

Indicative rating of Analytical Methods

The aim of the method lists is to present a first overview and basic information about existing measurement methods for a chemical agent and first impression of their potential usefulness. Methods highlighted in yellow were selected for further evaluation and are specified in detail as method sheets. Brief explanations of the data fields are given below.

- **Principle of the method**
Brief description of the method principle. Contains information on the sampling substrate, sample preparation and analytical technique.
- **Flow rate/recommended air volume**
The column gives information about the sampling conditions (air flow, recommended air volume) described in the method.
- **Limit of qualification (LOQ)/Validated working range**
According to the recommended sampling conditions and the analytical conditions the basic validation data LOQ and/or the validated working range are given.
NOTE: The unit used in the method list is normally the same as that used in the method.
- **Indicative rating (see below)**
- **Remarks**
Brief additional information about e.g. similar methods, special interferences, reasons for rating ("Indicative rating")

Indicative rating

The preliminary rating of the method is based on the information available at the screening stage of the target. The indicative rating is based on the requirement of EN 482 (1999). Three categories for methods were defined:

- **Category A:** The method meets all of or the most of the major requirements of EN 482 (1999)
- **Category B:** Validation data incomplete but the method has the potential to meet the EN 482 requirements.
Normally, only methods assigned "A" or "B" were included in the method lists.
- **Category C:** The method does not fulfil the requirements of EN 482 and has not got the potential to meet the EN 482 requirements.

A method assigned category "C" is normally disregarded. However, if no methods assigned category "A" or "B" are available a category "C" method is included but not evaluated further. Table 1 gives the criteria used for the indicative rating of methods.

Table 1: Criteria for indicative rating

Criteria	Requirement	Rationale for rating
Origin of the method	Method published in an "accepted source", see Table: Sources of methods (in document "Generation of method lists")	Required
Structure of the method description	ISO 78-2, prEN 482 Annex B	Preferable If possible major sections have to be present.
Sampling conditions	Description of sampling conditions Sampler, flow rate, recommended air volume or sampling time, uptake rate in case of diffusive sampling	Required For aerosol sampling the sampler has to fulfil the requirements for the type of aerosol according to EN 13205 (inhalable or respirable fraction) Normative references: EN 1232, EN 689, EN 1076, EN 838
Transportation and storage	Description of sample transport or sample stability	Required for critical samples! For critical samples detailed transportation and storage conditions have to be defined. For non-critical samples a short statement should be given.
Sample preparation	Description of sample handling	Required
Analytical technique	Description of the analytical conditions	Required
Minimum specified measuring range	EN 482: 0,1 to 2 LV	Required
Overall uncertainty	EN 482: 0,1 to 0,5 LV \leq 50 % 0,5 to 2 LV \leq 30 %	Required In most cases uncertainty only for sample clean-up and analytical steps will be available.

Criteria	Requirement	Rationale for rating
Bias	Information necessary	Required The bias is very often only available for analytical steps.
Repeatability	Minimum of 6 repeat measurements under defined conditions at 3 different concentrations.	Required
Selectivity	Information necessary Experiments to interferences described or lucid explanations given about the selectivity (e.g. the method is highly selective because the measuring wavelength is selective).	Required
Environmental conditions	Information on humidity, temperature pressure effects shall be given, where appropriate	Required
Unambiguity	Information necessary	Preferable

LV: limit value

Based on this indicative rating the methods for further evaluation are selected. In total 127 different methods lists were prepared by the project participants. In each case, the member of the task group who has prepared an individual method list gave a recommendation to the task group for further evaluation. The task groups then discussed the recommendations and the selected methods for further evaluation are highlighted yellow in the lists. When no methods could be assigned an A or B indicative rating, no method was further evaluated.

Downgrade of methods

Even methods from accepted sources do not always fulfil all requirements according to EN 482. For example the method descriptions of the BGIA are mainly very short and do not fulfil the requirement for "Structure of the method description" and Metropol methods very often have insufficient validation data included. The indicative rating for such methods cannot be better than "B". In such instance, special phrases appear in the method list, as indicated in table 2.

Table 2: Criteria for downgrading a method

Criteria	Phrase	Action
Method description short or some paragraphs from ISO 78-2 or prEN 482 – Annex B missing	Brief method description	downgrade to “B” (example: BGIA methods)
No or insufficient method performance data	No (insufficient) performance data published in the method	downgrade to “B” (example: Metropol methods)
Sampler does not sample the inhalable aerosol	Inhalable sampler not used or, where applicable, Inhalable sampler not used, but wall deposits analysed	downgrade to “B” (example: cassette filter holder used)
Method not practicable	Method not practicable	downgrade to “B” (example: laboratory methods for gases like CO)
Older methods with currently not longer used technique	Old method, no longer state of the art	downgrade to “B” (example: photometric method for ammonia)