



Method Summary

Determination of Low Level Volatile Organic Compounds in Waters by Headspace/GC-MS

Scope and Range

A range of volatile organic hydrocarbons such as BTEX (benzene, toluene, ethylbenzene, xylenes) and haloforms are known carcinogens and of environmental concern. This method describes a procedure for the detection, identification and quantitation of 54 volatile organic compounds that have boiling points typically below 200° C with reportable detection limits detailed in the table below. This method is applicable to surface, ground and saline waters with <10µg/l per VOC compound and is accredited for surface and saline waters.

Analyte	LOD µg/l	Analyte	LOD µg/l
Vinyl Chloride	0.1	1,1,1,2-tetrachloroethane	0.1
Chloroethane	0.2	Ethylbenzene	0.1
Trichlorofluoromethane	0.1	m/p-Xylene	0.2
1,1-Dichloroethene	0.1	o-Xylene	0.2
Trans-1,2-Dichloroethene	0.1	Styrene	0.1
1,1-Dichloroethane	0.1	Bromoform	0.1
Cis-1,2-Dichloroethene	0.1	Isopropylbenzene	0.1
Bromochloromethane	0.2	1,1,2,2-Tetrachloroethane	0.1
Chloroform	0.2	1,2,3-Trichloropropane	0.3
1,1,1-Trichloroethane	0.1	Bromobenzene	0.1
1,1-Dichloropropene	0.1	Propylbenzene	0.1
Carbon tetrachloride	0.1	2-Chlorotoluene	0.1
1,2-Dichloroethane	0.2	1,3,5-Trimethylbenzene	0.1
Benzene	0.2	4-Chlorotoluene	0.1
Trichloroethene	0.1	Tert-Butylbenzene	0.1
1,2-Dichloropropane	0.2	1,2,4-Trimethylbenzene	0.1
Dibromomethane	0.1	Sec-Butylbenzene	0.1
Bromodichloromethane	0.1	4-Isopropyltoluene	0.1
Cis-1,3-Dichloropropene	0.1	1,3-Dichlorobenzene	0.1
Toluene	0.2	1,4-Dichlorobenzene	0.1
Trans-1,3-Dichloropropene	0.2	n-Butylbenzene	0.1
1,1,2-Trichloroethane	0.1	1,2-Dichlorobenzene	0.1
1,3-Dichloropropane	0.1	1,2-Dibromo-3-Chloropropane	0.2
Tetrachloroethene	0.1	1,2,4-Trichlorobenzene	0.1
Dibromochloromethane	0.1	Hexachlorobutadiene	0.1
1,2-Dibromoethane	0.1	Naphthalene	0.1
Chlorobenzene	0.6	1,2,3-Trichlorobenzene	0.1

Method Number: TM 265

Updated: 07/09/2023

Issue Number: 08

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References

Rapid Quantitation of VOC's in Soil and Water by HS-GC-MS. Chromatography Technical Note No. 48, Anatum Ltd, UK.

USEPA Method No. 624 'Method 624 - Purgables'.

USEPA Method No. 8260b 'Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC-MS)'.

Determination of Volatile Organic Compounds by Headspace Trap. Barani et al. Journal of Chromatographic Science, Vol. 44, November/December 2006. Technical publications

Principle

A headspace vial is partially filled with sample and matrix modifiers. This is then agitated at an elevated temperature to portion the volatile compounds into the headspace. Analysis is undertaken by GC-MS

Interferences

Any compound or mixture with a similar volatility to the target analytes, which may co-elute with the target compounds and hinder or mask their identification, e.g. solvents, hydrocarbons (petrol/kerosene).

Samples with values exceeding the range of TM265 Low Level VOC in Waters may be more appropriately run by TM208 VOC in Waters that has range of up to 500µg/l (without dilutions).