

To help laboratories comply with and use these analytical procedures, Restek has been active in following the state guidance. Based on our good knowledge of the methods, our experienced chemists have developed a list of the appropriate technical service tools and analytical products to achieve success with these methods. We offer quality chromatographic columns, analytical reference materials, and sample preparation products.

In this comprehensive product listing, you will find everything you need to quickly set up or reorder consumables for these methods. Please refer to our latest product catalog or call 800-356-1688 or 814-353-1300, ext. 3, for more information. Also, we will be happy to provide a quote on any custom consumable you may need!

Regulatory and Analytical Methodology Contact Information

UST CONTACT

Wisconsin Department of
Commerce, Environmental &
Regulatory Services Division

P.O. Box 7837
Madison, WI 53707-7837
Phone: 608-266-0956
Fax: 608-261-7725

LUST CONTACT

Wisconsin Department of
Natural Resources

P.O. Box 7921
Madison, WI 53707-7921
Phone: 608-267-7560
Fax: 608-261-7725

Wisconsin's UST program maintains a web site at
<http://www.commerce.state.wi.us/ER/ER-BST-HomePage.html>

Wisconsin's LUST program maintains a web site at
http://www.dnr.state.wi.us/org/aw/rr/cleanup/ust_lust.html

State of Wisconsin UST Monitoring

- ✓ Comprehensive products listing for the latest UST methods used by the State of Wisconsin.
- ✓ Products conveniently organized by method number.
- ✓ Easy method set-up and reorder of consumables, including:
 - Gas chromatography columns and accessories,
 - Analytical reference materials,
 - Sample preparation supplies,
 - Technical service.

In 1992 the Wisconsin Department of Natural Resources (WDNR) published its technical guidance in assessing and closing underground storage tanks (UST). In accordance with Wisconsin state law and applicable US Environmental Protection Agency (EPA) UST site assessment requirements, WDNR requires site assessment to determine if a release has occurred from a UST System. In the technical guidance, WDNR released the first versions of modified gasoline range organic (GRO) and diesel range organic (DRO) methods. In September 1995, WDNR approved the modified GRO and DRO methods. These two methods, known as Wisconsin GRO and DRO, have been used in various laboratories since 1996; they are popular analytical procedures, not only in the State of Wisconsin but also in many other states.

The GRO method is based on purge and trap GC/FID/PID analysis and is designed to measure the concentration of GROs (C6-C10) and petroleum volatile organic compounds (PVOCs) in water or soil. The DRO method is based on solvent extraction GC/FID and is designed to measure the concentration of diesel range organics (C10-C28) in water, soil, or waste. DRO also can be used to measure kerosene, motor oil, or lubricant oil.



Ken Herwehe
Analytical Reference Materials
Product Marketing Manager
814-353-1300, ext. 2127



Joe Moodler
Analytical Reference Materials
Custom Standards Group Leader
814-353-1300, ext. 2148

Wisconsin

Gas Chromatography Columns & Accessories

For these items, see Restek's Chromatography Products Catalog:

- Syringes
- Autosampler Vials
- Guard Columns
- Ferrules, Septa



Recommended Gas Chromatography Columns

Rtx®-5, 30m x 0.25mm

Film Thickness	temp. limits	Cat. #
0.25µm	-60 to 330/350°C	10223
0.50µm	-60 to 330/350°C	10238
1.00µm	-60 to 320/340°C	10253

Integra-Guard Columns

Guard and analytical column in one connectionless length.

*Add the appropriate suffix number to analytical column catalog number.

ID	Length	Suffix #*
0.25mm	5m	-124
	10m	-127

Syringes

Standard Micro-Liter Syringes for Agilent 7673 and 7683 Autosamplers

Size	Needle Gauge	6-pk.
10µL	23s	20169
10µL	23s-26s	24600

Autosampler Vials

Crimp Top Vial Snap Seal™ Style (12 x 32mm, 11mm Crimp)

Description*	1,000-pk.
2.0mL Clear Glass Vial w/White Graduated Marking Spot	24384
2.0mL Amber Glass Vial w/White Graduated Marking Spot	24386

*Marking spots are available on request in blue, green, rust or yellow.

