Method Summary

Determination of Volatile Organic Compounds in Soils by Headspace/GC-MS

Scope and Range

This method is used for the detection, identification and quantitation of 64 volatile organic compounds that have boiling points typically below 200℃. The analysis is conducted on a Gas Chromatograph system using a Mass Selective Detector (GC-MS).
This method is applicable to the analysis of soils.
The concentration range is from a maximum of 500 µg/kg down to the reporting limits shown in the table below. Accreditation status is also shown in the table below.
Holding times for VOC compounds is 14 days (7 days for Vinyl Chloride and Styrene).

Compound	LOD (µg/kg)	Accreditation status
Dichlorodifluoromethane	6	ISO 17025
Chloromethane	7	ISO 17025
Vinyl Chloride	6	MCERTS
Bromomethane	10	MCERTS
Chloroethane	10	MCERTS
Trichlorofluoromethane	6	MCERTS
1,1-Dichloroethene	10	ISO 17025
Carbon Disulphide	7	MCERTS
Dichloromethane	10	ISO 17025
tert-Butyl Methyl Ether	10	MCERTS
trans-1,2-Dichloroethene	10	MCERTS
1,1-Dichloroethane	8	MCERTS
cis-1,2-Dichloroethene	6	MCERTS
2,2-Dichloropropane	10	None
Bromochloromethane	10	MCERTS
Chloroform	8	MCERTS
1,1,1-Trichloroethane	7	MCERTS
1,1-Dichloropropene	10	MCERTS
Carbon Tetrachloride	10	MCERTS
1,2-Dichloroethane	5	MCERTS
Benzene	9	MCERTS
tert-Amyl Methyl Ether	10	ISO 17025
Trichloroethene	9	ISO 17025
1,2-Dichloropropane	10	MCERTS
Dibromomethane	9	MCERTS
Bromodichloromethane	7	MCERTS
cis-1,3-Dichloropropene	10	MCERTS
Toluene	7	MCERTS
trans-1,3-Dichloropropene	10	None
1,1,2-Trichloroethane	10	MCERTS
1,3-Dichloropropane	7	MCERTS
Tetrachloroethene	5	MCERTS
Dibromochloromethane	10	MCERTS
1,2-Dibromoethane	10	MCERTS
Chlorobenzene	5	MCERTS
1,1,1,2-Tetrachloroethane	10	MCERTS
Ethylbenzene	4	MCERTS
p/m-Xylene	10	ISO 17025
o-Xylene	10	MCERTS
Styrene	10	ISO 17025

Method Summary

Determination of Volatile Organic Compounds in Soils by Headspace/GC-MS

Bromoform	10	MCERTS
Isopropylbenzene	5	ISO 17025
1,1,2,2-Tetrachloroethane	10	ISO 17025
1,2,3-Trichloropropane	16	MCERTS
Bromobenzene	10	MCERTS
Propylbenzene	10	MCERTS
2-Chlorotoluene	9	MCERTS
1,3,5-Trimethylbenzene	8	MCERTS
4-Chlorotoluene	10	MCERTS
tert-Butylbenzene	14	ISO 17025
1,2,4-Trimethylbenzene	9	ISO 17025
sec-Butylbenzene	10	None
4-Isopropyltoluene	10	None
1,3-Dichlorobenzene	8	MCERTS
1,4-Dichlorobenzene	5	MCERTS
1,2-Dichlorobenzene	10	MCERTS
1,2-Dibromo-3-chloropropane	14	MCERTS
n-Butylbenzene	11	None
1,3,5-Trichlorobenzene	20	None
1,2,4-Trichlorobenzene	20	None
Hexachlorobutadiene	20	None
Naphthalene	13	MCERTS
1,2,3-Trichlorobenzene	20	ISO 17025

References

National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) Schedule B3.

Principle

An aliquot of the sample is transferred to a headspace vial with water and heated/agitated to drive volatile analytes into the headspace of the vial. A portion of the headspace is transferred to a gas chromatograph where the compounds are separated and detected by GC-MS.

Interferences

Compounds with retention times and ion spectra similar to the target compounds could interfere with the analysis.