

new!

free literature

Resolve Benzene and Toluene
in Spark Ignition Fuels
Containing EthanolDownload your free copy from
www.restek.com

lit. cat.# 580227

D3606 Application Column (2 column set)

- Complete resolution of benzene from ethanol; no compromising coelutions.
- Easy, accurate quantification of aromatics.
- Fully conditioned column set—ready to use out of the box.
- Each set is tested for method applicability and includes chromatogram.

D3606 Application Column (2 column set)**Description****D3606 Application Column (2 column set)****

Column 1: 6' (1.8m), 1/8" OD, 2.0mm ID, nonpolar Rtx®-1

Column 2: 16' (4.9m), 1/8" OD, 2.0mm ID, proprietary packing material

cat.#*

83606-

*Please add column instrument configuration suffix number to cat.# when ordering. See chart on this page.

**This column set is for a valving system; therefore, packing material is filled to ends of columns.

Light Hydrocarbon Analysis

Special columns for unsaturated light hydrocarbons

Special columns for unsaturated light hydrocarbons

- Faster separations of C1 to C4 hydrocarbons.
- Res-Sil™ packing replaces Porasil materials.

***n*-Octane on Res-Sil™ C Packed Column**

This packed column has unique selectivity for resolving unsaturated light hydrocarbons (Figure 1).

OPN on Res-Sil™ C Packed ColumnThis column separates the light hydrocarbons, and resolves *cis*-2-butene from 1,3-butadiene (Figure 2).**2abc Refinery Gas Column Set**

This 3-column set is finely tuned to resolve light hydrocarbons. When used in the proper valving system, it will elute C5+ hydrocarbons ahead of C1 through C4 hydrocarbons.

Description*n*-Octane on Res-Sil™ C, 80/100 (20', 2.0mm ID, 1/8" SilcoSmooth™ OD)

OPN on Res-Sil™ C, 80/100 (12', 2.0mm ID, 1/8" SilcoSmooth™ OD)

2abc Refinery Gas Column Set (3 column set)**

cat.#*

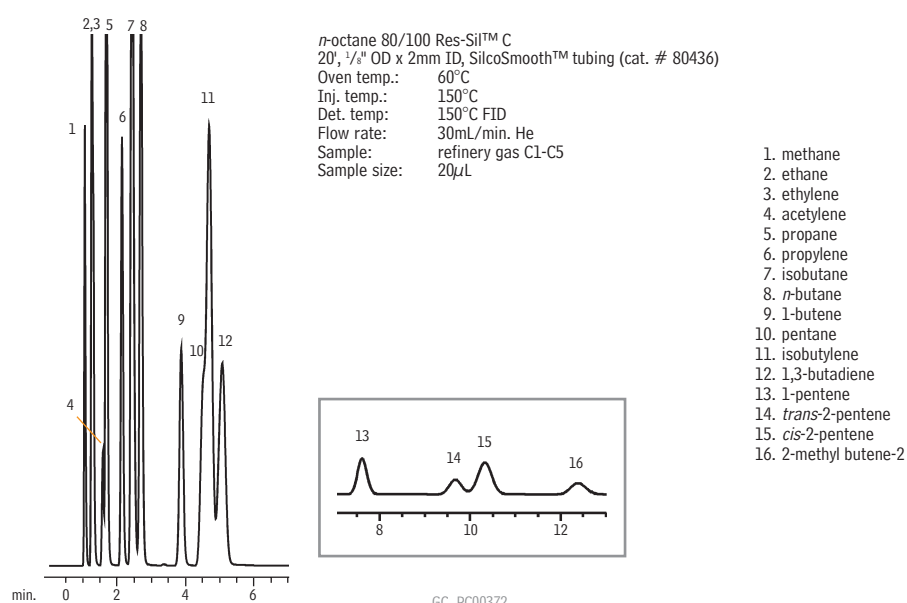
80436-

80437-

88000-

*Please add column instrument configuration suffix number to cat.# when ordering. See chart on this page.