Aluminum Crimp Seals w/Septa

Description	1,000-pk.
Silver Seal, PTFE/Natural Rubber Septa	21175
Silver Seal, PTFE/Silicone Septa*	24360

*PTFE/Silicone/PTFE available on request.

Thermolite® Septa

Size	temp. limits	25-pk.	50-pk.	100-pk.
11mm (7/16")	to 340°C	20363	20364	20365

Replacement Inlet Seals

Stainless Steel Inlet Seal for Single-Column Installation*

Size	2-pk.	10-pk.
0.8mm ID	21315	21316

*Equivalent to Agilent Part# 18740-20880.

Inlet Liners

For Agilent GCs

Description	ID /OD & Length (mm)	ea.	5-pk.
Uniliner®*	4.0 ID, 6.3 OD x 78.5	20335	20336
Drilled Uniliner®	4.0 ID, 6.3 OD x 78.5	21054	21055
1mm Split**	1.0 ID, 6.3 OD x 78.5	20972	20973

*Restek design improves performance over the original Agilent Liner.

**Use this liner for increased sensitivity.

Low Volume Injector for Agilent GCs

Description	kit.
Low-Volume Injector for Agilent Split/Splitless GC Inlets	21692

Analytical Reference Materials:

WI GRO (Sept. 1995)

The method is designed to measure concentrations of gasoline range organics (GRO) (C6-C10) in water or soil. Petroleum volatile organic compounds (PVOCs) can be determined concurrently by this method. It is based on purge and trap, GC/FID procedure. FID/PID in series is used for GRO/PVOCs concurrently.

Calibration Mixtures

PVOC/GRO Mix (Wisconsin)

benzene	1,2,4-trimethylbenzene
ethylbenzene	1,3,5-trimethylbenzene
methyl <i>tert</i> -butyl ether	<i>m</i> -xylene
naphthalene	<i>o</i> -xylene
toluene	<i>p</i> -xylene

1,000µg/mL each in P&T methanol, 1mL/ampul

	Each	5-pk.	10-pk.
	30095	30095-510	
w/data pack	30095-500	30095-520	30195

Surrogate Mixtures

4-bromofluorobenzene

2,500µg/mL in P&T methanol, 1mL/ampul

	Each	5-pk.	10-pk.
	30067	30067-510	
w/data pack	30067-500	30067-520	30167

10,000µg/mL in P&T methanol, 1mL/ampul

	Each	5-pk.	10-pk.
	30082	30082-510	
w/data pack	30082-500	30082-520	30182

α,α,α-trifluorotoluene

2,500µg/mL in P&T methanol, 1mL/ampul

	Each	5-pk.	10-pk.
	30068	30068-510	
w/data pack	30068-500	30068-520	30168

10,000µg/mL in P&T methanol, 1mL/ampul

	Each	5-pk.	10-pk.
	30083	30083-510	
w/data pack	30083-500	30083-520	30183

fluorobenzene

2,000µg/mL in P&T methanol, 1mL/ampul

	Each	5-pk.	10-pk.
	30030	30030-510	
w/data pack	30030-500	30030-520	30130

Analytical Reference Materials:

WI DRO (Sept. 1995)

The method is designed to measure concentrations of diesel range organics (DRO) in the C10-C28 range in water, soil, or waste. It also can be used to measure kerosene, motor oil, or lubricant oil. It is based on a solvent extraction, GC/FID procedure.

Calibration Mixtures

DRO Mix (EPA/Wisconsin)

n-decane (C10) *n*-eicosane (C20)
n-dodecane (C12) *n*-docosane (C22)
n-tetradecane (C14) *n*-tetracosane (C24)
n-hexadecane (C16) *n*-hexacosane (C26)
n-octadecane (C18) *n*-octacosane (C28)

2,000µg/mL each in methylene chloride, 1mL/ampul

	Each	5-pk.	10-pk.
	31064	31064-510	
w/data pack	31064-500	31064-520	31164

Standard Mixture of *n*-alkanes for System Performance Test

n-decane (C10) *n*-hexacosane (C26)
n-dodecane (C12) *n*-octacosane (C28)
n-tetradecane (C14) *n*-triacontane (C30)
n-hexadecane (C16) *n*-dotriacontane (C32)
n-octadecane (C18) *n*-tetraatriacontane (C34)
n-eicosane (C20) *n*-hexatriacontane (C36)
n-docosane (C22) *n*-octatriacontane (C38)
n-tetracosane (C24) *n*-tetracontane (C40)

