Guide Round Robin Test 2024 EN

By participating in a Round Robin Test, the performance of a laboratory is compared with the performance of other laboratories. This allows systematic errors to be uncovered and corrected accordingly. In this way, the performance and efficiency of a laboratory can be improved and confidence in the test values increased accordingly. Round Robin Tests can also be used to obtain data for validating measurement methods.

Regularly conducted Round Robin Tests are an important control instrument for a certified or accredited quality management system as well as for in-house solutions. Participation in Round Robin Tests is a prerequisite for accreditation in accordance with ISO 17025. All interested parties are authorised to participate in TESTEX AG Round Robin Tests.

How do I register for the Round Robin Tests?

Registration for participation takes place via the TESTEX AG Round Robin Test hub (https://testex.quodata.de/). If you are not yet registered as a participant in our online hub, you can also register as a participant via this link. Please refer to our guide "Guide Online-Hub TESTEX AG" for registration, login as a participant or other activities in the online hub.

The time window for registrations for participation in round tests closes automatically. Participation cannot be guaranteed in the event of late registration.

What are the terms of payment?

Invoices are due on receipt and payable immediately. Invoices are issued after receipt of the registration. A collective invoice will be issued for registrations for several round tests. If the participant's payment is not received by TESTEX at least two weeks before the published dispatch date of the sample for the Round Robin Test in question, TESTEX shall be entitled to retain the Round Robin Test sample or to exclude the participant from participation in the Round Robin Test in question. TESTEX shall inform the participant of the retention or exclusion.

What is the procedure and what rules apply to the Round Robin Test?

After your registration, participation in the desired Round Robin Test will be confirmed by email. Materials will be sent to you on the published dispatch date of the selected Round Robin Test. The results of a round test must be submitted via the online hub (https://testex.quodata.de/) no later than the last day of the deadline published in the online hub. The time window for submitting results closes automatically. In the event of late submission, consideration cannot be guaranteed. In this case, TESTEX is authorised to exclude the participant from the evaluation without reimbursement of costs.

To ensure that the results are as meaningful as possible, we strongly recommend that you observe the following points:

- In order to fulfil the purpose of the quality check, the samples must be treated as normal, ongoing orders. To ensure this, no information on the expected value range, the characteristic values or possible main sources of error are given in the instructions.
- The storage, production and handling of test items must be carried out in accordance with standard laboratory practice.
- If, depending on the type of textile provided, the test standard to be analysed permits several options for sampling, test execution or other variations, the Round Robin Test participant is responsible for the correct interpretation of the test standard. In this case, the factors relevant to the decision are listed in the instructions enclosed with the Round Robin Test material.
- In the case of test standards that provide for several test variants regardless of the material used, the variant is specified in the instructions.
- Tests that are not carried out in accordance with the instructions of the Round Robin Test centre are labelled and evaluated separately if necessary.
- If several options for air conditioning, pre-treatment or other points are possible according to the test standard, TESTEX AG will specify the preferred option.
- The Round Robin Test participant is responsible for correctly determining the result in accordance with the current version of the test standard.
- All partial results required by the test standard in the "Test report" chapter or similarly named results must be entered in the results forms. Missing values are labelled as outliers.
- Significant deviations in the performance of the test from the specifications of TESTEX AG, which result in the test values not being comparable with the test values obtained in accordance with the instructions, may result in the test values being labelled as outliers.
- Deviations from the specifications of the test standard or the instructions of TESTEX AG must be noted in the comment fields.
- Additional test material can be obtained from TESTEX AG. The costs will be charged. Lost or damaged test items will be replaced free of charge.

After closing the results input window, the results are statistically analysed and the performance is evaluated on the basis of the characteristic values achieved. The reports are compiled from the data obtained. For details on the evaluation, see "Which methods are used for performance evaluation?". In the event of obvious discrepancies such as spelling mistakes, transposed figures or mix-ups, you will be contacted by us and asked to analyse the submitted data in more detail. After the initial evaluation has been sent, the possibility of corrections is limited to the following options:

- Error in data transmission
- Errors on the part of the Round Robin Test centre. These can be, for example, mix-ups of materials or errors in labelling
- Material defects such as detectable inhomogeneity of the material

If you have an outlier in one of the measured values, it is important to determine the cause of the deviation and counteract it with corrective and preventive measures. See point "What can you do if a test value has been labelled as an outlier?"

Which Round Robin Tests can be booked?

All round tests open for booking are visible in our online hub after logging in.

How can confidentiality be guaranteed?

All information relating to the Round Robin Test is treated in strict confidence in accordance with the requirements of ISO 17043. The evaluation is carried out anonymously. Each participant is assigned a confidential code for each Round Robin Test, which is only known within the Round Robin Test department at TESTEX AG. You can find the lab codes in the hub under the "Reports" tab.

What work is subcontracted?

