the scope of this comparison test, statistical calculations, homogeneity and stability tests were applied and the results were presented in this report In accordance with ISO 13528. Assigned value is calculated from overall median of the total results and standard deviation (S.D) is calculated as overall median standard deviation according to participant number ($p < 4$).

Assigned Value:

First, the Grubbs outlier test is applied to participant results. For the final results, the median value calculated over the presented results is considered as assigned value.

Standard Deviation of Test Program:

First, the Grubbs outlier test is applied to participant results. For the final results, the median standard deviation calculated over the presented results is considered as standard deviation of the test program.

Uncertainty of Assigned Value:

The standard uncertainties of assigned values determined as described in Article 5 are obtained by calculating the standard error of the participants' means ($u = s/\sqrt{n}$) for each parameter.

Z' Scores:

If the number of participants in the comparison tests organized by Labsert "Z-Test" is <4 , the Z'-score calculation is used for the performance evaluations of the participants. The Z'-Score calculation, whose formula is given below, can be also used when the assigned value uncertainty cannot be neglected. The meaning of neglection is given below with the formula.

$$U_x \leq 0,3 * \sigma$$

If the formula given above can be matched for U_x value and the number of participants is more than 6, then Z score can be considered with the formula below.

$$Z = (x - x') / \sigma$$

As we described above, Z' score calculation is used for the laboratory comparison tests that we provide with the number of participants <4 instead of Z score.

$$Z' = (x - x') / \sqrt{\sigma^2 - u_x^2}$$

x: Participant Result

σ : Standard Deviation of Test

x': Assigned Value

U: Uncertainty of Assigned Value

Reports

As a result of the comparison test, a single final report is prepared for all participants separately for each parameter. This report is the final report. The calculations are done using an Excel spreadsheet or dedicated software.

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