

## Call for participation

### International Proficiency Test for the Detection and Classification of Gunshot Residues by SEM/EDS – GSR2024

Status from 10 January 2024

Dear GSR expert,

On behalf of the ENFSI Expert Working Group Firearms/GSR we would like to invite you to this year's PT round on the detection and classification of gunshot residue (GSR) particles by means of Scanning Electron Microscopy coupled with Energy Dispersive X-ray Spectroscopy (SEM/EDS). State-registered Forensic Science Laboratories and all members of the European Network of Forensic Science Institutes (ENFSI) are welcome to participate in the PT round GSR2024.

As part of the annually conducted GSR Proficiency Testing (PT) Scheme [1], the GSR2024 PT round is organized, conducted, evaluated and authorized by quo data Gesellschaft für Qualitätsmanagement und Statistik mbH (hereafter referred to as QuoData GmbH) as a PT provider accredited by DAkkS according to DIN EN ISO/IEC 17043:2010. Hence, we fulfil the requirements by ASTM E3255-21 [2] Standard Practice.

Since receiving ASCLD/LAB approval in 2006, the program has already enjoyed worldwide success.

Each participant will receive a specially prepared sample for the detection and classification of typical GSR particles (containing lead, barium and antimony) using their own laboratory-specific procedure for the *automated* detection of synthetic GSR particles via SEM/EDS (Scanning Electron Microscopy coupled with Energy Dispersive X-ray Spectroscopy) according to ASTM E1588-20 [3].

The main purpose of this GSR PT scheme is to help laboratories improve and maintain their level of performance and correct any inaccuracies in their reported findings. The GSR PT scheme also enables laboratories to demonstrate the quality of their measurements to accreditation bodies and other relevant authorities.

## Background information

In 2001, the first round of the GSR PT was conducted, and since 2010 the GSR PT scheme takes place annually. Since April 2022, the GSR PT scheme is also accredited by DAkkS according to DIN EN ISO/IEC 17043:2010 [4] and thus now meets the requirements by ASTM E3255-21 [2] Standard Practice.

Currently, preparations for the GSR2024 PT round are in progress and the samples are expected to be ready for dispatch on 12 June 2024. The organization and statistical evaluation of the GSR2024 PT round will be conducted by QuoData GmbH on behalf of the ENFSI Expert Working Group Firearms/GSR [5], as has been the case since 2010. QuoData GmbH is specialized in providing services in the area of external quality assurance and proficiency testing; more generally, QuoData GmbH develops statistical tools for quality assurance. In connection with the GSR PT scheme, QuoData provides a dedicated website where supplementary information on the current PT round is available [6].

Results of previous GSR PT rounds have been published in the Journal of Forensic Sciences ([7], [8] and [9]).

The findings compiled from the GSR2024 PT round will be published in a final report of results which will be submitted to all participants. In addition, each participant will receive an individual certificate of participation.

## Test sample description

To guarantee identical test samples, the use of synthetic sample sets is essential. Therefore, the GSR2024 PT round will be performed again with synthetic samples ([7], [8] and [9]).

The test material is designed according to the requirements of the Advisory Board and QuoData GmbH, and is produced by the company PLANO GmbH in Wetzlar [11], Germany. Quality control is performed on behalf of the ENFSI Expert Working Group Firearms/GSR (as a subcontractor) by a DIN EN ISO/IEC 17025:2018 [10] accredited laboratory. The test items for the GSR2024 PT round will consist of specially prepared, identical samples in accordance with DIN EN ISO/IEC 17043:2010 [4].

Homogeneity and stability testing of test samples is conducted in a DIN EN ISO/IEC 17025:2018 [10] accredited ENFSI laboratory (in this case: the Forensic Science Institute of the Bundeskriminalamt (BKA), Germany [12], on behalf of the ENFSI Expert Working Group Firearms/GSR as a subcontractor).

