FAST FACTS At-a-Glance Product Information from Restek

Northwest Regional UST Monitoring

- ✔ Comprehensive product listing for the latest UST methods used by the States of Oregon and Washington.
- ✔ 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.

To help laboratories comply with and use these analytical procedures, Restek has been active in following the state guidelines. 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 (lit. cat. #59662) 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 & LUST CONTACT

Washington Department of Ecology
Toxics Cleanup Program
P.O. Box 47600
Olympia, WA 98504-7600
Phone: 360-407-7170
Fax: 360-407-7154

Washington's UST & LUST program maintains a web site at

http://www.ecy.wa.gov/programs/tcp/ust-lust/tanks.html

UST & LUST CONTACT

Oregon Department of Environmental Quality
UST Program, 811 SW Sixth Avenue, 9th Floor
Portland, OR 97204
Phone: 503-229-5733 or 1-800-742-7878
Fax: 503-229-6954

Oregon's UST & LUST program maintains a web site at

http://www.deq.state.or.us/wmc/tank/ust-lust.htm

Washington State Department of Ecology (WSDE) has been using analytical methods for the analysis of total petroleum hydrocarbons (TPH) since 1991. These analytical methods, known as WTPH methods, have been extensively used in underground storage tank (UST) applications. In 1997 these methods were updated to provide additional detail, to provide for extended analysis and to incorporate an identification (ID) method for water samples. These updated methods are now called NWTPH ("NW" = "Northwest" to reflect their use in Oregon as well as Washington). Under NWTPH, there are three methods: NWTPH-HCID for hydrocarbon identification; NWTPH-Gx for volatile petroleum products; and NWTPH-Dx for semivolatile petroleum products.

In 1998 WSDE completed a "working draft" of the amendment to the state cleanup law: The Interim TPH Policy describes a new approach for petroleum: Separation into carbon-range fractions and use of surrogates or derived values to represent those fractions. Two analytical methods were adopted from Massachusetts' Department of Environmental Protection: VPH for volatile aliphatic and aromatic petroleum hydrocarbons, and EPH for extractable aliphatic and aromatic petroleum hydrocarbons.

NWTPH-HCID is a qualitative and semi-quantitative screen to determine the presence and type of petroleum products that may exist in water or soil. This method should be used if the type of petroleum contamination is unknown, and should be performed on contaminated soil or water that is representative of the site. The results will determine what fully quantitative method(s), if any, are needed for compliance with the matrix criteria. Should the value of the analysis for gasoline, diesel or heavy oils (or any other identified petroleum product) exceed the reporting limits, the specific analytical method for that product must be employed.

NWTPH-Gx is the qualitative and quantitative extended method for volatile (e.g., gasoline) petroleum products in soil and water. Petroleum products applicable for this method include aviation and automotive gasoline, mineral spirits, Stoddard solvent, and naphtha.

NWTPH-Dx is the qualitative and quantitative extended method for semivolatile (e.g., diesel) petroleum products in soil and water. Petroleum products applicable for this include jet fuels, kerosene, diesel oils, hydraulic fluids, mineral oils, lubricating oils and fuel oils.

RESTEK

Northwest Regional

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: WA VPH (June 1997)

The method is designed to measure the collective concentrations of volatile aliphatic and aromatic petroleum hydrocarbons in water and soil. The method is based on a purge and trap, gas chromatography procedure with PID/FID in series for detection.

Calibration Mixtures

WA VPH Standard

n-pentane (C5)	benzene	toluene
n-hexane (C6)	ethylbenzene	1,2,3-trimethylbenzene
n-octane (C8)	1-methylnaphthalene	*m*-xylene
n-decane (C10)	methyl *tert*-butyl ether	*o*-xylene
n-dodecane (C12)	naphthalene	*p*-xylene

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

	Each	5-pk.	10-pk.
	30451	30451-510	
w/data pack	30451-500	30451-520	30551

Surrogate Mixtures

MA VPH Surrogate Standard

2,5-dibromotoluene

1,000µg/mL in P&T methanol, 1mL/ampul

	Each	5-pk.	10-pk.
	30435	30435-510	
w/data pack	30435-500	30435-520	30535

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

	Each	5-pk.	10-pk.
	30453	30453-510	
w/data pack	30453-500	30453-520	30553

Matrix Spike Mixtures

PVOC Mix (California)

benzene	toluene	*p*-xylene
ethylbenzene	*m*-xylene	
methyl *tert*-butyl ether	*o*-xylene	

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

	Each	5-pk.	10-pk.
	30231	30231-510	
w/data pack	30231-500	30231-520	30331

Petroleum Reference Mixtures
Pattern Recognition Mixtures

Unleaded Gasoline Composite Standard

2,500µg/mL in P&T methanol, 1mL/ampul

	Each	5-pk.	10-pk.
	30081	30081-510	
w/data pack	30081-500	30081-520	30181

50,000µg/mL in P&T methanol, 1mL/ampul

	Each	5-pk.	10-pk.
	30205	30205-510	
w/data pack	30205-500	30205-520	30305

50,000µg/mL in P&T methanol, 5mL/ampul

	Each	5-pk.	10-pk.
	30206	30206-510	
w/data pack	30206-500	30206-520	30306

Analytical Reference Materials: WA EPH (June 1997)

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

WA EPH Aromatic Hydrocarbon Mix

acenaphthene, benzo(ghi)perylene, naphthalene, pyrene, toluene, 1,2,3-trimethylbenzene

