

TheReporter

Reprinted from Volume 16, No. 5, 1997

T297055

© 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.

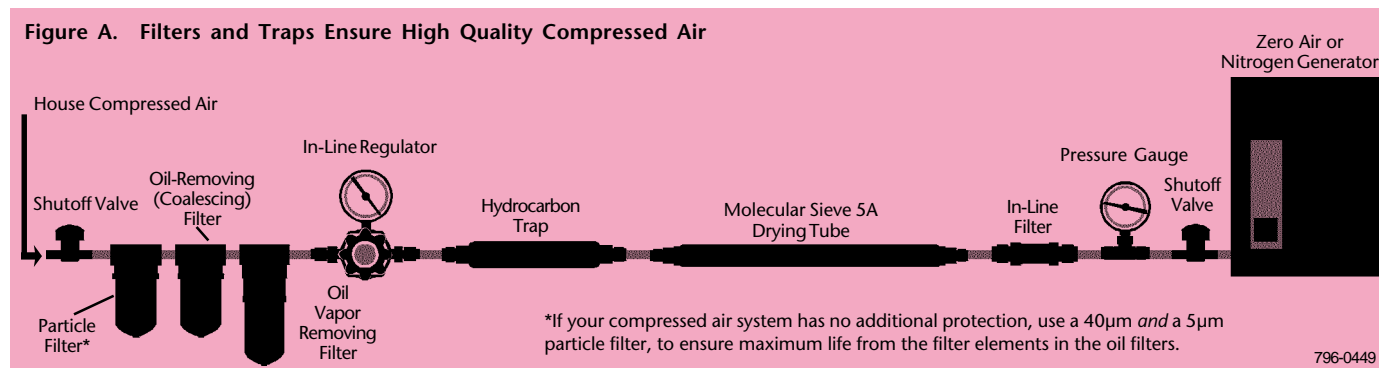
If you have questions about applying methodology described in this article to a current application, please contact our technical service chemists.



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.

Designing Gas Management Systems for GC: Part 4 – Tips for Using Gas Generators

R. Bartram, Gas Separations, Supelco, Bellefonte, PA, USA

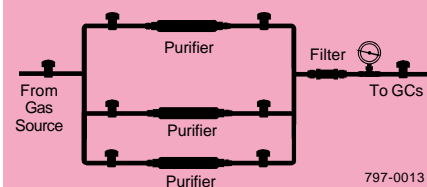


For convenience, economy, and safety, many analysts have made the decision to switch from gas cylinders to gas generators. While gas generators do offer these attractive benefits, some attention must be given to both the *input* to and the *output* from these devices. All generators that depend on an input of compressed air, including zero air and general-purpose air generators, and carrier gas grade and general grade nitrogen generators, must be protected from poor quality, contaminated house air. Old, oil-sealed air compressors introduce unacceptable levels of oil vapor, water vapor, rust, and dirt into the gas lines. If possible, it is best to use a modern, oilless compressor or a gas generator that features a built-in compressor. Yet, if an oilless compressor is located in an atmosphere high in water and/or oil vapors, it still may introduce these contaminants into the compressed air. Consequently, the gas output from the generator may need to be upgraded to acceptable purity for gas chromatography.

To make house air acceptable to most gas generators, you must remove three major contaminants: oil, water vapor, and particles. In the order shown, the filters and purifiers in Figure A first remove liquids, then vapors. Particles are removed through progressively smaller size filtration. Although these devices typically remove 99.9% of the oil and water vapors from compressed air, reducing them to 1000ppm or less, this is not sufficient incoming purity for most gas generators. The hydrocarbon and water vapor traps in Figure A adsorb the contaminants that escape the filters, reducing their concentrations to acceptable levels (1ppm or less).

Because high flows of air often must be purified, large (750cc) traps that trap contaminants efficiently at flow rates of up to 10 liters per minute are needed. The concern here is that the gas has sufficient contact time in the purifier for water vapor or hydrocarbons to be absorbed. A nitrogen generator, for example, typically requires an input of about 70 liters of air per minute to produce 1 liter of nitrogen per minute. In fact, the flow demands of nitrogen generators and general-purpose air generators often can exceed the flow capacity of even the 750cc purifiers. Under these circumstances, one approach is to use several purifiers of each type in parallel (Figure B).

Figure B. Parallel Purifier Configuration for a System Requiring a High Air Flow



We also recommend installing a hydrocarbon trap *downstream* from the generator, to remove any trace amount of hydrocarbon breakthrough. With twice the trapping capability of typical activated carbon purifiers, our Supelcarb™ HC Hydrocarbon Trap is the best choice for removing C6 and heavier hydrocarbons. Supelcarb is a special carbon sieve designed to have high capacity and good particle strength. Unlike irregular-shaped activated carbon particles, which can

create inconsistent packing densities and potential shifting of the packing in use, Supelcarb is a spherical bead that has extremely good packing characteristics. Activated carbon purifiers must be mounted in a vertical position, but a Supelcarb trap can be mounted either horizontally or vertically.

Our new Bulletin 918 rates popular gas purifiers on their contaminant-trapping ability, gas flow capacity, expected lifetime, and other considerations.

Ordering Information:

Purifier	Cat. No.
Molecular Sieve 5A Moisture Trap, 750cc	
1/4" fittings	23991
1/2" fittings	23992
Supelcarb HC Hydrocarbon Trap, 750cc	
1/4" fittings	24564
1/2" fittings	24565
Supelpure™-HC Hydrocarbon Trap, 750cc	
1/4" fittings	24518
1/2" fittings	24519
Mounting Clip for 750cc Traps	24983

For particle filters, oil vapor coalescing filters, and oil vapor filters, refer to the Supelco catalog.

Also see our catalog for air, zero air, FTIR, TOC, nitrogen, and hydrogen generators.

Supelcarb and Supelpure are trademarks of Sigma-Aldrich Co.