Hydrocarbon standards for GC analysis 2016

Petrochemical • Gas Chromatography • Petroleum (hydrocarbons) • EPA • ASTM • GC • Gasoline • Diesel • Oxygenates • Aromatics • Aliphatics • Petrochemical

LGC Quality - ISO 9001 • ISO/IEC 17025 • ISO Guide 34 • GMP/GLP • ISO 13485 • ISO/IEC 17043

Hydrocarbon standards for GC analysis

The products listed in this catalog are our standards for petroleum and environmental testing that are suitable for analysis by GC-MS or GC-FID.

The first section introduces our new certified reference materials (CRMs) for use with ASTM gas chromatography methods. These standards are intended for use with: ASTM D3606, D4815, D5501, D5599 and D5769. They have been manufactured to the highest quality in an ISO Guide 34 accredited facilities.

The second section of the catalog includes our new line of standards for PIANO and PONA analysis.

P - Paraffins (alkanes)
I - Isoparaffins (branched alkanes)
A - Aromatics (benzene and benzene derivatives)
N - Naphthalenes (cycloalkanes)
O - Olefins (alkenes)

These standards can be used for detailed hydrocarbon analysis, to determine retention time, indices, and response factors for individual components of complex petroleum mixtures.

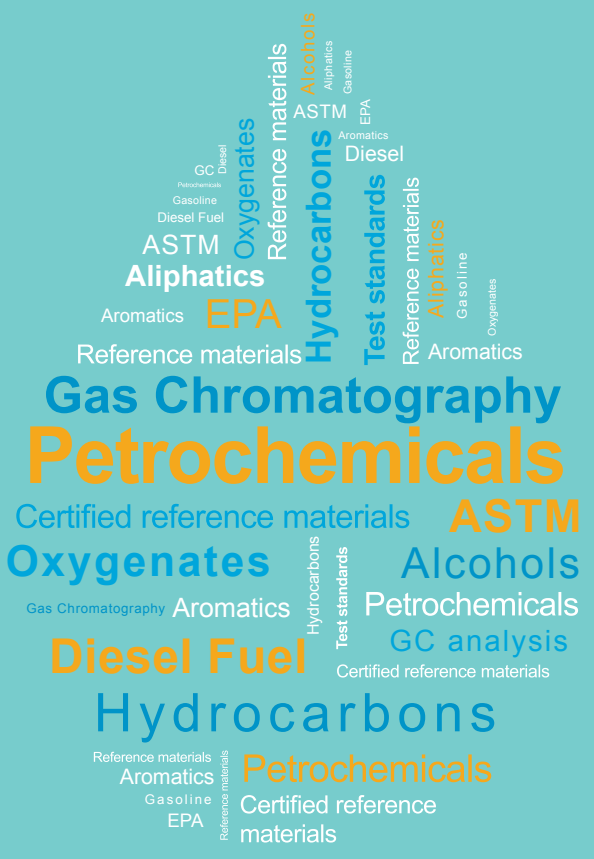
Section 3 offers standards for gas chromatography analysis in accordance with EPA or state regulations and are also manufactured in an ISO Guide 34 accredited facility.

In addition, our VHG Labs brand offers an extensive line of certified reference standards for both new and used oil applications which may be used for analysis by ICP, ICP-MS, AA, XRF, RDE, UVF, physical testing instruments, and other used oil analysis equipment. The VHG Labs line includes single and multi-element standards (both sulfonate-based and sulfur-free versions).

Our commitment to quality

All of the CRMs and reference standards that we offer are subjected to rigorous quality assurance checks prior to shipment and are shipped with a comprehensive Certificate of Analysis (COA).

If your requirements are not met by the products in this catalog or you have further questions, please contact us at custsvc@lgcgroup.com.



About LGC Standards

LGC Standards is a leading global producer and distributor of reference materials and proficiency testing schemes. Headquartered in Teddington, Middlesex, UK, LGC Standards has a network of dedicated sales offices extending across 20 countries in 5 continents. We have an unparalleled breadth of ISO Guide 34 accredited reference material production in facilities at 4 sites across the UK, US and Germany.

In addition to our petroleum product line, we manufacture CRMs and reference materials for the following sectors: pharmaceutical, forensic, clinical, food, beverage, environmental, pesticides, industrial and contaminants. We provide proficiency testing schemes in support of these sectors, as well as others, to more than 10,000 laboratories worldwide.

About our Webshop

An up-to-date listing of all products is available on the LGC website: www.lgcstandards.com. Once registered, you can use the website to order products, check delivery times and access a range of resources for a wide variety of sectors.

Prices for the products listed, as well as detailed procedures and transport charges are available from your local sales office, where applicable. For products requiring special delivery procedures (dangerous goods, etc.), additional charges may be applied. LGC Standards' technical staff are available to advise on the use and suitability of a particular product. Customers requiring assistance with the use or application of a particular reference material should contact their local office. Contact details for your local sales office are available at the back of this catalogue and on our website.

About LGC
Science for a Safer World

LGC delivers a range of measurement and testing solutions to the chemical, industrial and life sciences sectors. We provide reference materials, genomic solutions and analytical testing products and services, based on our own intellectual property.

We work with customers in the pharmaceutical, agricultural biotechnology, food, environment, security and sports sectors as well as with governments and academia to achieve excellence in investigative, diagnostic and measurement science. For more information, please visit our website: www.lgcgroup.com.

