

TheReporter

Reprinted from Volume 16, No. 2, 1997

T297032

© 1999 Sigma-Aldrich Co.

For more information, or current prices, contact your nearest Supelco subsidiary listed below. To obtain further contact information, visit our website (www.sigma-aldrich.com), see the Supelco catalog, or contact Supelco, Bellefonte, PA 16823-0048 USA.

ARGENTINA • Sigma-Aldrich de Argentina, S.A. • Av. Pueyrredon 2446/50 • Piso 5-B • Buenos Aires 1119
AUSTRALIA • Sigma-Aldrich Pty. Ltd. • Unit #2, 14 Anella Avenue • Castle Hill NSW 2154
AUSTRIA • Sigma-Aldrich Handels GmbH • Hebbelplatz 7 • A-1110 Wien
BELGIUM • Sigma-Aldrich N.V./S.A. • K. Cardijnplein 8 • B-2880 Bornem
BRAZIL • Sigma-Aldrich Quimica Brasil Ltda. • Rua Sabara, 566-Conj. 53 • 01239-010 São Paulo, SP
CANADA • Sigma-Aldrich Canada, Ltd. • 2149 Winston Park Dr., Oakville, ON L6H 6J8
CZECH REPUBLIC • Sigma-Aldrich s.r.o. • Pobrezni 46 • 186 21 Praha 8
DENMARK • Sigma-Aldrich Denmark A/S • Vejlegaardsvej 65B • DK-2665 Vallensbaek Strand
FINLAND • Sigma-Aldrich Finland/YA-Kemia Oy • Teerisuonkuja 4 • FIN-00700 Helsinki
FRANCE • Sigma-Aldrich Chimie • Chromatographie Supelco • L'Isle d'Abeau Chesnes - B.P. 701 • 38297 Saint-Quentin Fallavier Cedex
GERMANY • Sigma-Aldrich Chemie GmbH • Geschäftsbereich Supelco • Grünwalder Weg 30 • D-82041 Deisenhofen
GREECE • Sigma-Aldrich (o.m.) Ltd. • 72 Argonafton Str. • 16346 Ilioupoli, Athens
HUNGARY • Sigma-Aldrich Kft. • Nagy Diófa u. 7., IV fl. • H-1067 Budapest
INDIA • Sigma-Aldrich Co. • Survey No. 31/1, Sitharamapalaya • Mahadevapura P.O. • Bangalore 560 048
IRELAND • Sigma-Aldrich Ireland Ltd. • Airton Road • Tallaght • Dublin 24
ISRAEL • Sigma Israel Chemicals Ltd. • Park Rabin • Rohovot 76100
ITALY • Sigma-Aldrich s.r.l. • Via Gallarate, 154 • 20151 Milano
JAPAN • Sigma-Aldrich Japan K.K. • Division Supelco • JL Nihonbashi Building • 1-10-15 Nihonbashi Horidome-cho, Chuo-ku • Tokyo 103
KOREA • Sigma-Aldrich Korea • Samhan Camus Annex, 10th Floor • 17-26 Yoido-dong, Yungdeungpo-ku • Seoul
MALAYSIA • Sigma-Aldrich (M) Sdn. Bhd. • 9-2, Jalan 2/128, Taman Gembira • Off Jalan Kuchai Lama • 58200 Kuala Lumpur • Selangor
MEXICO • Sigma-Aldrich Quimica S.A. de C.V. • Calle 6 North No. 107 • Parque Industrial Toluca 2000 • 50200 Toluca
NETHERLANDS • Sigma-Aldrich Chemie BV • Postbus 27 • 3330 AA Zwijndrecht
NORWAY • Sigma-Aldrich Norway • Sandakerveien 102 • N-0483 Oslo
POLAND • Sigma-Aldrich Sp. z o.o. • Szelagowska 30 • 61-626 Poznań
PORTUGAL • Sigma-Aldrich Quimica, S.A. • P.O. Box 131 • Sintra 2710
RUSSIA • Sigma-Aldrich Russia • TOO Techmedbiochem • Makarenko Str. 2/21 • Building 1, Flat 22 • Moscow 103062
SINGAPORE • Sigma-Aldrich Pte. Ltd. • 102E Pasir Panjang Road • #08-01 Citilink Warehouse • Singapore 118529
SOUTH AFRICA • Sigma-Aldrich (pty) Ltd. • CNR Kelly & Ackerman Streets • Southern Life Industrial Park Unit • Unit 16/17 • Jet Park 1459
SPAIN • Sigma-Aldrich Quimica, S.A. • Apt. Correos 161 • 28100 Alcobendas, Madrid
SWEDEN • Sigma-Aldrich Sweden AB • Solkraftsvägen 14C • 135 70 Stockholm
SWITZERLAND • Supelco Switzerland • Industriestrasse 25 • P.O. Box 260 • CH-9471 Buchs
UNITED KINGDOM • Sigma-Aldrich Company Ltd. • Supelco UK • Fancy Road, Poole • Dorset BH12 4QH
UNITED STATES • Supelco • Supelco Park • Bellefonte, PA 16823-0048 • Phone 800-247-6628 or 814-359-3441 • Fax 800-447-3044 or 814-359-3044 • email:supelco@sial.com

