BRNO UNIVERSITY OF TECHNOLOGY

FACULTY OF CIVIL ENGINEERING
institute of building testing

ilac-MRA

Z 7008

PROFICIENCY TESTING PLAN

ZO 2025/1 – Steel Testing
(ZO 6892)

Proficiency Testing Provider at the SZK FAST
Veveří 95, 602 00 Brno
Czech Republic

szk.fce.vutbr.cz
ptprovider.cz

Coordinator	Assoc. Prof. Ing. Tomáš Vymazal, Ph.D.	Approved: April 13, 2026
Supervisor	Ing. Petr Misák, Ph.D.	Approved: April 13, 2026
Approved for PT Provider	Assoc. Prof. Ing. Tomáš Vymazal, Ph.D.	Approved: April 13, 2026

Contents

1 Basic Information about the Proficiency Testing Program

The aim of the Proficiency Testing Program (PTP) is to compare and evaluate the results of tests conducted on steel according to EN ISO 6892-1 [1], EN 10 080 [2], EN ISO 6892-2 [3], EN ISO 148-1 [4], EN ISO 6506-1 [5], EN ISO 6508-1 [6], EN ISO 6507-1 [7], EN ISO 7438 [8], EN 10 164 [9] and SEP 1390 [10].

The program strives to provide objective information about the measuring skills of PTP participants. The basic criterion for participation is timely registration for the program, and the prerequisites for obtaining the Certificate of Participation and the Final Report on the Results of Interlaboratory Comparison are timely payment of the fee and adherence to the schedule.

Important dates:

Registration deadline:	**August 31, 2026**
Distribution of samples:	**October 12–16, 2026**
Realization/initiation of testing:	**November 9, 2026**
Results sent to the organizer:	**November 27, 2026**
Evaluation/presentation of Certificate of Participation:	**January 31, 2027**

Submit of test results – exclusively via http://ptprovider.cz/OutcomesCode. To log in, it is necessary to enter the participant's code, which is automatically sent when registering in PTP.

2 Implementation of the Proficiency Testing Scheme

Applications for this Proficiency Testing Scheme (PTS) are accepted from testing laboratories or other entities expressing interest. The minimum number of participants for each part of the program is 5. In the event that the number of participants approaches the minimum, the PTS coordinator will consider using Horn's procedure to determine the assigned value and its uncertainty. The maximum number of participants is 30. If the minimum number of participants is not reached, the Proficiency Testing Provider (PTP) reserves the right to cancel the PTS. Subsequently, the procedure follows Chapter 3 of the directive "Appeals and Complaints Management" [11], which is available at www.ptprovider.cz.

The program is implemented for the following characteristics:

1. **EN ISO 6892-1 [1] Tensile testing at ambient temperature (B500B bars)**
   - Characteristic: $R_{p0,2}$, R_m, A, Z
   - Units: N/mm^2, N/mm^2, %, %
   - Specification according to EN 10 080 [2]: B500B
   - Test pieces: Bars ϕ 10 mm, length 500 mm
   - Number of determinations: 5
2. **EN ISO 6892-1 [1] Tensile testing at ambient temperature (circular cross-section)**
   - Characteristic: $R_{p0,2}$, R_m, A, Z
   - Units: N/mm^2, N/mm^2, %, %
   - Specification: test piece according to EN ISO 6892-1 [1]
   - Test pieces: metallic materials
   - Number of determinations: 5
   - Use the nominal cross-sectional area for calculation.
3. **EN ISO 6892-1 [1] Tensile testing at ambient temperature (flat cross-section)**
   - Characteristic: $R_{p0,2}$, R_m, A, Z
   - Units: N/mm^2, N/mm^2, %, %
   - Specification: flat test piece according to EN ISO 6892-1 [1]

- Test pieces: metallic materials
- Number of determinations: 5
- Use the nominal cross-sectional area for calculation.

4. **EN ISO 6892-2 [3] Tensile testing at elevated temperature (threaded circular cross-section)**
   - Characteristic: $R_{p0,2}$, R_m, A, Z
   - Units: N/mm^2, N/mm^2, %, %
   - Specification: metallic materials according to EN ISO 6892-2 [3], property class 4.8
   - Number of determinations: 5
   - Use the nominal cross-sectional area for calculation.
5. **EN ISO 6892-1 [1] Tensile testing at low temperature (flat cross-section)**
   - Characteristic: $R_{p0,2}$, R_m, A, Z
   - Units: N/mm^2, N/mm^2, %, %
   - Specification according to EN ISO 898-1 [12]: property class 4.8
   - Number of determinations: 5
   - Use the nominal cross-sectional area for calculation.
6. **EN ISO 148-1 [4] Charpy pendulum impact test at room temperature**
   - Characteristic: $KV2$, SFA, LE
   - Units: J, N, mm
   - Specification: Charpy V-notch, 5 pcs
   - Test pieces: Standard test specimen 10x10x55 mm
   - Number of determinations: 5
7. **EN ISO 148-1 [4] Charpy pendulum impact test at elevated temperature**
   - Characteristic: $KV2$, SFA, LE
   - Units: J, N, mm
   - Specification: Charpy V-notch, 5 pcs
   - Test pieces: Standard test specimen 10x10x55 mm
   - Number of determinations: 5
8. **EN ISO 148-1 [4] Charpy pendulum impact test at reduced temperature**
   - Characteristic: $KV2$, SFA, LE
   - Units: J, N, mm
   - Specification: Charpy V-notch, 5 pcs
   - Test pieces: Standard test specimen 10x10x55 mm
   - Number of determinations: 5
9. **EN ISO 6506-1 [5] Brinell hardness test**
   - Characteristic: HBW
   - Units: -
   - Specification: -
   - Test pieces: 10 indentations, hardness reference block
   - Number of determinations: 10