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Gas chromatography standards for petroleum analysis

Aromatic standards for gasolines (ASTM D5769)

Calibration standards — **Matrix: Isooctane**

Aromatics in finished gasoline calibration standard kit with IS, 6x1mL (RM, ISO Guide 34)

Kit Code: DRE-GK09000071IO

Compound:	Individual Code: DRE-GA09000065IO	DRE-GA09000066IO	DRE-GA09000067IO	DRE-GA09000068IO	DRE-GA09000069IO	DRE-GA09000070IO	Range (wt%)
indane	3.130	2.504	1.565	0.939	0.470	0.235	0.235-3.13%
1,4-diethylbenzene	3.130	2.504	1.565	0.939	0.470	0.235	0.235-3.13%
1,2-diethylbenzene	3.130	2.504	1.565	0.939	0.470	0.235	0.235-3.13%
1,2,4,5-tetramethylbenzene	3.130	2.504	1.565	0.939	0.470	0.235	0.235-3.13%
1,2,3,5-Tetramethylbenzene	2.070	1.656	1.035	0.621	0.311	0.155	0.155-2.07%
2-ethyltoluene	3.130	2.504	1.565	0.939	0.470	0.235	0.235-3.13%
3-ethyltoluene	3.130	2.504	1.565	0.939	0.470	0.235	0.235-3.13%
benzene	5.200	4.160	2.600	1.560	0.780	0.390	0.39-5.20%
benzene-d6	**2.000**	**2.000**	**2.000**	**2.000**	**2.000**	**2.000**	**IS 2.0%**
n-butylbenzene	3.130	2.504	1.565	0.939	0.470	0.235	0.235-3.13%
ethylbenzene	5.200	4.160	2.600	1.560	0.780	0.390	0.39-5.20%
ethylbenzene-d10	**2.000**	**2.000**	**2.000**	**2.000**	**2.000**	**2.000**	**IS 2.0%**
4-ethyltoluene	3.130	2.504	1.565	0.939	0.470	0.235	0.235-3.13%
isooctane	0.000	20.000	50.000	70.000	85.000	92.500	0.00-92.5%
cumene	3.130	2.504	1.565	0.939	0.470	0.235	0.235-3.13%
1-methylnaphthalene	2.080	1.664	1.040	0.624	0.312	0.156	0.156-2.08%
2-methylnaphthalene	2.070	1.656	1.035	0.621	0.311	0.155	0.155-2.07%
naphthalene	2.070	1.656	1.035	0.621	0.311	0.155	0.155-2.07%
naphthalene-d8	**1.000**	**1.000**	**1.000**	**1.000**	**1.000**	**1.000**	**IS 1.0%**
n-propylbenzene	3.130	2.504	1.565	0.939	0.470	0.235	0.235-3.13%
toluene	19.800	15.840	9.900	5.940	2.970	1.485	1.49-19.8%
toluene-d8	**7.000**	**7.000**	**7.000**	**7.000**	**7.000**	**7.000**	**IS 7.0%**
1,2,3-trimethylbenzene	3.130	2.504	1.565	0.939	0.470	0.235	0.235-3.13%
1,2,4-trimethylbenzene	5.200	4.160	2.600	1.560	0.780	0.390	0.39-5.20%
1,3,5-trimethylbenzene	3.130	2.504	1.565	0.939	0.470	0.235	0.235-3.13%
m-xylene	6.250	5.000	3.125	1.875	0.938	0.469	0..469-6.25%
o-xylene	6.250	5.000	3.125	1.875	0.938	0.469	0..469-6.25%
p-xylene	6.250	5.000	3.125	1.875	0.938	0.469	0..469-6.25%

Aromatic standards for gasolines (ASTM D5769) *continued*

Calibration standards **Matrix: Isooctane**

Aromatics in finished gasoline calibration standard kit without IS, 6x5 mL (RM, ISO Guide 34)

Kit Code: DRE-GK09000078IO

Range

Compound:	Individual Code: DRE-GA09000072IO	DRE-GA09000073IO	DRE-GA09000074IO	DRE-GA09000075IO	DRE-GA09000076IO	DRE-GA09000077IO	(wt%)
indane	3.130	2.500	1.565	0.939	0.470	0.235	0.235-3.13%
1,4-diethylbenzene	3.130	2.500	1.565	0.939	0.470	0.235	0.235-3.13%
1,2-diethylbenzene	3.130	2.500	1.565	0.939	0.470	0.235	0.235-3.13%
1,2,4,5-tetramethylbenzene	3.130	1.656	1.565	0.939	0.470	0.235	0.235-3.13%
1,2,3,5-Tetramethylbenzene	2.070	1.656	1.035	0.621	0.311	0.155	0.155-2.07%
2-ethyltoluene	3.130	2.500	1.565	0.939	0.470	0.235	0.235-3.13%
3-ethyltoluene	3.130	2.500	1.565	0.939	0.470	0.235	0.235-3.13%
benzene	5.200	4.160	2.600	1.560	0.780	0.390	0.39-5.20%
n-butylbenzene	3.130	2.500	1.565	0.939	0.470	0.235	0.235-3.13%
ethylbenzene	5.200	4.160	2.600	1.560	0.780	0.390	0.39-5.20%
4-ethyltoluene	3.130	2.500	1.565	0.939	0.470	0.235	0.235-3.13%
isooctane	0.000	20.000	50.000	70.000	85.000	92.500	0.0-92.5%
cumene	3.130	2.500	1.565	0.939	0.470	0.235	0.235-3.13%
1-methylnaphthalene	2.080	1.656	1.040	0.624	0.312	0.156	0.156-2.08%
2-methylnaphthalene	2.070	1.656	1.035	0.621	0.311	0.155	0.155-2.07%
naphthalene	2.070	1.664	1.035	0.621	0.311	0.155	0.155-2.07%
n-propylbenzene	3.130	2.500	1.565	0.939	0.470	0.235	0.235-3.13%
toluene	19.800	15.840	9.900	5.940	2.970	1.485	1.485-19.8%
1,2,3-trimethylbenzene	3.130	2.500	1.565	0.939	0.470	0.235	0.235-3.13%
1,2,4-trimethylbenzene	5.200	4.160	2.600	1.560	0.780	0.390	0.39-5.20%
1,3,5-trimethylbenzene	3.130	2.500	1.565	0.939	0.470	0.235	0.235-3.13%
m-xylene	6.250	5.000	3.125	1.875	0.938	0.469	0.469-6.25%
o-xylene	6.250	5.000	3.125	1.875	0.938	0.469	0.469-6.25%
p-xylene	6.250	5.000	3.125	1.875	0.938	0.469	0.469-6.25%

Aromatic standards for gasolines (ASTM D5769) *continued*

Calibration standards — **Matrix: Isooctane**

Aromatics in finished gasoline calibration standard kit without IS, 6x10 mL (RM, ISO Guide 34)