### Time table of the GSR2024 PT round

| Date                     | Action   | Responsibility  |
|--------------------------|--|---|
| 30 April 2024            | Deadline for enrollment  | Laboratories register for participation in the GSR2024 PT round through the PT portal <a href="https://forensics-pt.quodata.de">https://forensics-pt.quodata.de</a>   |
| 12 June 2024             | Sample dispatch  | QuoData GmbH sends the samples to the participants  |
| 10 July 2024             | Deadline for uploading test results  | Participants submit test results on the PT portal <a href="https://forensics-pt.quodata.de">https://forensics-pt.quodata.de</a>   |
| 31 July 2024             | Activation of the GSR QC Analysis Tool for cross checking submitted data             | QuoData GmbH sends login data and activates the GSR QC Analysis Tool ( <a href="https://gsr-ie.quodata.de">https://gsr-ie.quodata.de</a> )  |
| 14 August 2024           | Deadline for cross checking submitted data   | Using the GSR QC Analysis Tool, participants check their submitted data   |
| <b>30 September 2024</b> | Publication of the final report of results and providing the individual certificates | QuoData GmbH publishes the final report of results and the individual certificates, which are made available in the PT portal <a href="https://forensics-pt.quodata.de">https://forensics-pt.quodata.de</a> |

The **deadline for enrollment** is **30 April 2024**. If you participated in a PT round not before 2019, you can login and enroll here:

<https://forensics-pt.quodata.de/pt-participant/enrollment>

If you have forgotten your password, you can request a new password to be sent to your registered email address at any time.

Otherwise, please first fill in the online application form, provided here:

[https://forensics-pt.quodata.de/pt-participant/lab\\_applicant/add](https://forensics-pt.quodata.de/pt-participant/lab_applicant/add)

You will get an email with your login data and the link for enrollment.

**Sample dispatch** is scheduled for **12 June 2024**. Each laboratory will receive one test sample along with instructions. Test results will need to be uploaded and an online questionnaire on instrumental and procedural conditions will need to be filled out in the PT portal, which is available on

<https://forensics-pt.quodata.de>

– a website provided by QuoData GmbH.

The **deadline for uploading test results** along with the online questionnaire is four weeks after sample dispatch on **10 July 2024**.

On **31 July 2024**, the participating laboratories will receive an email with the **login data for the GSR QC Analysis Tool** (<https://gsr-ie.quodata.de>). Once they login, the participants will be able to access their own test results as well as additional information, including the exact number of GSR particles, their sizes and exact positions. This will give the laboratories the opportunity to cross-check their previously submitted data. It also allows the samples to be subsequently used in the laboratory as a standard for validation purposes in a GSR analysis. Laboratories have ten working days until **14 August 2024** to **cross-check** their submitted data.

The **final report of results and the individual certificate of participation** will be made available for the participating laboratories in the PT portal (<https://forensics-pt.quodata.de>) on **30 September 2024**.

### Participation fee

A participation fee will be charged to the laboratories covering the costs arising from the production of suitable sample material, the statistical evaluation, and the preparation of the final report of results and the individual certificates. The fee is **1215 €** per participant (plus 19% VAT for German participants) plus 45 € for shipping and packing. The increase in the fee compared to the previous year is mainly due to higher production costs for the test samples (in particular, in connection with the production of the lithography mask and the polishing procedure for the glassy carbon wafer).

It is possible to order more than one PT test sample. The price for any additional test sample is 1215 €, along with 45 € extra shipping costs per additional package. Since two test samples can be sent per package, extra shipping costs will be invoiced as follows:

- No extra shipping and packing costs for 1 additional test sample
- An extra 45 € shipping and packing costs for 2 or 3 additional samples
- An extra 90 € shipping and packing costs for 4 or 5 additional samples, etc.

However, to ensure the comparability and independence of all laboratory test results, only one set of results per laboratory can be submitted for taking into account in the PT evaluation across laboratories and to receive an individual certificate of participation. For the evaluation of additional sets of results, please refer to the web-based GSR QC Analysis Tool, which can be used for the purpose of quality assurance: <https://gsr-ie.quodata.de>.