10. **EN ISO 6508-1 [6] Rockwell hardness test**
    - Characteristic: *HRC*
    - Units: -
    - Specification: -
    - Test pieces: 10 indentations, hardness reference block
    - Number of determinations: 10
11. **EN ISO 6507-1 [7] Vickers hardness test**
    - Characteristic: *HV10*
    - Units: -
    - Specification: -
    - Test pieces: 10 indentations, hardness reference block
    - Number of determinations: 10
    - Instructions: Degrease the blocks with a cotton swab.
12. **EN ISO 7438 [8] Bend test**
    - Characteristic: Occurrence of cracks
    - Units: -
    - Specification: metallic materials, to be specified
    - Test pieces: flat specimen
    - Number of determinations: 3
13. **EN 10 164 [9] Lamellar tearing**
    - Characteristic: *Z* - reduction of area
    - Units: %
    - Specification: -
    - Test pieces: 3
    - Number of determinations: 3
14. **SEP 1390 [10] Bead-on-plate weldability test**
    - Characteristic: Occurrence and measurement of cracks
    - Units: mm
    - Specification: metallic materials, to be specified
    - Test pieces: 3
    - Number of determinations: 3

2.1 Ensuring Homogeneity and Stability

PT Provider employees and any suppliers they may utilize are aware of the significance of the homogeneity and stability of test specimens for the results of the Proficiency Testing Program. The homogeneity and stability of specimens is ensured in the following ways:

1. samples are from one production charge,
2. the distribution of specimens made of more production charge so as to ensure homogeneity of bodies in the field of testing of related characteristics,
3. by review the material before releasing participants.

2.2 Instructions for Eliminating Major Sources of Errors and Risks

PTP participants have the obligation:

- to handle the proficiency testing materials in the same way they handle the majority of routinely tested samples,
- to follow the instructions of the PT Provider employee responsible for the PTP, especially regarding the type of testing carried out, the number of result determinations and the PT schedule,
- to state measurement uncertainties in accordance with their documented procedures, including the corresponding expansion coefficient. Participants will use expansion coefficient 2, which approximately represents the 95 % reliability level, unless stated otherwise,
- adhere to the rules and principles of ethical behavior, avoiding unfair practices that could negatively impact the evaluation of the PT program,
- follow occupational health and safety and fire protection regulations, using only electrical equipment and instruments with valid inspections,
- to send the test results obtained during proficiency testing, including measurement uncertainties, to the PT Provider by the set deadline (see part 1).

2.3 PTP Schedule

All other information, forms and records not included in this document are accessible in updated form at http://ptprovider.cz/?lang=en.

3 Procedures used in the Statistical Analysis of Laboratory Results

Procedures used in the statistical analysis of proficiency testing programs can be found here: http://ptprovider.cz/?lang=en.

4 Certificate of Participation and the Final Report on the Results of Interlaboratory Comparison

The PT Provider gives expert commentary on participant efficiency evaluation in the Final Report as part of training courses the PT Provider organises. The Final Report preserves the anonymity of the PTP participants. Each participant, or the participant's test results, is represented by an ID number. The Certificate of Participation in the PT programme is part of the Final Report. The Certificate is unique to each participant and includes the participant's ID number.

5 Safeguards for Confidentiality

The identity of PTP participants is confidential and only known to persons/subjects involved with the PTP. All participant information is considered confidential by the PT Provider. The participant may renounce this confidentiality for the purposes of discussion and mutual assistance until the PTP results are obtained. The PT Provider reveals the proficiency testing results to no third party with the sole exception of a written request by a regulatory authority submitted prior to the commencement of the PTP and which has been granted a written consent by the PTP participants.

6 Related Documents

- Quality Handbook of the PT Provider at the SZK FAST
- Cancellation and Complaint Proceedings available at http://ptprovider.cz/?lang=en [11]
- MPA 20 – 01 - . . for application of EN ISO/IEC 17043 Concordance Assessment – General Requirements for Proficiency Testing in the Accreditation System of the Czech Republic.

References

[1] EN ISO 6892-1. *Metallic materials - Tensile testing - Part 1: Method of test at room temperature*. 2021.

[2] EN 10080. *Steel for the reinforcement of concrete - Weldable reinforcing steel - General*. 2005.

[3] EN ISO 6892-2. *Metallic materials - Tensile testing - Part 2: Method of test at elevated temperature*. 2018.

[4] EN ISO 148-1. *Metallic materials - Charpy pendulum impact test - Part 1: Test method*. 2016.

[5] EN ISO 6506-1. *Metallic materials - Brinell hardness test - Part 1: Test method*. 2014.

[6] EN ISO 6508-1. *Metallic materials - Rockwell hardness test - Part 1: Test method*. 2023.

[7] EN ISO 6507-1. *Metallic materials - Vickers hardness test - Part 1: Test method*. 2023.

[8] EN ISO 7438. *Metallic materials - Bend test*. 2020.

[9] EN 10164. *Steel products with improved deformation properties perpendicular to the surface of the product - Technical delivery conditions*. 2018.

[10] SEP 1390. *Welded bead-on-plate bend test*. 1996.

[11] *Cancellation and Complaint Proceedings – available at www.ptprovider.cz*.

[12] EN ISO 898-1. *Mechanical properties of fasteners made of carbon steel and alloy steel - Part 1: Bolts, screws and studs with specified property classes - Coarse thread and fine pitch thread*. 2013.