Kit Code: DRE-GK09000085IO

Compound:	Individual Code : DRE-GA09000079IO	DRE-GA09000080IO	DRE-GA09000081IO	DRE-GA09000082IO	DRE-GA09000083IO	DRE-GA09000084IO	Range (wt%)
indane	3.130	2.500	1.565	0.939	0.470	0.235	0.235-3.13%
1,4-diethylbenzene	3.130	2.500	1.565	0.939	0.470	0.235	0.235-3.13%
1,2-diethylbenzene	3.130	2.500	1.565	0.939	0.470	0.235	0.235-3.13%
1,2,4,5-tetramethylbenzene	3.130	1.656	1.565	0.939	0.470	0.235	0.235-3.13%
1,2,3,5-Tetramethylbenzene	2.070	1.656	1.035	0.621	0.311	0.155	0.155-2.07%
2-ethyltoluene	3.130	2.500	1.565	0.939	0.470	0.235	0.235-3.13%
3-ethyltoluene	3.130	2.500	1.565	0.939	0.470	0.235	0.235-3.13%
benzene	5.200	4.160	2.600	1.560	0.780	0.390	0.39-5.20%
n-butylbenzene	3.130	2.500	1.565	0.939	0.470	0.235	0.235-3.13%
ethylbenzene	5.200	4.160	2.600	1.560	0.780	0.390	0.39-5.20%
4-ethyltoluene	3.130	2.500	1.565	0.939	0.470	0.235	0.235-3.13%
isooctane	0.000	20.000	50.000	70.000	85.000	92.500	0.0-92.5%
cumene	3.130	2.500	1.565	0.939	0.470	0.235	0.235-3.13%
1-methylnaphthalene	2.080	1.656	1.040	0.624	0.312	0.156	0.156-2.08%
2-methylnaphthalene	2.070	1.656	1.035	0.621	0.311	0.155	0.155-2.07%
naphthalene	2.070	1.664	1.035	0.621	0.311	0.155	0.155-2.07%
n-propylbenzene	3.130	2.500	1.565	0.939	0.470	0.235	0.235-3.13%
toluene	19.800	15.840	9.900	5.940	2.970	1.485	1.485-19.8%
1,2,3-trimethylbenzene	3.130	2.500	1.565	0.939	0.470	0.235	0.235-3.13%
1,2,4-trimethylbenzene	5.200	4.160	2.600	1.560	0.780	0.390	0.39-5.20%
1,3,5-trimethylbenzene	3.130	2.500	1.565	0.939	0.470	0.235	0.235-3.13%
m-xylene	6.250	5.000	3.125	1.875	0.938	0.469	0.469-6.25%
o-xylene	6.250	5.000	3.125	1.875	0.938	0.469	0.469-6.25%
p-xylene	6.250	5.000	3.125	1.875	0.938	0.469	0.469-6.25%

Aromatic standards for gasolines (ASTM D5769) *continued*

Quality control standards			Matrix: Isooctane
ASTM D5769 Quality control reference material with 3 IS (RM, ISO Guide 34)			
Code	**Compound**	**Concentration**	**UoM**
DRE-GA09000132IO	1,2,4,5-tetramethylbenzene	20000 +/- 1000 mg/Kg	10x2mL
	benzene	10000 +/- 500 mg/Kg	
	benzene-d6	**20000 +/- 1000 mg/Kg**	
	n-decane (C10)	120000 +/- 6000 mg/Kg	
	n-dodecane (C12)	50000 +/- 2500 mg/Kg	
	ethylbenzene	30000 +/- 1500 mg/Kg	
	ethylbenzene-d10	**20000 +/- 1000 mg/Kg**	
	heptane (C7)	170000 +/- 8500 mg/Kg	
	n-hexane (C6)	120000 +/- 6000 mg/Kg	
	naphthalene	10000 +/- 500 mg/Kg	
	naphthalene-d8	**10000 +/- 500 mg/Kg**	
	octane (C8)	170000 +/- 8500 mg/Kg	
	toluene	90000 +/- 4500 mg/Kg	
	1,2,4-trimethylbenzene	30000 +/- 1500 mg/Kg	
	m-xylene	30000 +/- 1500 mg/Kg	
	o-xylene	30000 +/- 1500 mg/Kg	

Quality control standards			Matrix: Isooctane
ASTM D5769 Quality control reference material without IS (RM, ISO Guide 34)			
Code	**Compound**	**Concentration**	**UoM**
DRE-GA09000133IO	1,2,4,5-tetramethylbenzene	20000 +/- 1000 mg/Kg	10x2mL
	benzene	10000 +/- 500 mg/Kg	
	n-decane (C10)	120000 +/- 6000 mg/Kg	
	n-dodecane (C12)	50000 +/- 2500 mg/Kg	
	ethylbenzene	30000 +/- 1500 mg/Kg	
	heptane (C7)	170000 +/- 8500 mg/Kg	
	n-hexane (C6)	120000 +/- 6000 mg/Kg	
	naphthalene	10000 +/- 500 mg/Kg	
	Octane (C8)	170000 +/- 8500 mg/Kg	
	Toluene	90000 +/- 4500 mg/Kg	
	1,2,4-trimethylbenzene	30000 +/- 1500 mg/Kg	
	m-xylene	30000 +/- 1500 mg/Kg	
	o-xylene	30000 +/- 1500 mg/Kg	

Aromatic standards for gasolines (ASTM D5769) *continued*

Quality control standards			Matrix: Isooctane
ASTM D5769 Quality control reference material with 4 IS (RM, ISO Guide 34)			
Code	**Compound**	**Concentration**	**UoM**
DRE-GA09000134IO	1,2,4,5-tetramethylbenzene	20000 +/- 1000 mg/Kg	10x2mL
	benzene	10000 +/- 500 mg/Kg	
	benzene-d6	**20000 +/- 1000 mg/Kg**	
	n-decane (C10)	120000 +/- 6000 mg/Kg	
	n-dodecane (C12)	50000 +/- 2500 mg/Kg	
	ethylbenzene	30000 +/- 1500 mg/Kg	
	ethylbenzene-d10	**20000 +/- 1000 mg/Kg**	
	heptane (C7)	170000 +/- 8500 mg/Kg	
	n-hexane (C6)	120000 +/- 6000 mg/Kg	
	naphthalene	10000 +/- 500 mg/Kg	
	naphthalene-d8	**10000 +/- 500 mg/Kg**	
	octane (C8)	170000 +/- 8500 mg/Kg	
	toluene	90000 +/- 4500 mg/Kg	
	toluene d8	**90000 +/- 4500 mg/Kg**	
	1,2,4-trimethylbenzene	30000 +/- 1500 mg/Kg	
	m-xylene	30000 +/- 1500 mg/Kg	
	o-xylene	30000 +/- 1500 mg/Kg	