Work relating to the design and execution of Round Robin Tests is not subcontracted. This applies in particular to the planning of the Round Robin Test programme, the performance evaluation and the authorisation of the final report. Tests on materials to check their suitability for the Round Robin Test in terms of homogeneity and stability are subcontracted. This concerns only the determination of the test values, not the statistical analysis, their evaluation and selection of the test objects.

Where do the materials used come from?

The materials are obtained from various sources. On the one hand, materials from industry are used. On the other hand, materials are used that have been specially produced as reference materials for use in Round Robin Tests.

How are the materials selected?

Regardless of the nature and source of the material, all materials used are tested for homogeneity and stability. In order to analyse homogeneity, a selected lead parameter is tested on at least three representative samples.

The suitability of the materials in terms of stability is assessed before the Round Robin Test using the characteristics of the material and the findings from previous Round Robin Tests. As the ageing of materials is not a linear process, it does not make sense to perform a stability test before carrying out the Round Robin Test. In order to check the stability conclusively, the values from the homogeneity test are compared with values that were determined at the time the Round Robin Test was carried out and analysed using the same statistical methods that are used in the homogeneity test.

We have several test devices on which the same test is carried out. Can I take part in a Round Robin Test with all devices?

In principle, the TESTEX AG Round Robin Test is intended for **a** device in **a** laboratory. The quantity of material is also adapted to this. TESTEX AG is not obliged to provide the participant with sufficient material for several devices. For selected Round Robin Tests, we offer the option of entering values from a second test device. In the analyses, the Lab Codes are supplemented with a and b if this option was used. The participant is responsible for clearly labelling the device to enable subsequent differentiation of the results; the required input lines are provided by TESTEX AG.

In principle, any number of devices per test laboratory can participate in a Round Robin Test by creating a separate laboratory, see the "Online Hub" guide.

We have several laboratories in which the same tests are carried out. How can we participate in the Round Robin Test with the different laboratories?

Each test laboratory can be registered separately and book all approved Round Robin Tests. The online hub can be used to define users who can switch between laboratories in the view, see the "Online Hub" guide.

How can a booked Round Robin Test be cancelled?

Cancellations for one or more Round Robin Tests must be made in writing to rrt@testex.com. Cancellation is possible from receipt of registration until one week before the planned dispatch of the material for the respective round test. In order to cover costs already incurred, 50% of the costs of the respective Round Robin Test will be charged in the event of cancellation. In the event of a cancellation received by TESTEX later than one week before the material is dispatched, the participant will be charged the full cost of the Round Robin Test in question.

What methods are used to assess performance?

The evaluation is carried out in accordance with ISO 17043 and ISO 13528 and is based on the comparison of the individual laboratory with the total of the submitted values (consensus value). For the evaluation, the consensus value has the advantage over the "true value", which is usually determined by a reference laboratory, that certain fluctuations in the properties of the material are better reflected and a possible error or deviation of the reference laboratory has less influence on the evaluation.

A wide variety of standards are applied in the TESTEX Round Robin Test. The majority of the tests are quantitative tests. Quantitative tests lead to test values that can be assigned to the interval scale. This scale is analysed using the statistical methods described below:

- Q/Hampel for determining the robust mean value. This is calculated in accordance with ISO 13528 (C.25) and (C.26).
- Q method for calculating the robust standard deviation according to ISO 13528 formula (C.22), (C.23) and (C.24).

Under certain circumstances, the determined test values are censored data. Censored data are values whose exact size is only incompletely known. For example, it is known from censored data that it is smaller than a certain limit value. However, the exact value is unknown. Censored data therefore represent missing values, but with the additional information relating to a threshold. Censored data is handled in accordance with ISO 13528 and a different method is used depending on the type of censoring:

Left-censored data (e.g. in pollutant analyses, if value < LOQ). The exact values of data that are smaller than a certain threshold are unknown. Statistically evaluated is 0.5 x "<" value.

Right-censored data (e.g. when determining the material strength, if value > maximum test force of the device). The exact values of data that are greater than a certain threshold are unknown. The value is statistically evaluated without taking the " > " sign into account.

Deviations from this mode may be necessary in individual cases. If a deviation is made, this will be noted in the evaluation.

The outliers are determined by calculating the z-Score. This describes the distance between the test value determined by the laboratory and the consensus value of all participants. The distance is given in the number of standard deviations from the mean value. The following rule applies:

$z \leq 1.5$	means "good" performance and does not cause a message
$1.5 < z < 2.5$	indicates a "questionable" performance and causes a warning message
$z \geq 2.5$	means "unsatisfactory" performance and causes an outlier message

Statistical methods cannot be used for tests that provide a qualitative statement. No deviation from the mode is permitted here.

How is the evaluation structured?

A final report is produced at the end of the programme. This contains the results reported by the participants, the results of the statistical analyses, graphical representations of the data and comments.

What can be done if a test value has been labelled as an outlier?

