Method Implementation Document (MID 15713)

BS ISO 15713:2006

Stationary source emissions - Sampling and determination of gaseous fluoride content

Environment Agency
Version 2
October 2007

THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

Record of amendments

Version number	Date	Amendment
2	October 07	Section 6.1: amended paragraph on filter holder
2	October 07	Section 6.2: stated that sample nozzles shall be made of Monel® type alloys or silica
2	October 07	Section 6.3: stated that the filter holder shall be made of the same material as the probe or from PTFE

Status of this document

This method implementation document may be subject to review and amendment following publication. The most recent version of this note is available on the Source Testing Association web site at:

www.S_T_A.org

Role of Method Implementation Documents

The Environment Agency recognises that European and International standards may need supplementing by Method Implementation Documents (MIDs) to ensure they are being implemented consistently.

We have established our Monitoring Certification Scheme: MCERTS to deliver quality environmental measurements. Organisations wishing to include a standard in their schedule of MCERTS accreditation shall follow the requirements of the standard and, where available, the associated MID.

It may not be necessary to produce a MID for every standard but where required they will be used to supplement standards called up by Technical Guidance Note M2. MIDs provide details on how the preferred standards shall be used for regulatory monitoring.

MIDs are produced in collaboration with the Source Testing Association and its members.

Copies of MIDs and further information on MCERTS including copies of performance standards and guidance can be obtained from our web-site at:

www.mcerts.net

Or from the STA web-site at:

www.S-T-A.org

Feedback

Any comments or suggested improvements to this MID should be e-mailed to Rupert Standring at rupert.standring@enviroment-agency.gov.uk.

1 Scope

In order for the monitoring to be MCERTS accredited both the sampling and laboratory analysis shall be accredited to ISO 17025.

Ion chromatography may be used, instead of ion selective electrode, for the analysis of samples.

2 Normative references

No additional information

3 Terms and definitions

No additional information

4 Principle

No additional information

5 Reagents

5.1 – 5.3

No additional requirements

5.4 Calibration solutions

No additional requirements

6 Apparatus

6.1 Introduction

The standard states that materials used in the sample train (probe liner, filter, filter housing, tube connecting impingers to the probe and the impingers) shall be resistant to temperature and chemical attack from the stack gas.

The standard lists materials that are known to be suitable for the probe liner, tube connecting impingers to the probe and the impingers.

The standard does not give materials for the filter and filter housing. Therefore, manufacturer's specifications have been reviewed to select an appropriate filter and filter housing. The filter housing may be made up of the same material as the probe.

If a stack emissions monitoring organisation wishes to use materials that are not specified in this document, they shall prove to the satisfaction of accreditation bodies, such as UKAS, that the materials are resistant to chemical attack from stack gases containing gaseous fluoride.

6.2 Probe

Monel® type alloys or silica shall be used.

Note 1: Monel® type alloys have an unreactive, smooth surface that is corrosion resistant. Monel® 400 is suitable for use up to temperatures of 550°C.

Note 2: Silica refers to fused silica, which is a glass like substance made from silica sand (quartz) or silica tetrachloride. It is unreactive, chemically resistant to HF and stable at temperatures up to 900°C.

If isokinetic sampling is carried out the sample nozzle shall be made of Monel® type alloys or silica.

6.3 Filter and filter housing

The standard states that if the amount of particulate fluoride is below 10% of the total emissions then the filter can be omitted. This shall be done where possible, as it reduces the possibility of gaseous fluoride being removed by absorbtion onto the filter and filter holder.

If the amount of particulate fluoride in the stack gas is not known, or is not clearly below 10% of the total emissions a filter shall be used, as there is a risk of overestimating the fluoride content as soluble particle bound fluorides may enter the bubbler solution.

The filter holder shall be made of the same material as the probe or from PTFE.

HF may be outgassed from new PTFE components. Preconditioning of new PTFE components by heating shall be carried out. Heating shall be carried out to the temperature the material will be exposed to during sampling.

PTFE shall not be used above 250°C as it degrades and releases fluoride.

The filter shall be made of quartz fibre.

6.4 Sampling train

The impingers shall be connected to the sampling probe using polypropylene, polyethylene or Viton® tubing.

The impingers shall be made of quartz, polypropylene or polyethylene.

6.5 - 6.11

No additional requirements

7 Sampling

7.1 - 7.5

No additional requirements

7.6 Sampling

Note: the standard describes the use of a side-stream technique when sampling isokinetically. This enables the recommended flow rate through the absorber solution to be maintained. In the UK this approach is not used.

Isokinetic sampling shall only be carried out when droplets are present. When isokinetic sampling is required it shall meet the requirements of BS EN 13284-1. When sampling isokinetically the flow rate through the impinger may increase above that recommended by the standard. Under these circumstances it is acceptable to use a greater volume of absorber solution than specified in the standard.

7.10 Quality assurance

The standard states the leak rate measured during any leak test shall not be greater than 4% of the nominal flow rate. Sections 7.7, 7.8 and 7.9 state 2%. A 2% value shall be used.

7.11 Sample recovery

No additional requirements

7.12 Equipment field blank

The field blank shall be less than 10% of the emission limit value.

8 Analytical procedure

Ion chromatography may be used.

9 Expression of results

No additional requirements

10 Performance characteristics

No additional requirements

11 Test report

If carrying out MCERTS accredited work the monitoring report shall be submitted in the report format specified in the Manual stack emission monitoring performance standard for organisations available from www.mcerts.net.