Internal standards			
ASTM D5769 3 Internal Standard Mix (RM, ISO Guide 34)			
Code	**Compound**	**Concentration**	**UoM**
DRE-GA09000136	benzene-d6	2 +/- .1	1x5mL
	ethylbenzene-d10	2 +/- .1	
	naphthalene-d8	1 +/- .05	
Code	**Compound**	**Concentration**	**UoM**
DRE-GS09000136	benzene-d6	2 +/- .1	5x5mL
	ethylbenzene-d10	2 +/- .1	
	naphthalene-d8	1 +/- .05	

Internal standards			
ASTM D5769 4 Internal Standard Mix (RM, ISO Guide 34)			
Code	**Compound**	**Concentration**	**UoM**
DRE-GA09000137	benzene-d6	2 +/- .1	1x10mL
	ethylbenzene-d10	2 +/- .1	
	naphthalene-d8	1 +/- .05	
	toluene-d8	7 +/- .35	
Code	**Compound**	**Concentration**	**UoM**
DRE-GS09000137	benzene-d6	2 +/- .1	5x10mL
	ethylbenzene-d10	2 +/- .1	
	naphthalene-d8	1 +/- .05	
	toluene-d8	7 +/- .35	

Benzene and toluene in gasoline standards (ASTM D3606)

Calibration standards — **Matrix: Isooctane**

Benzene in gasoline calibration standard kit with IS, 7x2 mL (RM, ISO Guide 34)

Kit Code: DRE-GK09000100IO

Compound:	Individual Code: DRE-GA09000093IO	DRE-GA09000094IO	DRE-GA09000095IO	DRE-GA09000096IO	DRE-GA09000097IO	DRE-GA09000098IO	DRE-GA09000099IO	Range (wt%)
benzene	5	2.5	1	0.6	0.3	0.1	0.06	0.06-5.00%
2-butanol	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**IS**
toluene	20	15	10	5	2.5	1	0.5	0.50-20.00%

Calibration standards — **Matrix: Isooctane**

Benzene in gasoline calibration standard kit with 10% EtOH & IS, 7x2 mL (RM, ISO Guide 34)

Kit Code: DRE-GK09000108IO

Compound:	Individual Code: DRE-GA09000101IO	DRE-GA09000102IO	DRE-GA09000103IO	DRE-GA09000104IO	DRE-GA09000105IO	DRE-GA09000106IO	DRE-GA09000107IO	Range (wt%)
benzene	5	2.5	1.25	0.65	0.33	0.12	0.06	0.06-5.00%
2-butanol	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**IS - 4.00%**
ethanol	10	10	10	10	10	10	10	10.00%
toluene	20	15	10	5	2.5	1	0.5	0.50-20.00%

Quality control standards — **Matrix: Isooctane**

ASTM D3606 check standard A with 4% 2-butanol (RM, ISO Guide 34)

Code	Compound	Concentration	UoM
DRE-GA09000109IO	benzene	10 +/- .5 mL/L	10x2mL
	2-butanol	40 +/- 2 mL/L	
	ethanol	100 +/- 5 mL/L	
	toluene	50 +/- 2.5 mL/L	

Quality control standards — **Matrix: Isooctane**

ASTM D3606 check standard B with 4% 2-butanol (RM, ISO Guide 34)

Code	Compound	Concentration	UoM
DRE-GA090001110IO	benzene	10 +/- .5 mL/L	10x2mL
	2-butanol	40 +/- 2 mL/L	
	ethanol	0 +/- 0 mL/L	
	toluene	50 +/- 2.5 mL/L	

Internal standards

ASTM D3606 2-butanol IS, Neat (RM, ISO Guide 34)

Code	Compound	Concentration	UoM
DRE-GA09010059	2-butanol	1000000 +/- 50000 mg/L	1x2mL
DRE-GS09010059	2-butanol	1000000 +/- 50000 mg/L	5x2mL

Oxygenate standards (ASTM D4815/D5599/D5501)

Calibration standards — **Matrix: Oxygenate free gasoline**

Oxygenates in gasoline calibration standard kit with IS, 11x2 mL (RM, ISO Guide 34)

Kit Code: DRE-GK09000122OG

Compound:	Individual Code					
	DRE-GA 09000111OG	DRE-GA 09000112OG	DRE-GA 09000113OG	DRE-GA 09000114OG	DRE-GA 09000115OG	DRE-GA 09000116OG
1,2-Dimethoxyethane	**5**	**5**	**5**	**5**	**5**	**5**
1-butanol	0.25	0.5	---	---	---	---
1-propanol	0.25	0.5	---	---	---	---
2-butanol	---	2.5	---	---	0.25	---
2-methyl-2-propanol (TBA)	---	9	5	---	0.5	---
ethanol	1.25	0.25	---	5	10	---
ethyl tert-butyl ether (ETBE)	5	---	9	15	1.25	---
isobutyl alcohol	0.25	0.5	---	---	---	---
isopropyl alcohol	0.5	0.25	---	---	---	2.5
isopropyl ether (DIPE)	---	0.25	---	3.5	1.5	---
methanol	1.25	5	9	0.5	---	15
methyl t-butyl ether (MTBE)	16	5	---	1	10	7
tert-amyl alcohol	0.25	1.5	0.75	---	---	---
tert-amyl methyl ether (TAME)	---	---	1.25	---	0.5	---