A correction of the values is only possible in exceptional cases after the initial evaluation has been sent, see point: "What is the procedure and what rules apply to the Round Robin Test?". In general, sufficient material is provided to repeat the test. This allows the cause of the error to be investigated. In "Selection, Use and Interpretation of Proficiency Testing (PT) Schemes", Brookman and Mann describe questions that may be relevant in root cause analysis, see page 8.

How can objections be raised or suggestions for improvement made?

Objections and suggestions for improvement can be submitted at any time in writing by email to the address (rrtcomplaint@testex.com).

What is the number of participants and who takes part in the Round Robin Tests?

The expected type and number of participants can be seen in the TESTEX AG online hub. The minimum number of participants is 7. Fewer participants can also be accepted, but the significance of the statistical evaluation is weakened by the low number of participants.

Organisational matters

All personnel involved in the design and execution of Round Robin Tests are employed by Testex AG and fulfil the requirements of ISO 17043 in terms of qualifications and experience.

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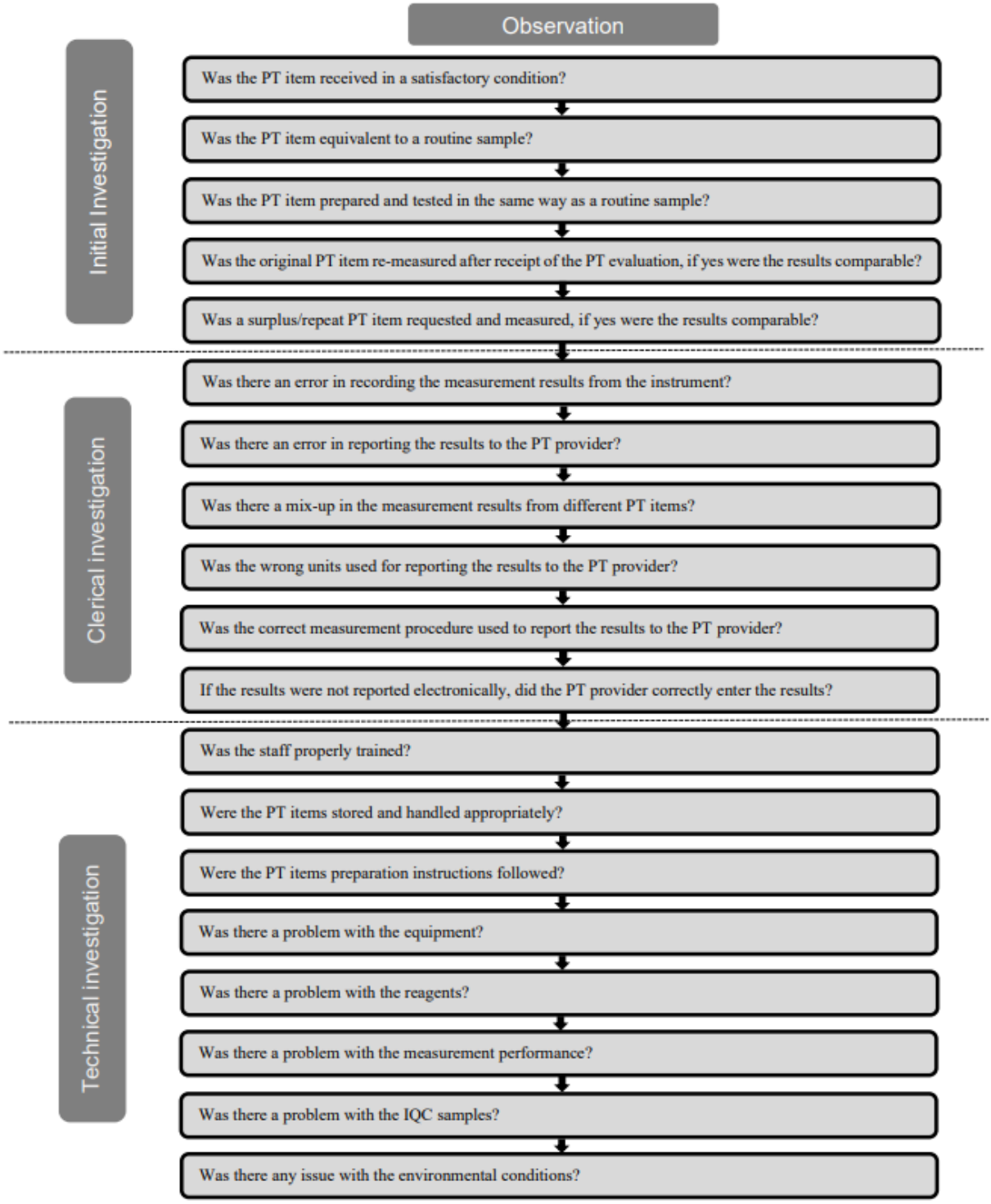

(Brookman, Mann, 2021)