H

This article is archived from a past issue of The Supelco Reporter. Information in the article was appropriate at the time of publication, but product specifications, catalog numbers, and availability may have changed over time.

If you have questions about applying methodology described in this article to a current application, please contact our technical service chemists.



Supelco is a member of the Sigma-Aldrich family. Supelco products are sold through Sigma-Aldrich, Inc. Sigma-Aldrich warrants that its products conform to the information contained in this and other Sigma-Aldrich publications. Purchaser must determine the suitability of the product for a particular use. Additional terms and conditions may apply. Please see the reverse side of the invoice or packing slip.

Monitoring VOCs in Ambient Air: A New EPA Method and a Complete Solution

I. DeGraff, Sample Handling, Supelco, Bellefonte, PA, USA

Figure A. Analytes Desorbed from Spiked Sorbent Tube

Adsorbent Tube: Air Toxics (glass) 10-50ng each analyte introduced onto tube (calibration standard, Cat. No. 41900)

Cat. No.: 25086

GC Column: VOCOL, 60m x 0.25mm ID, 1.5µm film

Cat. No.: 24154

Oven: 37°C (4 min) to 200°C at 4°C/min, hold 10 min

Carrier: helium, 2mL/min

Det.: FID

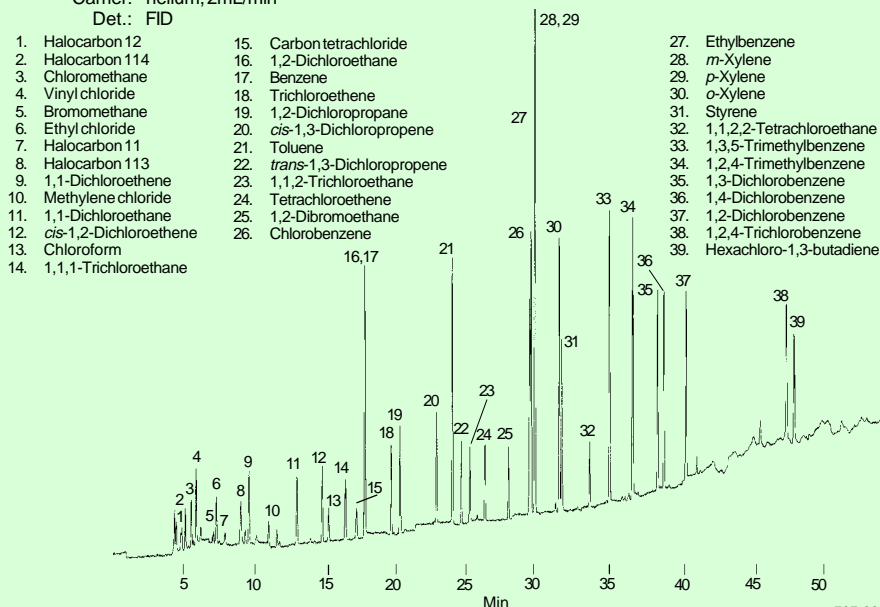


Figure provided by G. Howe, Research Triangle Institute, Research Triangle Park, NC, USA 27709.