DRE-GK09000122OG *continued* — **Range (wt%)**

Compound:	Individual Code					
	DRE-GA 09000117OG	DRE-GA 09000118OG	DRE-GA 09000119OG	DRE-GA 09000120OG	DRE-GA 09000121OG	
1,2-Dimethoxyethane	**5**	**5**	**5**	**5**	**5**	**IS**
1-butanol	---	1.25	5	---	2.5	0.25-5.00%
1-propanol	---	2.5	1.5	5	---	0.25-5.00%
2-butanol	---	---	0.5	1.5	5	0.25-5.00%
2-methyl-2-propanol (TBA)	---	15	---	---	1.25	0.50-15.00%
ethanol	15	---	---	---	---	0.25-15.00%
ethyl tert-butyl ether (ETBE)	---	---	---	12	---	1.25-15.00%
isobutyl alcohol	---	---	2.5	1.5	5	0.25-5.00%
isopropyl alcohol	---	1.5	---	5	---	0.25-5.00%
isopropyl ether (DIPE)	---	---	0.5	---	5	0.25-5.00%
methanol	---	---	---	---	---	0.50-15.00%
methyl t-butyl ether (MTBE)	---	---	---	---	---	1.00-16.00%
tert-amyl alcohol	---	---	0.5	---	2.5	0.25-2.50%
tert-amyl methyl ether (TAME)	10	5	15	---	---	0.50-15.00%

Oxygenate standards (ASTM D4815/D5599/D5501) *continued*

Calibration standards — **Matrix: Oxygenate free gasoline**

Oxygenates in gasoline calibration standard kit with IS, 8x2 mL (RM, ISO Guide 34)

Kit Code: DRE-GK09000131OG

Compound:	Individual Code: DRE-GA 09000123OG	DRE-GA 09000124OG	DRE-GA 09000125OG	DRE-GA 09000126OG	DRE-GA 09000127OG	DRE-GA 09000128OG	DRE-GA 09000129OG	DRE-GA 09000130OG	Range (wt%)
1,2-dimethoxyethane	**5.0**	**5.0**	**5.0**	**5.0**	**5.0**	**5.0**	**5.0**	**5.0**	**IS 5.0%**
tert-amyl methyl ether (TAME)	2.0	1.0	0.5	---	1.5	0.1	---	---	0.1-2.0%
tert-butyl ethyl ether (ETBE)	1.0	---	---	9.0	12.5	---	5.0	18.0	1.0-18.0%
ethanol	1.4	0.3	---	5.0	9.0	---	12.5	---	0.3-12.5%
isopropyl ether	2.0	0.3	---	1.0	0.5	5.0	---	---	0.3-5.0%
methanol	1.4	5.0	9.0	0.3	---	12.5	---	---	0.3-12.5%
methyl t-butyl ether	15.5	5.0	11.0	---	---	0.3	1.3	---	0.3-15.5%
2-methyl-2-propanol	---	12.5	5.0	9.0	0.3	1.3	---	---	0.3-12.5%

Calibration standards — **Matrix: n-heptane**

Ethanol in fuel calibration standard kit, 6x2mL (RM, ISO Guide 34)

Kit Code: DRE-GK09000092HP

Compound:	Individual Code: DRE-GA09000086HP	DRE-GA09000087HP	DRE-GA09000088HP	DRE-GA09000089HP	DRE-GA09000090HP	DRE-GA09000091HP	Range (wt%)
ethanol	10	15	20	50	75	85	10.0-85.0%
methanol	0.3	0.3	0.3	0.3	0.3	0.3	0.30%

Calibration standards — **Matrix: n-heptane**

Ethanol in fuel calibration standard kit, 5x2mL (RM, ISO Guide 34)

Kit Code: DRE-GK090000174

Compound:	Individual Code: DRE-GA09000180	DRE-GA09000181	DRE-GA09000182	DRE-GA09000183	DRE-GA09000184	Range (wt%)
ethanol	20	50	75	90	99.40	20.0-99.4%
methanol	0.60	0.50	0.30	0.20	0.10	0.1-0.6%
isooctane	69.40	39.50	14.80	5.80	0	balance

Internal standard

ASTM D4815/D5599 1,2-Dimethoxyethane IS, Neat (RM, ISO Guide 34)

Code	Compound	Concentration	UoM
DRE-GA09010060	1,2-Dimethoxyethane	1000000 +/- 50000 mg/L	1x2mL
DRE-GS09010060	1,2-Dimethoxyethane	1000000 +/- 50000 mg/L	5x2mL

Quality control standard			
ASTM 5501 96% Ethanol QC Check, (RM, ISO Guide 34)			
Code	Compound	Concentration	UoM
DRE-GA09000173EL	Ethanol	960000 +/- 48000 mg/Kg	1x2mL
	n-Heptane	39000 +/- 1950 mg/Kg	
	methanol	1000 +/- 50 mg/Kg	

Quantitative peak mix			
ASTM D4815 quantitative peak mix, (RM, ISO Guide 34)			
Code	Compound	Concentration	UoM
DRE-GS09000186	1,2 Dimethoxyethane	6 +/- .3 wt%	5x1mL
	tert-amyl alcohol	7.3 +/- .365 wt%	
	benzene	5 +/- .25 wt%	
	1-butanol	5 +/- .25 wt%	
	2-butanol	7.3 +/- .365 wt%	
	tert-butyl ethyl ether (ETBE)	4 +/- .2 wt%	
	ethanol	7.3 +/- .365 wt%	
	isobutyl alcohol	7.3 +/- .365 wt%	
	isopropyl alcohol	7.3 +/- .365 wt%	
	isopropyl ether	4 +/- .2 wt%	
	methanol	7.3 +/- .365 wt%	
	methyl t-butyl ether	4 +/- .2 wt%	
	methylcyclopentane	4 +/- .2 wt%	
	2-methyl-2-propanol	7.3 +/- .365 wt%	
	1-propanol	7.3 +/- .365 wt%	
	tert-amyl methyl ether	7.3 +/- .365 wt%	

Valve timing mix			
ASTM D4815 Valve timing solution (RM, ISO Guide 34)			
Code	Compound	Concentration	UoM
DRE-GA09000135	tert-butyl ethyl ether (ETBE)	100000 +/- 5000 mg/Kg	1x1mL
	n-hexane (C6)	600000 +/- 30000 mg/Kg	
	isopropyl ether	100000 +/- 5000 mg/Kg	
	methyl t-butyl ether	100000 +/- 5000 mg/Kg	
	methylcyclopentane	100000 +/- 5000 mg/Kg	
Code	Compound	Concentration	UoM
DRE-GS09000135	tert-butyl ethyl ether (ETBE)	100000 +/- 5000 mg/Kg	5x1mL
	n-hexane (C6)	600000 +/- 30000 mg/Kg	
	isopropyl ether	100000 +/- 5000 mg/Kg	
	methyl t-butyl ether	100000 +/- 5000 mg/Kg	
	methylcyclopentane	100000 +/- 5000 mg/Kg	

