



ITAK



PROFICIENCY TESTING PLAN FOR IRON ORE

2020

ACCREDITATION

ITAK – Instituto de Tecnologia August Kekulé is an ABNT NBR ISO / IEC 17043 Proficiency Testing provider accredited by “Coordenação Geral de Acreditação do Inmetro (Cgcre)”, for the following PT's: Iron Ore, Gold Ore, Copper Ore and Concentrates, Nickel Ore, Silver and Niobium Iron Alloy, and aims to provide its customers with the practice of continually improving their performance in performing chemical analyzes worldwide.

Continuing this important work, **ITAK** will promote in **2020**, five (5) rounds of **Proficiency Testing Program for Iron Ore Analyzes** and invites the laboratories of this market to join the group of participants.

BENEFITS

In addition, to be an impartial tool of assessment laboratory performance, participation in round-robin programs has several benefits, such as:

- ✓ Adherence to one of the requirements of **ISO / IEC 17025** for companies seeking or already are Accredited 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 raise the level of performance (benchmarking);
- ✓ The opportunity of evaluation and comparison of methodologies seeking one that best suits the level of accuracy required for specific parameters and levels;
- ✓ Knowledge of the type of deviations that may be committed by the laboratory (systematic or random) directing actions in eliminating/minimizing them;
- ✓ Identify staff training needs; and/or normalization or improvement of analytical methods.

ADDITIONAL BENEFIT: CERTIFICATION OF MATRIX FROM THE PARTICIPANT

ITAK is recognized worldwide as a manufacturer and supplier of Certified Reference Materials (CRM's) of various geochemical matrices. As an additional benefit to participants of this Proficiency Test, laboratories may submit materials from their routine in order ITAK can prepare Reference Materials and include them as Test Items in the rounds of this PT.

The participant must keep in touch to define the material collection criteria, shipping, amount and characteristics of the samples to be sent. ITAK will be responsible for homogenization, chemical analysis and homogeneity assessment to approve its using in the PT. This benefit is free of costs.

Attention: The cost and fees related to the raw material and CRM shipping will be the customer's responsibility.

This benefit is limited to the first 8 participants subscribed.

At the end of the Round in which Reference Material (RM) is used, it will be certified becoming a CRM and the donor will receive a number of aliquots previously announced.

All participating laboratories must be aware that their reported results may be used by ITAK in the certification of reference materials used in the PT as test items, preserving the data confidentiality.

CONFIDENTIALITY

According to a confidentiality protocol adopted by ITAK, the labs are identified by specific numerical codes, and the participant knowledge and access only to their own code, avoiding collusion among participants, which in case of occurrence or suspicion of occurrence, it will be properly investigated and handled by the program coordination team.

The performance comments described in the final reports are also confidential and are intended to provide important information to responsible for laboratories, so that they have a thorough evaluation of the quality aspects of their analysis and know where to act effectively to correct possible deviations.

The experimental results obtained by the Participant Laboratory or even their performance in the Proficiency Testing may be disclosed to third parties with the consent of the Participant Laboratory.

STATISTICAL TREATMENT

For this Proficiency Testing, is necessary a number of participants greater than 6 (six) laboratories. The results obtained by the participants of the Proficiency Program are evaluated according to methodologies and statistical tools referenced by the ISO standards.

According to the results for accuracy assessments, the participating laboratory can be classified as proficient (satisfactory performance) for the analysis of a specific parameter, or not proficient if its performance is unsatisfactory or questionable.

Each used statistical technique has it's limited and conditioned to the number of participants who reported numerically valid results and approved in the Evaluation and Treatment Outliers.

SAMPLES AND ANALYSES

In 2020, the ITAK will launch five (05) rounds of Proficiency Testing Program for Iron Ore Analyses. In each round, it will be sent a pair of samples with different levels of concentration. Each sample will be split into five (05) sachets containing 8 g each, totaling 10 sachets per round.

The samples used in the Proficiency Testing Program are Reference Materials (MR's) with proven homogeneity and stability. MR's are produced by ITAK in accordance with the ISO 9001: 2015 Quality Management System and ISO quality protocols (ISO Series Guide 30 to 35) and ABNT NBR ISO 17034 - General requirements for the competence of reference materials producers.

To the participating laboratory is required to undertake one (1) independent determination in each sample, preferably in five (05) different days, analyzing a couple a day, employing one or more

validated analytical methods. The methods used should be reported with the results. The samples must be analyzed as ordinary routine samples of the laboratory, without any special treatment.