A breakthrough volume study of some of these volatile organic compounds (Method TO-14 analytes) was performed by scientists at Research Triangle Institute, using two Supelco™ adsorbent tubes. More than 30 compounds had breakthrough volumes greater than 5 liters on either tube at 25°C and a sample humidity of 65%. Figure A illustrates the resolution possible with the GC column the investigators selected.

We have the complete solution to Method TO-17, with a full range of products from sample collection to analysis.

Ordering Information:

Description	Cat. No.
<i>Thermal Desorption Tubes for Dynatherm 850/890, ACEM 900 (each)</i>	
Carbotrap™ 217	20895-U
Carbotrap 317	20877
<i>for Perkin-Elmer (pks. of 10)</i>	
Air Toxics (glass)	25086
Air Toxics (ss)	25051
Carbotrap 300 (glass)	25085
Carbotrap 300 (ss)	25050
<i>Dynatherm Thermal Desorption Units</i>	
ACEM 900	22587
MTDU 910 (8 tubes)	22594
<i>Capillary GC Columns, 60m x 0.25mm ID</i>	
VOCOL™ (1.5µm film)	24154
SPB™-624 (1.4µm film)	24256
<i>TO-14 Calibration Standard (also used for Method TO-17)</i>	
Mix 1 (39 analytes)*	41900-U

Reference

US EPA Method TO-17, *Determination of Volatile Organic Compounds in Ambient Air Using Active Sampling onto Sorbent Tubes*.

Obtain from: Center for Environmental Research Information, Office of Research & Development, US EPA, Cincinnati, OH 45268.

Trademarks

Carbopack, Carbosieve, Carbotrap, Carboxen, SPB, Supelco, VOCOL — Sigma-Aldrich Co.

Tenax — Enka Research Institute Arnhem



The US Environmental Protection Agency recently developed Method TO-17, *Determination of Volatile Organic Compounds in Ambient Air Using Active Sampling onto Sorbent Tubes (1)*. Method TO-17 will have many practical applications as an alternative to canister sampling, which can be costly and inconvenient. Method TO-17 incorporates new adsorbents and thermal desorption systems, developed since the introduction of methods TO-1 and TO-2 in 1984. Two tubes are collected simultaneously at different flow rates (1:4 ratio) as a quality control check of sample integrity. A brief summary of the new method is given in Table 1.

We had the opportunity to provide data and input to the EPA and were among those asked to review the draft method. The method lists multi-bed sorbent tubes for sample collection — proprietary adsorbents provide maximum sensitivity and minimal interference from moisture during high-humidity sampling.

Table 1. US EPA Method TO-17

Sampling Pump:
dual tube manifold, independent control of sampling rates

Sorbent Tubes:

¼ inch or 6mm OD, glass or stainless steel

-Tenax® GR/Carbopack™ B

-Carbopack B/Carboxen™ 1000

(Carbotrap 217) or

Carbopack B/Carbosieve™ SIII

-Carbopack C/Carbopack B/

Carboxen1000 (Carbotrap 317) or

Carbopack C/Carbopack B/Carbosieve SIII

Flow Rate:

10-200mL/min

Air Volumes:

1 liter & 4 liters, or equivalent ratio

Thermal Desorber:

two-stage, with refocusing and dry purge capability

Analysis:

GC/MS, FID, other

*Mix contains primarily gaseous TO-17 analytes. Standards for other analytes are available as liquid mixtures or in neat form.

Reprinted from Volume 16, No. 2, 1997