Low level oxygenates standard			
Low level oxygenates mix, 10 mg/L (RM, ISO Guide 34)			
Code	Compound	Concentration	UoM
DRE-GH09000168HE	propyl ether	10 +/ .5 mg/L	10x2mL
	Isobutyraldehyde	10 +/ .5 mg/L	
	Valeraldehyde	10 +/ .5 mg/L	
	Acetaldehyde	10 +/ .5 mg/L	
	Acetone	10 +/ .5 mg/L	
	allyl alcohol	10 +/ .5 mg/L	
	tert-amyl methyl ether (TAME)	10 +/ .5 mg/L	
	1-butanol	10 +/ .5 mg/L	
	2-butanone (MEK)	10 +/ .5 mg/L	
	tert-butyl ethyl ether (ETBE)	10 +/ .5 mg/L	
	Butyraldehyde	10 +/ .5 mg/L	
	dimethyl ether	10 +/ .5 mg/L	
	Ethanol	10 +/ .5 mg/L	
	ethyl ether	10 +/ .5 mg/L	
	isobutyl alcohol	10 +/ .5 mg/L	
	isopropyl alcohol	10 +/ .5 mg/L	
	isopropyl ether	10 +/ .5 mg/L	
	Methanol	10 +/ .5 mg/L	
	methyl t-butyl ether	10 +/ .5 mg/L	
	2-methyl-2-propanol	10 +/ .5 mg/L	
	1-propanol	10 +/ .5 mg/L	
	propionaldehyde	10 +/ .5 mg/L	

PIANO and PONA Standards

LGC Quality - ISO 9001 • ISO/IEC 17025 • ISO Guide 34 • GMP/GLP • ISO 13485 • ISO/IEC 17043

PIANO and PONA standards

PIANO (DHA) Standard	
Detailed Hydrocarbon Analysis	
Catalog#	**Product**
VHG-PIANO-DHA-1	1mL of material inside a 2mL ampoule
VHG-PIANO-DHA-10x1	10x1mL of material inside 2mL ampoules

Component	Concentration Wt%
n-Pentane	2.2
n-Hexane	2.4
n-Heptane	2.4
n-Octane	2.4
n-Nonane	2.4
n-Decane	2.4
n-Undecane	1.8
n-Dodecane	2.2
Isopentane	2.2
2-Methylpentane	1.7
3-Methylpentane	1.8
2,2-Dimethylbutane	1.6
2,3-Dimethylpentane	2.9
2,4-Dimethylpentane	1.8
2,2,4-Trimethylpentane	2.3
2-Methyl-1-Heptene	1.3
Benzene	2.4
Toluene	2.6
Ethylbenzene	2.5
p-Xylene	3.4
Propylbenzene	2.4
Cumene	1.9
3-Ethyltoluene	2.0
1,2,4-Trimethylbenzene	1.8
1,3,5-Trimethylbenzene	1.5
n-Butylbenzene	2.5
Isobutylbenzene	2.3
1,2,4,5-Tetramethylbenzene	1.3
n-Pentylbenzene	2.4
Cyclohexane	2.4
Methylcyclohexane	2.4
Ethylcyclohexane	2.5
Propylcyclohexane	2.4
n-Butylcyclohexane	1.2
n-Pentylcyclohexane	2.4

PIANO Standards *continued*

PIANO Paraffins Standard		
Covers all your Paraffins needs for detailed hydrocarbon analysis including ASTM methods D6729, D6730, D6733 and D5134.		
Catalog#	**Product**	
VHG-PIANO-PAR-1	PIANO Paraffins Standard – 1mL	
Component	**CAS Number**	**Concentration Wt%**
n-Pentane (C5)	109-66-0	9.4
n-Hexane (C6)	110-54-3	9.5
n-Heptane (C7)	142-82-5	9.8
n-Octane (C8)	111-65-9	9.5
n-Nonane (C9)	111-84-2	9.0
n-Decane (C10)	124-18-5	9.2
n-Undecane (C11)	1120-21-4	9.3
n-Dodecane (C12)	112-40-3	9.4
n-Tridecane (C13)	629-50-5	8.9
n-Tetradecane (C14)	629-59-4	8.8
n-Pentadecane (C15)	629-62-9	7.1

PIANO and PONA standards *continued*

PIANO Isoparaffins Standard		
Covers all your Isoparaffins needs for detailed hydrocarbon analysis including ASTM methods D6729, D6730, D6733 and D5134.		
Catalog#	**Product**	
VHG-PIANO-ISO-0.1	PIANO Isoparaffins standard – 0.1mL	
Component	**CAS Number**	**Concentration Wt%**
Isopentane	78-78-4	2.2
2,3-Dimethylbutane	79-29-8	0.44
2-Methylpentane	107-83-5	3.2
3-Methylpentane	96-14-0	5.3
2, 2-Dimethylpentane	590-35-2	1.8
2,4-Dimethylpentane	108-08-7	3.6
2,2,3-Trimethylbutane	464-06-2	3.9
3,3-Dimethylpentane	562-49-2	1.8
2-Methylhexane	591-76-4	2.3
2,3-Dimethylpentane	565-59-3	1.8
3-Methylhexane	589-34-4	1.6
3-Ethylpentane	617-78-7	0.52
2,2-Dimethylhexane	590-73-8	1.3
2,5-Dimethylhexane	592-13-2	3.7
2,2,3-Trimethylpentane	564-02-3	1.7
2,4-Dimethylhexane	589-43-5	1.6
2,3-Dimethylhexane	584-94-1	1.6
2-Methylheptane	592-27-8	4.3
4-Methylheptane	589-53-7	3.2
3-Methylheptane	589-81-1	5.4
3-Ethylhexane	619-99-8	0.70
3,3-Dimethylheptane	4032-86-4	1.7
2,5-Dimethylheptane	2216-30-0	5.6
3,5-Dimethylheptane	926-82-9	0.75
2,3-Dimethylheptane	3074-71-3	1.5
3,4-Dimethylheptane	922-28-1	3.6
2-Methyloctane	3221-61-2	3.7
3-Methyloctane	2216-33-3	5.5
3,3-Diethylpentane	1067-20-5	1.6
2,2-Dimethyloctane	15869-87-1	3.2
3,3-Dimethyloctane	4110-44-5	3.1
2,3-Dimethyloctane	7146-60-3	3.8
3-Ethyloctane	5881-17-4	3.6
2-Methylnonane	871-83-0	3.7
3-Methylnonane	5911-04-6	5.7