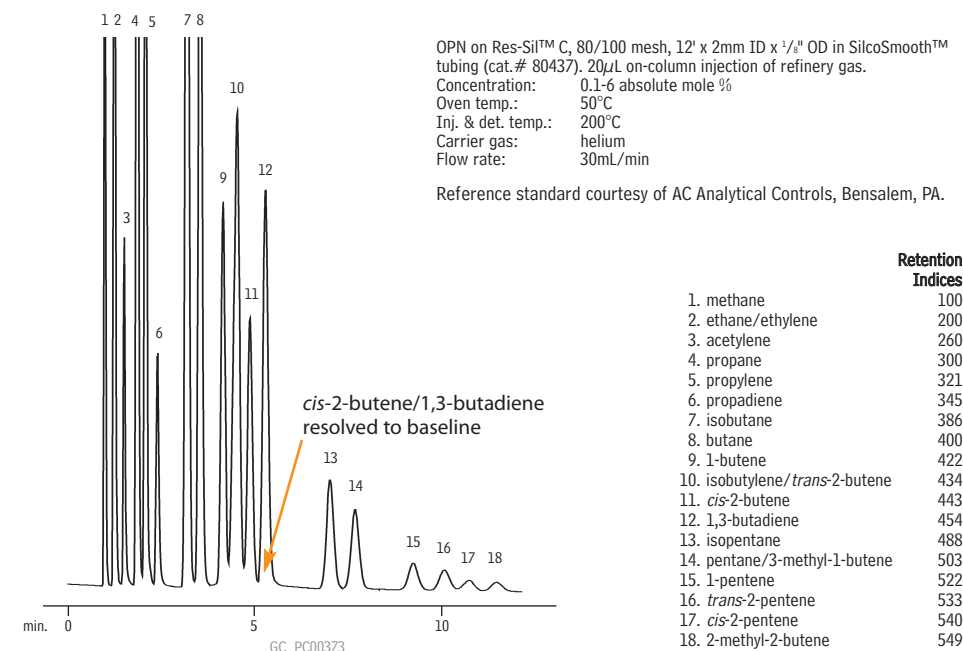
**This column set is for a valving system; therefore, packing material is filled to ends of columns.

Column Instrument
ConfigurationsGeneral
Configuration
Suffix -800Agilent
5880, 5890,
5987, 6890:
Suffix -810Varian 3700,
Vista Series,
FID:
Suffix -820PE 900-3920
8 7/4" Sigma 1,2,3:
Suffix -830PE Auto System
8300, 8400,
8700 (Not On-
Column):
Suffix -840See page 129 for custom
configurations**Note:** Initial 2" of column will
be empty, to accommodate a
needle. For a completely filled
column (not on-column) add
suffix -901.**Figure 1** *n*-Octane on Res-Sil™ C packing has unique selectivity for unsaturated light hydrocarbons.

for more info

See page 121 for more
information on Res-Sil™
packing materials.

Figure 2 OPN on Res-Sil™ C packing has unique selectivity for *cis*-2-butene and 1,3-butadiene.

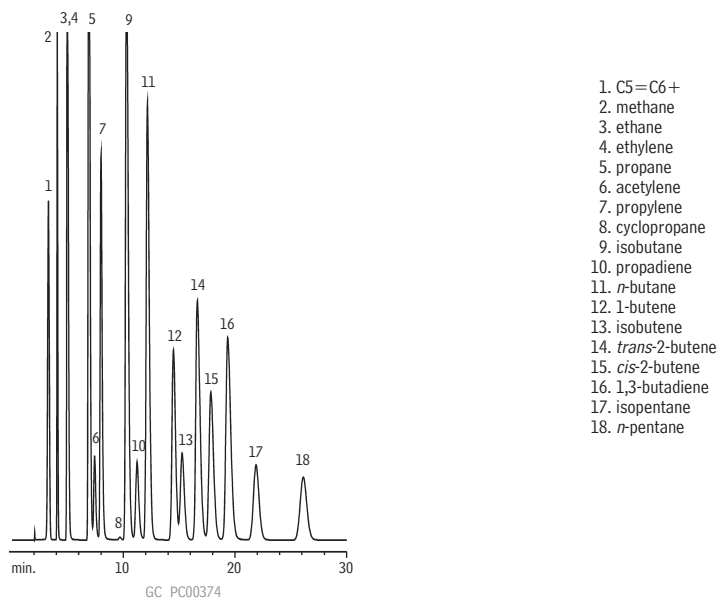


Darrel Zezzo
Ohio Valley Sales Representative
1+ year of service!

also available

Res-Sil™ packing materials.
See page 121.

