

# FAST FACTS

At-a-Glance  
Product  
Information  
from Restek

To help laboratories comply with and use these analytical procedures, Restek has been active in following the state guidance. Based on our assembled knowledge of the methods, our experienced chemists have 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.

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

## Regulatory and Analytical Methodology Contact Information

### Texas Natural Resources Conservation Commission

Petroleum Storage Tank Division

MC: 133

P.O. Box 13087

12100 Park 35 Circle, 78753

Austin, TX 78711-3087

Phone: (512) 239-2106

Fax: (512) 239-2177

### Texas UST program maintains a web site at:

[http://www.tnrcc.state.tx.us/permitting/r\\_e/pssta/](http://www.tnrcc.state.tx.us/permitting/r_e/pssta/)

### Texas LUST program maintains a web site at:

<http://www.tnrcc.state.tx.us/permitting/remed/rpr/index.html>



# RESTEK

# State of Texas UST Monitoring

- ✓ The latest TNRCC 1005/1006 UST methods used by Texas.
- ✓ Comprehensive product listing 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.

Texas Natural Resource Conservation Commission (TNRCC) enforces the state and EPA rules in assessment, monitoring, and closure of Underground Storage Tanks (UST). In the early 1990s TNRCC published the TNRCC Method 1005, Revision 01 analytical method for UST applications. Then, in 1996 they modified the method and released Revision 02; then modified it again in 1998 and Revision 03 was finalized in June 2001.

TNRCC Method 1005, Revision 03 determines the total petroleum hydrocarbons (TPH) (C6-C35) in solid and aqueous matrices. The GC method is used to separate the TPH into two ranges (C6-C12, and C12-C28), and a third range (C28-C35) when applicable, based on the boiling points of the hydrocarbons. It is based on liquid/liquid or liquid/solid extraction and GC/FID analysis, and may be used in lieu of US EPA Method 418.1 for the analysis of TPHs. Compared with earlier versions, this final version now includes heavier hydrocarbons in the range of C28 to C35. Data produced using Revision 03 should be reported to C35, unless the environmental medium of concern or suspected source of TPH does not contain hydrocarbons greater than C28. Results from analyses using earlier versions of Method 1005 may not include data for C28 to C35.

TNRCC Method 1006, draft version, was published in May 2000 to guide the separation and quantitation of aliphatic and aromatic fractions in petroleum contaminated soil or water samples. This method uses silica gel fractionation to separate the aliphatic and aromatic fractions. The method is applicable to hydrocarbons in the gasoline, diesel, motor oil range, and commonly is used in conjunction with TNRCC Method 1005 for the determination of total petroleum hydrocarbons. TNRCC 1006 method is not intended for the quantitation of individual target analytes, such as benzene, toluene, naphthalene, or other aromatics. Those target analytes are best determined using EPA Methods 8021, 8260 or 8270.



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## Gas Chromatography Columns & Accessories

For the below 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

\*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 Vial

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

\*Our stainless steel inlet seal is 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 changes improve 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

## TNRCC Method 1005, Revision 3, (6-1-2001)

To determine the total concentrations of petroleum hydrocarbons (TPH) (C6-C35) in solid and aqueous matrices. It is based on solvent/solid extraction and GC/FID.

## Analytical Reference Materials

### Calibration Mixtures

#### TX TPH Calibration Mix

diesel fuel #2 composite  
unleaded gasoline composite  
each in pentane, 1mL/ampul

	Each	5-pk.	10-pk.
	31483	31483-510	—
w/data pack	31483-500	31483-520	31583

### Retention Time Calibration Mixtures

#### Alternate Boiling Point/Carbon Number Distribution Marker Stock Standard

hexane (C6)	heneicosane (C21)
octane (C8)	octacosane (C28)
decane (C10)	pentatriacontane (C35)
dodecane (C12)	hexatriacontane (C36)
hexadecane (C16)	

200µg/mL each in pentane, 1mL/ampul

	Each	5-pk.	10-pk.
	31639	31639-510	—
w/data pack	31639-500	31639-520	31739

**Note:** Restek includes both C35 and C36 as the method allows the laboratory to use C36, if the laboratory is unable to locate the C35 reference standard (TNRCC 1005 & 1006, paragraph 2.0).