### GSR QC Analysis Tool

The GSR QC Analysis Tool (<https://gsr-ie.quodata.de>) will be available free of charge for one year after completion of the GSR2024 PT round with a maximum of 100 evaluations. It is an additional service offered to the participants and a benefit in the context of quality assurance within laboratories. This opportunity will make it possible to subsequently use PT test samples for other purposes (e.g. as a validation standard for the SEM/EDS system or for quality assurance studies).

### Payment and shipping

For participants from EU-countries other than Germany, the declaration of a VAT registration number is necessary; otherwise, they will be charged German VAT.

Payment and sample shipping will proceed as follows:

1. The laboratory accepts the conditions for participation by filling in the enrollment form provided in the PT portal (<https://forensics-pt.quodata.de>). In doing so, the laboratory specifies whether payment will be carried out by bank transfer or by credit card (MasterCard, Visa or JCB). Please note that we have to charge a 3% fee for payment by credit card.
2. Additionally, 45 € per package (with up to two test samples) will be charged for shipping and packaging.
3. After successful payment, sample shipping will be carried out by FedEx Corporation.

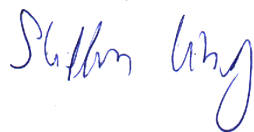
Any additional costs, e.g. due to customs duties, are covered by the participating laboratory.

### Binding enrollment for participation

The statement of participation is binding and cannot be cancelled once QuoData GmbH has received the enrollment. If a purchase order was submitted together with your statement for participation, an invoice for the participation fee and shipping costs will be mailed to the address indicated on the purchase order.

The amount indicated on the invoice must be credited within four weeks as specified in the invoice. No sample will be shipped until the fee has been received.

On behalf of the ENFSI Expert Working Group Firearms/GSR



PD Dr. habil. Steffen Uhlig  
CEO  
QuoData GmbH

Dresden, 10 January 2024

## References

- [1] <https://quodata.de/fileadmin/GSR%20PT/GSR%20PT%20Scheme%20Description.pdf>
- [2] ASTM E3255-21, Standard Practice for Quality Assurance of Forensic Science Service Providers Performing Forensic Chemical Analysis, ASTM International, West Conshohocken, [www.astm.org](http://www.astm.org)
- [3] ASTM E1588-20, Standard Practice for Gunshot Residue Analysis by Scanning Electron Microscopy/Energy Dispersive X-Ray Spectrometry, ASTM International, West Conshohocken, 2020, [www.astm.org](http://www.astm.org)
- [4] DIN EN ISO/IEC 17043:2010; Conformity assessment - General requirements for proficiency testing.
- [5] <http://www.enfsi.eu/about-enfsi/structure/working-groups/firearms-and-gsr>
- [6] <https://quodata.de/gsr-quality-scheme.php>
- [7] Niewoehner L., Wenz W., Andrasko J., Beijer R., Gunaratnam L.; "ENFSI Proficiency Test Program on Identification of GSR by SEM/EDX"; Journal of Forensic Sciences; vol. 48(4); (2003); pp. 786-792.
- [8] Niewoehner L., Andrasko J., Biegstraaten J., Gunaratnam L., Steffen S., Uhlig S.; "Maintenance of the ENFSI Proficiency Test Program on Identification of GSR by SEM/EDX (GSR2003)"; Journal of Forensic Sciences; vol. 50(4); (2005).
- [9] Niewoehner L., Andrasko J., Biegstraaten J., Gunaratnam L., Steffen S., Uhlig S., Antoni, S.; "GSR2005-Continuity of the ENFSI Proficiency Test on Identification of GSR by SEM/EDX"; Journal of Forensic Sciences; vol. 53(1); (2008).
- [10] DIN EN ISO/IEC 17025:2018; General requirements for the competence of testing and calibration laboratories.
- [11] <https://www.plano-em.de>
- [12] <https://www.bka.de>