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

Total Fe, FeO, Al₂O₃, SiO₂, Mn, TiO₂, P, CaO, MgO, K₂O, Na₂O and LOI (Loss On Ignition)

The samples will be sent by ITAK from the city of João Monlevade / MG, under the guidance of the Participant Laboratory, using appropriate and viable type of transportation. In case of loss or damage to any item test, the ITAK will evaluate the possibility of replacement of the same, which will depend on the types of transportation and delivery time so as not to compromise the program schedule.

It is the participant's responsibility to follow up and take samples at customs or carrier when necessary. If samples come back to ITAK because of incorrect address information or because the laboratory has not taken the samples at customs, ITAK can charge the expenses for reshipping.

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

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

Communications about this Proficiency Testing, such as doubts, reporting of results, technical reports and certificates of participation, will be sent using the software developed by ITAK that will be available on website <https://pep.itak.com.br/> for the participating laboratories.

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

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

ANALYTICAL METHODS

The Participant Laboratory of the Proficiency Testing for Iron Ore Analyses should use its routine procedure in Iron Ore Analyses.

The suggested analytical methods for the Proficiency Testing Program in Iron Ore Analyses are:

- ✓ **Fe Total:** Fusion and determination by XRF or Titrimetric Method;
- ✓ **FeO:** Titrimetric Method;
- ✓ **Al₂O₃, Mn, TiO₂, P, CaO, MgO, K₂O, Na₂O:** Fusion and determination by AAS or ICP-OES or XRF;
- ✓ **SiO₂:** Digestion followed by gravimetric method or Fusion and determination by XRF;

- ✓ **Fe Total:** Método de fusão e determinação por Espectrometria de Fluorescência de Raios X ou Método Titulométrico;
 - ✓ **FeO:** Método Titulométrico;
 - ✓ **Al₂O₃, Mn, TiO₂, P, CaO, MgO, K₂O, Na₂O:** Método de fusão e determinação por Espectrofotometria de Absorção Atômica e/ou Espectrometria de Emissão Óptica (ICP) e/ou Fluorescência de Raios X;
 - ✓ **SiO₂:** Digestão seguida de Método gravimétrico ou Método de fusão e determinação por Espectrometria de Fluorescência de Raios X;
- Perda ao Fogo (PF ou Perda Por Calcinação):** Método gravimétrico.

SCHEDULE FOR 2020 ROUNDS

The proposed schedule for 2020 is presented in the table below but can be adjusted as required. The official schedule should be visited through the PTP Management System.

Steps of Program	1st Round 2020 (38th round)	2nd Round 2020 (39th round)	3rd Round 2020 (40th round)	4th Round 2020 (41st round)	5th Round 2020 (42nd round)
1- Sending invitations	13/Dec/2019	--	--	--	--
2-Confirmation of participants	03/Feb/2020				
3- Sending samples to the participants	07/Feb/2020	03/Apr/2020	22/May/2020	03/Jul/2020	31/Aug/2020
4- Receiving samples by the participant	24/Feb/2020	20/Apr/2020	05/Jun/2020	18/Jul/2020	14/Sep/2020
5- Completion of the Analyses and report the results by the participants	16/Mar/2020	05/May/2020	25/Jun/2020	08/Aug/2020	05/Oct/2020
6- Preparation and delivery of Performance Report to the participants.	06/Apr/2020	25/May/2020	03/Jul/2020	28/Aug/2020	26/Oct/2020

Attention: the dates in bold (item 5) must be met in order to avoid delays in issuing the results, which can compromise the subsequent rounds of the program. On the verge of delays occur, the Program Coordination must be contacted to assess the possibility of extending the deadline without compromising schedule or injury to the other participants. In the event of an undue delay, the ITAK may close the round without the results of the participant(s) in arrears.

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

REQUIREMENTS FOR PARTICIPATION

The Laboratory interested in taking part of the Proficiency Testing Program for Iron Ore Analysis - ITAK - 2020 should be a legally responsible organization, possess technical capacity and equipment to carry out the chemical analysis of its scope, complete the registration form in the ITAK website at: <https://pep.itak.com.br/login.php> , confirming its participation until the deadline stated in the schedule.

PERFORMANCE REPORT

For each round of the Proficiency Testing Program in Iron Ore Analyses – 2020, will issue a personalized 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 in accordance with 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 responsible for that site, or through a formal authorization from the responsible sent to **ITAK**. It will not issue preliminary reports.

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

ITAK Interlaboratory Performance Report is accepted as a ISO 17025 requirement.

INVESTMENT

Request us a proposal by email: tecnologia@itak.com.br

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

interlab@itak.com.br

All customs duties are participants' responsibility.

The participant is responsible for the bank transferring taxes. The bank expenses must be not shared.

SUBCONTRACT ACTIVITIES

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

COORDINATION TEAM

Bráulio de Freitas Pessoa – Technical Director

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