Figure 3 Refinery gas calibration standard on a Restek refinery gas packed column set.



2abc Refinery Gas Column Set (cat.# 88000-875) (3 column set)
 Oven temp.: 60°C
 Inj. temp.: 150°C
 Det. temp.: 150°C FID
 Flow rate: 30mL/min., helium
 Sample: refinery gas
 Sample size: 1cc

Permanent Gases & Hydrocarbon Analysis

it's a fact

ShinCarbon ST is an ideal packing material for permanent gases, low molecular weight hydrocarbons, sulfur dioxide, and Freon® gases.

also available

For adapter kits for installing packed/micropacked columns, see [page 119](#).

a plus 1 story

"Being one of the first labs to utilize the ShinCarbon column in a real working environment, I was pleased to find that I was able to do all my permanent gas analysis on one column instead of the customary two. The peaks were sharper than I had experienced in the past and run time was significantly reduced. We are extremely pleased with the performance of the ShinCarbon column and will continue to find even more applications for it."

Bruce Nasser,
Quality Control Chemist,
Oxygen Service Spec Lab

ShinCarbon ST Packed/Micropacked Columns

- Separate permanent gases, including CO/CO₂, without cryogenic cooling.
- Rapid separations of permanent gas/light hydrocarbon mixtures.
- Excellent compatibility with most GC detectors—minimal bleed, minimal baseline rise.
- Preconditioned, less than 30 minutes to stabilize.

Analyze oxygen, nitrogen, methane, carbon monoxide, and carbon dioxide with one column and at room temperature. ShinCarbon ST material, a high surface area carbon molecular sieve (~1500 m²/g), is the ideal medium for separating gases and highly volatile compounds by GSC. The rapid, above-ambient analyses these columns provide will be a great convenience. Excellent thermal stability of the high surface area carbon, combined with careful conditioning during column manufacturing, ensures low-bleed operation and rapid stabilization when installing a new column. Custom-made ShinCarbon ST columns are available on request.

ShinCarbon ST is a highly stable material. Its 330°C upper temperature limit minimizes bleed and baseline rise during temperature programming, making the material compatible with most detection systems used for gas analysis, including TCD or HID. All ShinCarbon ST columns are fully conditioned in an oxygen/moisture free environment to prevent contamination. This minimizes stabilization time (less than 30 minutes) when installing a new column which, in turn, minimizes downtime.

ShinCarbon ST 80/100 Packed Columns (SilcoSmooth™ Stainless Steel)

OD	ID	2-Meter*
1/8"	2.0mm	80486-

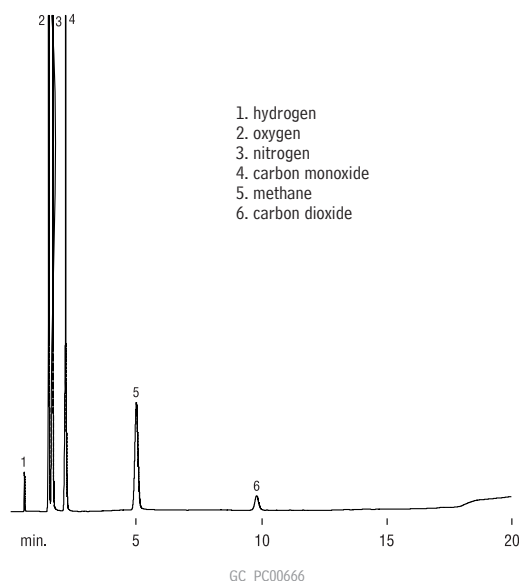
ShinCarbon ST 100/120 Micropacked Columns**

OD	ID	1-Meter	2-Meter
1/16"	1.0mm	19809	19808
0.95mm	0.75mm	19810	—

*Please add column instrument configuration suffix number to cat.# when ordering. See chart on the next page.

**Order installation kit separately. See page 119.

Separate permanent gases in 10 minutes, without cryogenics.



