



ITAK

PROFICIENCY TEST PLAN FOR ALUMINA ANALYSIS

2025

ACCREDITATION

ITAK – Instituto de Tecnologia August Kekulé is an ABNT NBR ISO / IEC 17043 Proficiency Testing provider for the following matrices: Iron Ore, Gold Ore, Copper Ore and Concentrates, Nickel Ore, Silver, Ferroniobium, Phosphate Rock and Phosphate Concentrate and Bauxite, which are accredited by “Coordenação Geral de Acreditação do Inmetro (Cgcre)”, ABNT NBR ISO/IEC 17043 (PEP-0021).

Seeking to expand this important work to other matrices, **ITAK** is launching in **2025**, two rounds of the **Proficiency Test Program for Alumina Analysis** and invites the laboratories in such market to join the group of participants. We aim to provide continuous improvement practices in performing chemical analyses to our customers worldwide.

BENEFITS

Besides being an impartial tool for assessing laboratory performance, participation in proficiency tests has several benefits, such as:

- ✓ Adherence to one of the requirements of **ISO / IEC 17025** for companies already Accredited, or searching for accreditation on this ISO standard or other quality systems;
- ✓ Increased metrological reliability of the results obtained by the laboratory from their levels of precision and accuracy;
- ✓ Comparison with other industry laboratories and finding improvement opportunities to increase performance level (benchmarking);
- ✓ The opportunity for evaluation and comparison of methodologies, seeking one that best suits the level of accuracy required for specific parameters and levels;
- ✓ Awareness of the type of deviations that may be made by the laboratory (systematic or random), guiding actions to eliminate/minimise them;
- ✓ Identify staff training needs; and/or normalisation or improvement of analytical methods.

CONFIDENTIALITY

All information regarding Proficiency Test participants is treated as confidential and proprietary to the client. The only publicly available information in each round's report is the names of the participants. A confidentiality agreement with ITAK binds individuals who have access to this information.

When required by law or authorised by contractual commitments, ITAK will disclose confidential information, and the affected participant will be notified of such disclosures, unless prohibited by law.

If we receive information about the participant from sources other than the participant, such as a complainant or regulatory authority, ITAK will ensure that this information remains confidential. The identity of these sources will also be kept confidential and not disclosed to the participant unless the source agrees to share that information.

According to the confidentiality protocol implemented by ITAK, laboratories are assigned distinct numerical codes. Each participant is granted access exclusively to their code, effectively preventing any

possibility of collusion among participants. In case of any suspected collusion, the Program's coordination team will conduct a thorough investigation and take appropriate action.

The report for each round includes a list of participants, excluding lab codes to maintain confidentiality. By confirming participation, the laboratory agrees to have your name included in the report. If you prefer not to have your name mentioned, please inform us via email at interlab@itak.com.br.

Participating laboratories understand and agree that their reported results may be utilised by ITAK for the characterisation of reference materials used as test items in the Proficiency Tests. Confidentiality will always be maintained.

STATISTICAL TREATMENT

The choice of the method to obtain the assigned value, the standard deviation for proficiency assessment, and the estimated uncertainty of the proficiency test will depend on the number of participants and data consistency, using statistical approaches and techniques from the ISO 5725, ISO 17043 and ISO 13528 series standards.

If this Proficiency Test uses a Statistical model with assigned values and Standard deviation from Certified Reference Materials, a minimum number of participants is not required.

If the Proficiency Test uses a Statistical model with Consensus values, a minimum of six participants is required.

If the Proficiency Test uses a Statistical model that involves Consensus values from expert participants after removing outliers, a minimum of three participants is required for evaluation.

According to the results of accuracy assessments, the performance of the participants can be classified as satisfactory, unsatisfactory, or questionable for each evaluated parameter.

If the participant does not provide complete data for evaluation for some specific analyses, the report will be issued as “insufficient data”.

Each statistical technique has its use limited and is conditioned by the number of participants who report numerically valid results and are approved in the Evaluation and Treatment Outliers.

SAMPLES AND ANALYSES

For each round, ITAK will send 10 samples referring to two reference materials of different concentrations (05 sachets containing 20 g each), totalling 10 sachets.

The samples used in the Proficiency Testing Program are Reference Materials (RMs) with proven homogeneity and stability. RMs are produced by ITAK following the ISO 9001 Quality Management System and ISO quality protocols (ISO Series Guide 30 to 35) and ISO 17034 - General requirements for the competence of reference materials producers.

It is the participant's responsibility to follow up and clarify the shipment through customs or the carrier when it is required. If samples come back to ITAK because of incorrect address information or because the laboratory has not clarified the shipment through customs, ITAK can charge reshipping expenses.

Test items can be shipped by using customer accounts on FedEx, DHL, and UPS carriers.

Along with the samples, there will also be instructions directing the Participating Laboratory on how to treat the samples, carry out the analyses, and report the analytical results.

Any communication about this Proficiency Testing, such as doubts, reporting of results, technical reports, and certificates of participation, is by software at www.itak.com.br/app for participating laboratories.

In addition to their test results and methodologies, ITAK PT participants should also report the measurement uncertainties of each analysed parameter (if available). It must be sent as the Standard Uncertainty Combined, without application of any coverage factor, which would make it Expanded Uncertainty. Such data should be reported in specific fields in the ITAK PT Management System.