### TX TPH Locator Mix

hexane (C6)	octacosane (C28)
decane (C10)	

200µg/mL each in pentane, 1mL/ampul

	Each	5-pk.	10-pk.
	31482	31482-510	—
w/data pack	31482-500	31482-520	31582

### Matrix Spike Mixtures

#### TX TPH Matrix Spike Mix

diesel fuel #2 composite  
unleaded gasoline composite  
10,000µg/mL each in P&T methanol, 1mL/ampul

	Each	5-pk.	10-pk.
	31484	31484-510	—
w/data pack	31484-500	31484-520	31584

## TNRCC Method 1005 (cont.)

### Surrogate Mixtures

#### 2-Fluorobiphenyl Standard

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 Standard

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

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

## Draft TNRCC Method 1006

To separate and quantify the aliphatic and aromatic fractions (C6-C35) of petroleum hydrocarbons extracted from soil and water samples. It is used in conjunction with TNRCC 1005 for selected samples to determine the aliphatic and aromatic fractions of the TPH. It is based on extraction, fractionation and GC/FID.

## Analytical Reference Materials

### Calibration Mixtures

#### TX TPH Calibration Mix

diesel fuel #2 composite  
unleaded gasoline composite  
10,000µg/mL each in pentane, 1mL/ampul

	Each	5-pk.	10-pk.
	31483	31483-510	—
w/data pack	31483-500	31483-520	31583

### Calibration Check Mixtures

#### BTEX Standard

benzene *m*-xylene  
ethylbenzene *o*-xylene  
toluene *p*-xylene  
200µg/mL each in P&T methanol, 1mL/ampul

	Each	5-pk.	10-pk.
	30051	30051-510	—
w/data pack	30051-500	30051-520	30151

2,000µg/mL each in P&T methanol, 1mL/ampul

	Each	5-pk.	10-pk.
	30213	30213-510	—
w/data pack	30213-500	30213-520	30313

## Draft TNRCC Method 1006 (cont.)

### WA EPH Aromatic Hydrocarbon Standard

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  
2-methylnaphthalene  
naphthalene  
pyrene  
1,2,3-trimethylbenzene

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

	Each	5-pk.	10-pk.
	31469	31469-510	—
w/data pack	31469-500	31469-520	31569

### Retention Time Calibration Mixtures

#### Alternate Boiling Point/Carbon Number Distribution Marker Stock Standard

hexane (C6)  
octane (C8)  
decane (C10)  
dodecane (C12)  
hexadecane (C16)  
heneicosane (C21)  
octacosane (C28)  
pentatriacontane (C35)  
hexatriacontane (C36)

200µg/mL each in pentane, 1mL/ampul

	Each	5-pk.	10-pk.
	31639	31639-510	—
w/data pack	31639-500	31639-520	31739

**Note:** Restek includes both C35 and C36 as the method allows the laboratory to use C36, if the laboratory is unable to locate the C35 reference standard (TNRCC 1005 & 1006, paragraph 2.0).

### Matrix Spike Mixtures

#### TX TPH Matrix Spike Mix

diesel fuel #2 composite  
unleaded gasoline composite  
10,000µg/mL each in P&T methanol, 1mL/ampul

	Each	5-pk.	10-pk.
	31484	31484-510	—
w/data pack	31484-500	31484-520	31584

### 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

## Petroleum Reference Mixtures Pattern Recognition Mixtures (cont.)

### Unleaded Gasoline Composite Standard

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

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 different gasoline-powered vehicles. 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

## EPA Methods for Texas UST Applications

To complement the TNRCC 1005 and TNRCC 1006 methods, TNRCC has recommended standard EPA methods for Texas UST analysis of individual target compounds, such as benzene, toluene, naphthalene, and other aromatics. The recommended methods include EPA Methods 8021, 8260 or 8270. Please request the EPA UST Fast Facts (Lit. Cat. #59397) for complete product listings.

### Fuel and Certified Fuel Standards

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

Certified BTEX in Unleaded Gas Composite Standard  
 Certified Aromatics in Unleaded Gasoline  
 Certified PAHs in Diesel Fuel #2  
 Certified PAHs in Motor Oil (coming soon)

### Single Source Fuel Standards

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

## 50 State UST Methods

### Latest Revisions for All 50 States Available Soon!

- ✓ Detailed product listing available for all 50 states in convenient Fast Facts format.
- ✓ Completely updated with the latest method revisions.
- ✓ Allows easy ordering and method setup.
- ✓ Convenient listing of analytical column, sample preparation, reference material, and other consumables needed for all methods.

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) 353-1309**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](http://www.restekcorp.com)

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

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Literature Cat.# 59394