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

	Each	5-pk.	10-pk.
	31488	31488-510	
w/data pack	31488-500	31488-520	31588

WA EPH Aliphatic Hydrocarbon Mix

n-octane (C8), *n*-decane (C10), *n*-dodecane (C12), *n*-hexadecane (C16), *n*-heneicosane (C21), *n*-tetratriacontane (C34)

1,000µg/mL each in hexane, 1mL/ampul

	Each	5-pk.	10-pk.
	31489	31489-510	
w/data pack	31489-500	31489-520	31589

Surrogate Mixtures

MA EPH Surrogate Spike Mix

1-chlorooctadecane, *o*-terphenyl

4,000µg/mL each in acetone, 1mL/ampul

	Each	5-pk.	10-pk.
	31479	31479-510	
w/data pack	31479-500	31479-520	31579

Internal Standard Mixtures

5-α-androstane

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

	Each	5-pk.	10-pk.
	31065	31065-510	
w/data pack	31065-500	31065-520	31165

Matrix Spike Mixtures

WA EPH Matrix Spike Mix

n-decane (C10), *n*-dodecane (C12), *n*-hexadecane (C16), *n*-heneicosane (C21), acenaphthene, anthracene, benzo(a)pyrene, benzo(ghi)perylene, naphthalene, pyrene

250µg/mL each in acetone, 1mL/ampul

	Each	5-pk.	10-pk.
	31490	31490-510	
w/data pack	31490-500	31490-520	31590

Fractionation Mixtures

WA EPH Fractionation Check Mix

n-octane (C8), *n*-decane (C10), *n*-dodecane (C12), *n*-hexadecane (C16), *n*-heneicosane (C21), *n*-tetratriacontane (C34), acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(ghi)perylene, chrysene, dibenzo(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, pyrene

25µg/mL each in hexane, 1mL/ampul

	Each	5-pk.	10-pk.
	31491	31491-510	
w/data pack	31491-500	31491-520	31591

Analytical Reference Materials:

NWTPH-HCID (June 1997)

The method is designed to identify petroleum products in the C7-C30 range, by "fingerprint" pattern matching, in water, soil or waste. The extraction can be used to quantitatively measure DRO range petroleum products, kerosene, motor oil, or lubricant oil. It is based on a solvent extraction GC/FID procedure.

Surrogate Mixtures

NW TPH-HCID Surrogate Mix

n-pentacosane (C25), 4-bromofluorobenzene

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

	Each	5-pk.	10-pk.
	31486	31486-510	
w/data pack	31486-500	31486-520	31586

Retention Time Mixtures

NW TPH-HCID Retention Time Mix

n-dodecane (C12), *n*-tetracosane (C24), toluene

2,500µg/mL each in methylene chloride, 1mL/ampul

	Each	5-pk.	10-pk.
	31485	31485-510	
w/data pack	31485-500	31485-520	31585

Petroleum Reference Mixtures
Pattern Recognition Mixtures

Mineral Spirits Standard

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

	Each	5-pk.	
	31260	31260-510	
w/data pack	31260-500	31260-520	31360

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

	Each	5-pk.	10-pk.
	31261	31261-510	
w/data pack	31261-500	31261-520	31361

Unleaded Gasoline Composite Standard

2,500µg/mL in P&T methanol, 1mL/ampul

	Each	5-pk.	10-pk.
	30081	30081-510	
w/data pack	30081-500	30081-520	30181

50,000µg/mL in P&T methanol, 1mL/ampul

	Each	5-pk.	10-pk.
	30205	30205-510	
w/data pack	30205-500	30205-520	30305

50,000µg/mL in P&T methanol, 5mL/ampul

	Each	5-pk.	10-pk.
	30206	30206-510	
w/data pack	30206-500	30206-520	30306

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

Prepared from an equal volume blend of these motor oils: 5W30, 10W30, 10W40, 20W50. A precisely weighed amount of the composite is diluted to 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

Prepared from an equal volume blend from five gasoline powered vehicles. A precisely weighed amount of the composite is diluted to 50,000µg/mL in methylene chloride. 1mL/ampul.

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

Analytical Reference Materials: NWTPH-Gx (June 1997)

This method is designed to measure concentrations of volatile petroleum products. BTEX may be determined simultaneously with gasoline, if requirements of methods 8020/8021 (use of PID) or 8260 (use of MS) are met.

NW TPH-Gx Surrogate Mix

4-bromofluorobenzene 1,4-difluorobenzene

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

	Each	5-pk.	10-pk.
	30455	30455-510	
w/data pack	30455-500	30455-520	30555

Petroleum Reference Mixtures Pattern Recognition Mixtures

Unleaded Gasoline Composite Standard

2,500µg/mL and 50,000µg/mL mixtures; described in column at left.

Analytical Reference Materials: NWTPH-Dx (June 1997)

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.

NW TPH-Dx Surrogate Mixes

Pentacosane Standard

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

	Each	5-pk.	10-pk.
	31487	31487-510	
w/data pack	31487-500	31487-520	31587

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

10,000µg/mL in methylene chloride, 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	31097-510	
w/data pack	31097-500	31097-520	31197

Petroleum Reference Mixtures Pattern Recognition Mixtures

Diesel Fuel #2 Composite Standard

5,000µg/mL and 50,000µg/mL mixtures; described in column at left.

Kerosene Fuel Composite Standard

5,000µg/mL and 50,000µg/mL mixtures; described in column at left.

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.			❍ mg/mL
2.			❍ µg/mL
3.			❍ ng/mL
4.			❍ vol./vol.%
5.			❍ wt./wt.%
6.			❍ other _____
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.
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) 353-1309

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

Literature Cat.# 59396

RESTEK ISO 9001 REGISTERED