Invalid analytical results, such as "less than" or "zero", are not amenable to statistical evaluation. Therefore, in these situations, ITAK will not do the participant performance evaluation.

The participating laboratory is required to undertake one (1) independent determination in each sample, preferably in five (05) different days, analysing a couple a day, employing one or more validated analytical methods. The methods used should be reported with the results. The samples must be analysed as ordinary routine laboratory samples, without any special treatment.

The parameters to be determined in each sample are listed below:

Al₂O₃, CaO, Fe₂O₃, Ga₂O₃, MnO, Na₂O, P₂O₅, SiO₂, TiO₂, V₂O₅, ZnO, S, LOI (300°C) and LOI (1100°C).

The samples will be sent by the ITAK from João Monlevade / MG, under the guidance of the Participant Laboratory, using an appropriate way to transport them. In case of loss or damage to any test item, ITAK will evaluate the possibility of replacement, which will depend on how it can be transported and the delivery deadline so as not to compromise the schedule.

ANALYTICAL METHODS

The participating laboratory in the Alumina Analysis Proficiency Testing Program is required to use its standard procedures to analyse the specified parameters.

While ITAK suggests the following analytical methods, laboratories are allowed to use alternative methods as long as these methods are properly validated.

The suggested analytical methods are:

- **For Al₂O₃ (%), CaO (%), Fe₂O₃ (%), Ga₂O₃ (%), MnO (%), Na₂O (%), P₂O₅ (%), SiO₂ (%), TiO₂ (%), V₂O₅ (%), and ZnO (%):** fusion method followed by determination through X-ray Fluorescence Spectrometry or ICP-OES/MS.
- **For sulfur (S %):** combustion method followed by determination through infrared analysis.
- **For Loss on Ignition (LOI %):** gravimetric method, either via a muffle furnace or Thermogravimetric Analysis (TGA).

SCHEDULE

The proposed schedule is presented in the table below, but can be adjusted as required. The official schedule should be viewed through the PTP Management System.

| Steps of the Program | 1 st Round |
|---|--|
| 1- Sending invitations | 06/Aug |
| 2-Confirmation of participants | 20/Aug |
| 3- Sending samples to the participants | 29/Aug |
| 4- Receiving samples by the participant | 19/Sep |
| 5- Completion of the Analyses and reporting the results by the participants | 20/Oct |
| 6- Preparation and delivery of the Performance Report to the participants. | 10/Nov |
| 7-Registration of appeals | Up to 10 days after the report is submitted |
| 8-Resposta a apelações | Up to 15 days after the filing of the appeal |

Note: the dates in bold (item 5) must be met to avoid delays in issuing the results, which can compromise the subsequent rounds of the program.

If delays occur, the Program Coordinator must be contacted to assess the possibility of extending the deadline without compromising the schedule or causing loss to the other participants.

ITAK may close the rounds without the missing results if there are unjustified delays.

For each round, the instructions will be sent along with the samples, with guidelines on how the laboratory should proceed, and specific information about the samples, such as the expected levels of the analyte (s).

REQUIREMENTS FOR PARTICIPATION

The Laboratory interested in participating in this Proficiency Testing Program should be a legally responsible organisation with the technical capacity and equipment to carry out the chemical analysis of its scope.

PERFORMANCE REPORT

For each round, ITAK will issue a personalised digital Interlaboratory Performance Evaluation Report under confidentiality identification for the internal evaluation of the Participant Laboratory and identifying improvement opportunities.

The Performance Report is structured following the ISO / IEC 17043 requirements.

If the participant wants to receive the report of another unit of the same business group, it must be requested directly to the person in charge or through a formal authorisation from the person in charge. Preliminary reports will not be issued.

If required, ITAK may rectify or ratify reports provided that such corrections do not require further statistical processing of data. All rectification generates a new version and a new report number that will replace the previous version when published and communicated.

If required by law, the performance report can be delivered or presented to the Regulatory Entity or Public Prosecutor's Office without the participant's permission and will be formally and previously communicated.

If it is not possible to deliver the performance report on the date planned in the schedule, the participants will be promptly notified about the possible delay and the new delivery date.

ITAK Interlaboratory Performance Report is accepted as an ISO/IEC 17025 requirement.

APPEAL

The participant of ITAK's Proficiency Test has the right to appeal against its performance evaluation on the Technical Report.

The participants who have doubts or disagree with the performance evaluation must register their appeal in the "Appeals" field in the Proficiency Test Management System.

Meeting a requirement of ABNT NBR ISO/IEC 17043 - Conformity assessment – General requirements for proficiency testing, ITAK has a procedure that manages this process.

INVESTMENT

Request a proposal by email: interlab@itak.com.br

ITAK has an attractive discount policy, such as participation of several units of companies belonging to the same economic group, discounts for laboratories' participation in more than one PT, discounts for purchase of ITAK's CRM, etc.

Find out more by contacting us at: interlab@itak.com.br

All customs duties are participants' responsibility.

ITAK must receive the total amount without any deductions, such as bank fees or taxes applied. It is necessary to take them into account before sending us the payment.

SUBCONTRACT ACTIVITIES

For this PT, homogeneity test analyses of Reference Materials used as samples (test items) can be subcontracted from competent laboratories.

All laboratories are evaluated and qualified in the ITAK's Quality Management System for these analyses, providing results with which, after appropriate statistical treatment, the designated values, standard deviations, and uncertainties are obtained for the Proficiency Test.

COORDINATION TEAM

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