1. hydrogen
2. oxygen
3. nitrogen
4. carbon monoxide
5. methane
6. carbon dioxide

ShinCarbon ST 100/120 mesh
2 meter x 1mm ID micropacked (cat.# 19808)
Sample: 5µL permanent gases mix, approx.
5 mol. percent each
Inj. temp.: 100°C
Carrier gas: helium
Flow rate: 10mL/min.
Oven temp.: 40°C (hold 3 min.) to 250°C
@ 8°/min. (hold 10 min.)
Det. HID @ 200°C

please note

For additional example applications for ShinCarbon ST columns, see [pages 682, 684, and 686](#) in the Applications section.

Rt™-XLSulfur Packed/Micropacked Columns

- Optimized columns for low ppbv sulfur analyses.
- Eliminate the need for Teflon® tubing.
- Column and end-fittings are Siltek® treated for maximum inertness.

Sulfur analyses are traditionally performed using Teflon® tubing to improve column inertness. Unfortunately, Teflon® tubing is gas permeable, difficult to pack with high efficiency, prone to shrinkage, and has poor thermal stability. Analyses of ppbv levels of sulfur compounds are possible with the Rt™-XLSulfur column. The packing material for Rt™-XLSulfur columns is extensively deactivated for analysis of low ppbv levels of hydrogen sulfide and methyl mercaptan. It is then treated to achieve effective separation of hydrocarbons from sulfur compounds. The interior wall and the end-fittings of the Rt™-XLSulfur column are Siltek® treated, making the column as inert as Teflon®. The extra care taken with this column ensures more accurate analyses of sulfur compounds.

Rt™-XLSulfur Packed Columns

OD	ID	1-Meter*	2-Meter*
1/8"	2.0mm	80484-	80485-
3/16"	3.1mm	80482-	80483-

Rt™-XLSulfur Micropacked Columns**

OD	ID	1-Meter	2-Meter
1/16"	1.0mm	19804	19805
0.95mm	0.75mm	19806	19807

*Please add column instrument configuration suffix number to cat.# when ordering. See chart on this page.

**Order installation kit separately. See page 119.

Excellent for
Sulfur Analysis

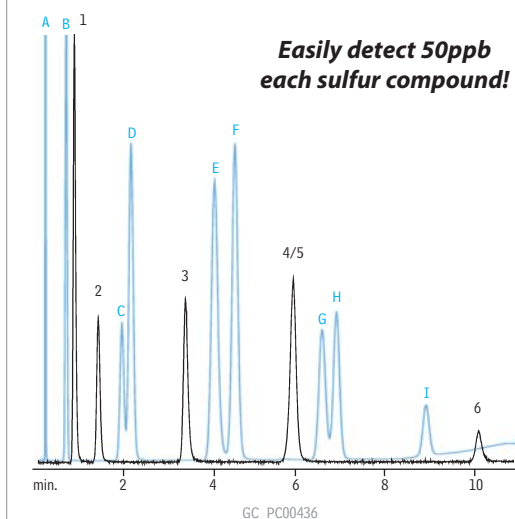
did you know?

Rt™-XLSulfur columns are optimized for low ppb-level sulfur analysis!

also available

For adapter kits for installing packed/micropacked columns, see [page 119](#).

Rt™-XLSulfur micropacked column separates hydrocarbons from sulfur compounds.



sulfurs

1. hydrogen sulfide
2. carbonyl sulfide
3. methyl mercaptan
4. ethyl mercaptan
5. dimethyl sulfide
6. dimethyl disulfide

hydrocarbons

- A. methane
- B. ethane
- C. propylene
- D. propane
- E. isobutane
- F. butane
- G. isopentane
- H. pentane
- I. hexane

1m, 0.75mm ID Rt™-XLSulfur micropacked column (cat.# 19806)
 Conc.: 50ppb each
 Oven temp.: 60°C to 230°C @ 15°C/min.
 Carrier gas: helium
 Flow rate: 9mL/min.
 Det.: SCD/FID

Sulfur standards courtesy of DCG Partnership 1 Ltd., Pearland, TX.

Column Instrument Configurations

General Configuration
Suffix -800

Agilent 5880, 5890, 5987, 6890:
Suffix -810

Varian 3700, Vista Series, FID:
Suffix -820

PE 900-3920
8 3/4" Sigma 1,2,3:
Suffix -830

PE Auto System 8300, 8400, 8700 (Not On-Column):
Suffix -840

See page 129 for custom configurations

Note: Initial 2" of column will be empty, to accommodate a needle. For a completely filled column (not on-column) add suffix -901.