50µg/mL each in cyclohexane, 1mL/ampul

	Each	5-pk.	10-pk.
	31633	31633-510	
w/data pack	31633-500	31633-520	31733

Surrogate Mixtures

p-terphenyl

10,000µg/mL in methylene chloride, 1mL/ampul

	Each	5-pk.	10-pk.
	31095	31095-510	
w/data pack	31095-500	31095-520	31195

2-fluorobiphenyl

2,500µg/mL each in P&T methanol, 1mL/ampul

	Each	5-pk.	10-pk.
	31096	31096-510	
w/data pack	31096-500	31096-520	31196

o-terphenyl

10,000µg/mL in methylene chloride, 1mL/ampul

	Each	5-pk.	10-pk.
	31097 Default	31097-510 Default	
w/data pack	31097-500 Default	31097-520 Default	31197 Default

Analytical Reference Materials:

WI DRO (cont.)

Petroleum Reference Mixtures Pattern Recognition Mixtures

Kerosene Fuel Composite Standard

5,000µg/mL in methylene chloride, 1mL/ampul

	Each	5-pk.	10-pk.
	31094	31094-510	
w/data pack	31094-500	31094-520	31194

50,000µg/mL in methylene chloride, 1mL/ampul

	Each	5-pk.	10-pk.
	31256	31256-510	
w/data pack	31256-500	31256-520	31356

50,000µg/mL in methylene chloride, 5mL/ampul

	Each	5-pk.	10-pk.
	31257	31257-510	
w/data pack	31257-500	31257-520	31357

Diesel Fuel #2 Composite Standard

5,000µg/mL in methylene chloride, 1mL/ampul

	Each	5-pk.	10-pk.
	31093	31093-510	
w/data pack	31093-500	31093-520	31193

50,000µg/mL in methylene chloride, 1mL/ampul

	Each	5-pk.	10-pk.
	31258	31258-510	
w/data pack	31258-500	31258-520	31358

50,000µg/mL in methylene chloride, 5mL/ampul

	Each	5-pk.	10-pk.
	31259	31259-510	
w/data pack	31259-500	31259-520	31359

Motor Oil Composite Standard

This composite solution is prepared from an equal volume blend of the following types of motor oil: 5W30, 10W30, 10W40, and 20W50. After blending, a precisely weighed amount of the composite is added to a volumetric flask to produce a mixture at 50,000µg/mL in methylene chloride, 1mL/ampul.

	Each	5-pk.	10-pk.
	31464	31464-510	
w/data pack	31464-500	31464-520	31564

Used Motor Oil Composite Standard

This composite solution is prepared from an equal volume blend from five gasoline powered vehicles (belonging to Restek employees). After blending, a precisely weighed amount of the composite is added to a volumetric flask to produce a mixture at 50,000µg/mL in methylene chloride, 1mL/ampul.

	Each	5-pk.	10-pk.
	31465	31465-510	
w/data pack	31465-500	31465-520	31565

Other Certified Fuel Standards

Save time—use these standards to perform calibration checks for TPH and aromatics in a single analysis.

Certified BTEX in Unleaded Gas Composite Standard

Certified for: toluene
benzene *m*-xylene
ethylbenzene *o*-xylene
isopropyl benzene *p*-xylene
methyl *tert*-butyl ether
naphthalene
5,500ppm gasoline in P&T methanol, certified components listed, 1mL/ampul

	Each	5-pk.	10-pk.
	30237	30237-510	
w/data pack	30237-500	30237-520	30337

Certified Aromatics in Gasoline

Certified for: *n*-propylbenzene
benzene toluene
ethylbenzene 1,2,3-trimethylbenzene
m-ethyltoluene 1,2,4-trimethylbenzene
o-ethyltoluene 1,3,5-trimethylbenzene
p-ethyltoluene *m*-xylene
isopropylbenzene *o*-xylene
methyl *tert*-butyl ether *p*-xylene
naphthalene
5,500ppm gasoline in P&T methanol, certified components listed, 1mL/ampul

	Each	5-pk.	10-pk.
	30485	30485-510	
w/data pack	30485-500	30485-520	30585

Certified PAHs in Diesel #2

Certified PAHs	Typical Certified Conc. * (ppm)
acenaphthene	7
acenaphthylene	1
anthracene	13
fluorene	6
1-methylnaphthalene	110
2-methylnaphthalene	60
naphthalene	30
phenanthrene	13

50,000ppm diesel #2 in methylene chloride, PAH concentrations listed above, 1mL/ampul

	Each	5-pk.	10-pk.
	31673	31673-510	
w/data pack	31673-500	31673-520	31773

Certified PAHs in Motor Oil

coming soon!