PIANO and PONA standards *continued*

PIANO Aromatics Standard		
Covers all your Aromatics needs for detailed hydrocarbon analysis including ASTM methods D6729, D6730, D6733 and D5134.		
Catalog#	**Product**	
VHG-PIANO-ARO-0.1	PIANO Aromatics Standard – 0.1mL	
Component	**CAS Number**	**Concentration Wt%**
Benzene	71-43-2	7.0
Toluene	108-88-3	4.5
EthylBenzene	100-41-4	6.7
m-Xylene	108-38-3	2.2
p-Xylene	106-42-3	4.7
o-Xylene	95-47-6	2.2
Isopropylbenzene	98-82-8	2.2
n-Propylbenzene	103-65-1	4.5
1-Methyl-3-ethylbenzene	620-14-4	2.2
1-Methyl-4-ethylbenzene	622-96-8	2.1
1,3,5-Trimethylbenzene	108-67-8	1.1
1-Methyl-2-ethylbenzene	611-14-3	2.2
1,2,4-Trimethylbenzene	95-63-6	2.5
tert-Butylbenzene	98-06-6	4.5
Isobutylbenzene	538-93-2	4.3
sec-Butylbenzene	135-98-8	2.2
1-Methyl-3-isopropylbenzene	535-77-3	1.1
1-Methyl-4-isopropylbenzene	99-87-6	1.1
1-Methyl-2-isopropylbenzene	527-84-4	1.1
1-Methyl-3-n-propylbenzene	1074-43-7	2.1
1-Methyl-4-n-propylbenzene	1074-55-1	2.2
n-Butylbenzene	104-51-8	2.2
1,2-Diethylbenzene	135-01-3	1.1
1-Methyl-2-n-propylbenzene	1074-17-5	2.2
1,4-Dimethyl-2-ethylbenzene	1758-88-9	2.3
1,3-Dimethyl-5-ethylbenzene	934-74-7	2.2
1,2-Dimethyl-4-ethylbenzene	934-80-5	2.2
1,3-Dimethyl-2-ethylbenzene	2870-04-4	1.1
1,2-Dimethyl-3-ethylbenzene	933-98-2	2.2
1,2,4,5-Tetramethylbenzene	95-93-2	0.24
2-Methylbutylbenzene	3968-85-2	1.1
2-tert-Butyltoluene	1074-92-6	0.76
n-Pentylbenzene	538-68-1	4.4
5-tert-Butyl-m-Xylene	98-19-1	2.1
p-(tert-Butyl)ethylbenzene	7364-19-4	2.2
1,3,5-Triethylbenzene	102-25-0	4.5
1,2,4-Triethylbenzene	877-44-1	1.1
n-Hexylbenzene	1077-16-3	4.4

PIANO and PONA standards *continued*

PIANO Naphthalene Standard		
Covers all your Naphthalene needs for detailed hydrocarbon analysis including ASTM methods D6729, D6730, D6733 and D5134.		
Catalog#	**Product**	
VHG-PIANO-NAP-0.1	PIANO Naphthalene Standard – 0.1mL	
Component	**CAS Number**	**Concentration Wt%**
Cyclopentane	287-92-3	4.9
Methylcyclopentane	96-37-7	3.2
Cyclohexane	110-82-7	5.3
1,1-Dimethylcyclopentane	1638-26-2	3.4
cis-1,3-Dimethylcyclopentane	2532-58-3	0.59
trans-1,2-Dimethylcyclopentane	2452-99-5	1.4
trans-1,3-Dimethylcyclopentane	2453-00-1	2.7
Methylcyclohexane	108-87-2	5.6
Ethylcyclopentane	1640-89-7	3.5
(1α,2β,3α)-1,2,3-trimethylcyclopentane	19374-46-0	1.6
(1α,2α,4α)-1,2,4-trimethylcyclopentane	2613-72-1	3.7
(1α,2β,4α)-1,2,4-trimethylcyclopentane	16883-48-0	1.6
trans-1,4-Dimethylcyclohexane	2207-04-7	3.5
1-Ethyl-1-methylcyclopentane	16747-50-5	1.1
trans-1,2-Dimethylcyclohexane	6876-23-9	1.6
(1α,2α,3α)-1,2,3-trimethylcyclopentane	2613-69-6	0.79
Isopropylcyclopentane	3875-51-2	3.5
cis-1,2-Dimethylcyclohexane	2207-01-4	3.7
n-Propylcyclopentane	2040-96-2	3.6
(1α,3α,5α)-1,3,5-trimethylcyclopentane	1795-27-3	3.5
1,1,4-Trimethylcyclohexane	7094-27-1	3.6
(1α,2β,4β)-1,2,4-Trimethylcyclohexane	7667-60-9	3.6
(1α,2β,4α)-1,2,4-Trimethylcyclohexane	7667-59-6	3.5
1,1,2-Trimethylcyclohexane	7094-26-0	3.3
Isobutylcyclopentane	3788-32-7	3.7
Isopropylcyclohexane	696-29-7	5.7
n-Butylcyclopentane	2040-95-1	3.7
Isobutylcyclohexane	1678-98-4	5.5
trans-1-Methyl-2-propylcyclohexane	42806-77-9	3.8
trans-1-Methyl-2-(4-methylpentyl)cyclopentane	66553-50-2	3.7

