

Conditions for the provision of calibration services by the SARAD Radon Calibration Laboratory

1. Conclusion of the service contract

The request for the calibration service is made by sending the completely filled and signed order form "Radon-Calibration Request.pdf". A separate form is to be used for each different selection of calibration points. The contract for the processing of the offered calibration services becomes valid with the order confirmation by the SARAD GmbH after examination of the request. Only electronic measuring instruments with internal data recording are calibrated according to the procedure described in section 5. For an order confirmation, the following requirements must be met by the device to be calibrated:

- The device must be clearly identifiable (manufacturer, type, serial number).
- Continuous sampling (diffusion or pump).
- Storage of the measured values in an equidistant time interval from a minimum of 10 minutes to a maximum of 4 hours for a period of at least 250 hours.
- The detection limit ($k=2$) of the instrument to be calibrated for the individual values of the set measuring interval must be below the target concentration of the calibration campaign.
- The measurement results must be calculated and provided by the instrument on the basis of the decay events detected within a time interval. The use of pre-processed data (e.g. moving averages) is not allowed.
- It must be possible to export the data to an editable text or CSV file (Excel or similar) with radon measurement results and assigned time stamps. Each data record must be in a separate line, timestamp and measured value must be separated by a defined character (preferably tabulator). There must be no blank lines between the data records.
- The measured results must be provided in the SI unit "Bq/m³".
- If possible, battery operation over the total duration of the exposure.
- The humidity conditioned in the calibration chamber must not be changed by the instrument under calibration.

An order confirmation will not be issued if there are reasonable doubts on the part of the SARAD Radon Calibration Laboratory about the feasibility of the calibration in accordance with the standards. The potential client will be informed within five working days after receipt of the order form.

2. Costs

The informal costs for the calibration services are automatically calculated by the order form according to the information about the instruments stated by the customer. In case of incorrect information, the

costs will be charged within the order confirmation according to the corrected information. The prices calculated in the order form are exclusive of statutory value added tax.

3. Requested date of the provision

The customer has to indicate in the request form a desired start date for the calibration. The order form should be sent to the calibration laboratory at least four weeks before this date. If it is impossible to carry out the calibration at the desired date (+ 1 week) due to the limited capacity of the calibration facility, the customer will receive a proposal for the next possible start date by email within five working days instead of the order confirmation. The customer will only receive the order confirmation if he confirms the proposed date in writing.

Depending on the sensitivity of the device and the selected activity concentration, the exposure takes between three and ten days per calibration point.

4. Important notes on delivery and return shipment

The customer bears the costs for both delivery and return of the instruments to be calibrated. The return shipment is carried out by a parcel service selected by the calibration laboratory. The customer can agree on a different regulation. The agreement must be in writing.

The "Calibration Request Number (CRN)" transmitted in the order confirmation must be attached to the package sent to the calibration laboratory in a clearly visible manner.

The instrument must be received by the calibration laboratory at least two working days before the start of calibration.

The instrument must be delivered with new batteries or with a fully charged rechargeable battery. Care must be taken to ensure that the time on the instrument is set correctly. If no measurement mode is specified on the order form, the mode currently set on the instrument will be used. All necessary equipment for measurement as well as for reading out and converting the measurement data must be provided (power supply, filter, communication cable, PC software, manuals, etc.) by the customer.

5. Calibration method used

Calibration is performed by simultaneous exposure of the instruments to be calibrated with a SARAD working standard in a sealed calibration chamber. The chamber is first filled with low radon air to determine the background C_0 of the instrument under calibration. Subsequently, a homogeneously distributed and largely constant radon activity concentration (Rn-222) is generated for the determination of the calibration factor K (calibration measurement). The radon activity concentration C_{ref} averaged over the period of the calibration measurement (reference concentration) is determined by means of SARAD working standard. The calibration factor K results from the ratio of the measured value C_m of the calibration material corrected for the zero effect C_0 and averaged over the period of the calibration measurement and the reference concentration C_{ref} .

$$K = C_{ref} / (C_m - C_0)$$

The ambient conditions correspond to the specifications of DIN IEC 61577-4.

6. Confidentiality

The Radon calibration laboratory of SARAD GmbH commits itself to confidential handling of customer data. Neither data provided by the customer nor data generated within the scope of the calibration activities with reference to the customer (e.g. calibration results) will be passed on to third parties unless this is expressly required by legal regulations.

7. Declarations of conformity

The Radon Calibration Laboratory of SARAD GmbH does not make any statements regarding the conformity of the calibration material or calibration results.

8. Complaints

For the handling of complaints, a complaint procedure has been defined in the QM manual of the SARAD Radon Calibration Laboratory. This procedure will be made available to the customer upon request.