EPA Methods

for Wisconsin UST Applications

To complement the WI GRO and WI DRO methods, analyses of individual target compounds, such as benzene, toluene, naphthalene, and other aromatics are included in EPA Methods 8021, 8260 or 8270. Please request our EPA UST *Fast Facts* (Lit. Cat. #59397) for complete product listings.

Fuel and Certified Fuel Standards

We offer a wide variety of composite and single-source fuel standards to meet your needs. Please see our general chromatography product catalog for detailed listings of the following:

Aviation Gasoline	JP-4 Military Fuel
Jet Fuel A	JP-5 Military Fuel
Fuel Oil #4	JP-8 Military Fuel
Fuel Oil #5	Mineral Spirits
Fuel Oil #6	



Latest Revisions for
All 50 States
Available Soon!

- ✓ Detailed product listings for each state in convenient *Fast Facts* format:

analytical columns
reference materials
sample preparation materials
other consumables

- ✓ Completely updated with the latest method revisions.
- ✓ Allows easy ordering and method setup.

Call Technical Service at 800-356-1688 or 814-353-1300, ext. 4, for more information, or contact your local Restek representative.





Custom Reference Material Request Form

Domestic Customers**FAX#:** 814-355-2895**email:** standards@restekcorp.com**International Customers****Contact Your Local Restek Representative.****Name:** _____ **Date:** _____**Company/Location:** _____**Phone #:** _____ **FAX #:** _____**E-mail:** _____**Take these eight steps to create the right solution:**

1. Mixture Description: _____
2. Solvent: _____ **3. No. of components:** _____
4. Volume (select): 1mL, 2mL, 5mL, 10mL, or other mL _____
5. Quantity: No. of units _____

6. Select testing and documentation that best meets your requirements:

- Gravimetric Documentation: Lot Sheet with balance printout attached.
- Qualitative Documentation: Certificate of Composition, Chromatogram, and Gravimetric Documentation.
- Quantitative Documentation: Certificate of Analysis and Data Pack.

7. Compound(s): (list or attach sheet)		Concentration:	8. Concentration Units
1.			<input type="radio"/> mg/mL <input type="radio"/> µg/mL <input type="radio"/> ng/mL <input type="radio"/> vol./vol.% <input type="radio"/> wt./wt.% <input type="radio"/> other _____
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			

ALL mixtures are produced in accordance with our ISO 9001 registration. Analytical balances are calibrated daily at seven mass levels using NIST-traceable weights. ALL raw materials used are a minimum of 97% pure unless otherwise specified. Select the testing and documentation option that best meets your requirements. **on-line:** <http://www.restekcorp.com/stdreq.htm>

Can't locate the exact mixture you need?

With **thousands** of compounds in our inventory,
we can make any mixture
to your specifications.

*To order, use the convenient custom
reference material request form inside.*

visit us online at
www.restekcorp.com

For more information,
Call 800-356-1688 or 814-353-1300 or
Contact Your Local Restek Representative

USA: 110 Benner Circle, Bellefonte, PA 16823 • phone: (800) 356-1688 • fax: (814) 355-2895

Germany: Schaberweg 23, 61348 Bad Homburg • phone: (49) 06172 2797 0 • fax: (49) 06172 2797 77

France: 1, rue Montespan, 91024 Evry • phone: 01 60 78 32 10 • fax: 01 60 78 70 90

Ireland: 8 Baronscourt Lane, Belfast, BT8 8RR, Northern Ireland • phone: (44) 28 9081 4576 • fax: (44) 28 9081 4576

Thames Restek UK Ltd.: Fairacres Industrial Centre, Dedworth Road, Windsor, Berkshire • SL4 4LE
phone: 01753 624111 • fax: 01753 624666



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