PIANO and PONA standards *continued*

PIANO Olefins Standard		
Covers all your Olefins needs for detailed hydrocarbon analysis including ASTM methods D6729, D6730, D6733 and D5134.		
Catalog#	**Product**	
VHG-PIANO-OLE-0.1	PIANO Olefins Standard – 0.1mL	
Component	**CAS Number**	**Concentration Wt%**
3-Methyl-1-butene	563-45-1	2.0
1-Pentene	109-67-1	4.1
2-Methyl-1-butene	563-46-2	1.4
2-Methyl-1, 3-butadiene	78-79-5	2.4
trans-2-Pentene	646-04-8	1.8
cis-2-Pentene	627-20-3	2.0
4-Methylpentene-1	691-37-2	3.4
1-Hexene	592-41-6	6.9
trans-2-Hexene	4050-45-7	1.7
2-Methylpentene-2	625-27-4	3.3
cis-2-Hexene	7688-21-3	3.9
1-Heptene	592-76-7	7.5
trans-3-Heptene	14686-14-7	3.6
cis-3-Heptene	7642-10-6	5.8
trans-2-Heptene	14686-13-6	3.7
cis-2-Heptene	6443-92-1	5.7
1-Octene	111-66-0	7.6
trans-2-octene	13389-42-9	1.9
cis-2-Octene	7642-04-8	3.9
1-Nonene	124-11-8	7.6
trans-3-Nonene	20063-92-7	1.8
cis-3-Nonene	20237-46-1	4.0
trans-2-Nonene	6434-78-2	1.8
cis-2-Nonene	6434-77-1	2.7
1-Decene	872-05-9	8.1

PIANO Combinations	
We also offer a combined PIANO Standard and a PIANO Standards Set.	
Catalog#	**Product**
VHG-PIANO-COM-0.1	Combined PIANO Standard: All components of the 5 PIANO Standards are combined into one ampoule – 0.1mL.
VHG-PIANO-SET	PIANO Standards Set: This set contains one each of the following standards: VHG-PIANO-PAR-1, VHG-PIANO-ISO-0.1, VHG-PIANO-ARO-0.1, VHG-PIANO-NAP-0.1, VHG-PIANO-OLE-0.1, and VHG-PIANO-COM-0.1. Set size – 1x1mL & 5x0.1mL.

PIANO and PONA standards *continued*

PONA Standard

Our PONA Standard can be used to determine retention times, indices and response factors. Our mixture is provided in a flame sealed ampoule under an atmosphere of nitrogen. Nominal values of each component are listed.

Catalog#	UoM
VHG-PONA-1	1mL
VHG-PONA-10X1	10x1mL

Component	CAS Number	Concentration Wt%
1-Butene	106-98-9	2.7
1-Pentene	109-67-1	2.5
1-Hexene	592-41-6	2.7
1-Heptene	592-76-7	2.7
1-Octene	111-66-0	2.7
1-Nonene	124-11-8	2.7
1-Decene	872-05-9	2.7
1-Undecene	821-95-4	2.7
1-Dodecene	112-41-4	2.7
N-Propane	74-98-6	0.5
N-Butane	106-97-8	2.5
N-Pentane	109-66-0	2.7
N-Hexane	110-54-3	2.7
N-Heptane	142-82-5	2.7
N-Octane	111-65-9	2.7
N-Nonane	111-84-2	2.7
N-Decane	124-18-5	2.7
N-Undecane	1120-21-4	2.7
N-Dodecane	112-40-3	2.7
Methanol	67-56-1	2.7
Ethanol	64-17-5	2.7
Methyl *tert*-Burtyl Ether (MtBE)	1634-04-4	2.7
tert-Amyl Methyl Ether (TAME)	994-05-8	2.7
tert-Butanol (TBA)	75-65-0	2.7
Ethyl *tert*-Butyl Ether (ETBE)	637-92-3	2.7
Cyclopentane	287-92-3	2.8
Cyclohexane	110-82-7	2.7
Methylcyclohexane	108-87-2	2.7
Ethylcyclohexane	1678-91-7	2.7
Propylcyclohexane	1678-92-8	2.7
n-Butylcyclohexane	1678-93-9	2.7
Benzene	71-43-2	2.7
Toluene	108-88-3	2.8
Ethylbenzene	100-41-4	2.7
Propylbenzene	103-65-1	2.7
N-Butylbenzene	104-51-8	2.7
N-Pentylbenzene	538-68-1	2.7

Gas chromatography standards for environmental analysis

LGC Quality - ISO 9001 • ISO/IEC 17025 • ISO Guide 34 • GMP/GLP • ISO 13485 • ISO/IEC 17043

Gas chromatography standards for environmental analysis

LGC stocks many Dr. Ehrenstorfer standards for all your petroleum and environmental needs. Our Dr. Ehrenstorfer line allows us to have the most comprehensive custom program available. Don't see what you're looking for? Contact your local sales office or visit us on the web.

Custom chlorinated volatiles		
Catalog#	**Product**	
DRE-YS09000034HP Solvent: Heptane	Chlorinated VOC Mix, 5 mg/L, (RM, ISO GUIDE 34)	5 x 1 mL
Component	**CAS Number**	Concentration
carbon tetrachloride	56-23-5	5 +/- 0.25 mg/L
tetrachloroethylene	127-18-4	5 +/- 0.25 mg/L
1,1,1-trichloroethane	71-55-6	5 +/- 0.25 mg/L
1,1,2-trichloroethane	79-00-5	5 +/- 0.25 mg/L
trichlorofluoromethane	75-69-4	5 +/- 0.25 mg/L
1,1,2-trichloro-1,2,2-trifluoroethane	76-13-1	5 +/- 0.25 mg/L

Extraction surrogate standards		
Catalog#	**Product**	
DRE-YS09000041AC Solvent: Acetone	EPH Extraction Surrogate Mix, 2000 mg/L (RM, ISO GUIDE 34)	5 x 1 mL
Component	**CAS Number**	Concentration
1-chlorooctadecane	3386-33-2	2000 +/- 100 mg/L
o-terphenyl	84-15-1	2000 +/- 100 mg/L

Fractionation surrogate standards		
Catalog#	**Product**	
DRE-YS09000042HE Solvent: Hexane	EPH Fractionation Surrogate Mix, 4000 mg/L (RM, ISO GUIDE 34)	5 x 1 mL
Component	**CAS Number**	Concentration
2-bromonaphthalene	580-13-2	4000 +/- 200 mg/L
2-fluorobiphenyl	321-60-8	4000 +/- 200 mg/L

EPH standards

Connecticut EPH standards		
Catalog#	**Product**	
DRE-YS09000040DI Solvent: Methylene Chloride	EPH CT Aliphatics Mix, 1000 mg/L (RM, ISO GUIDE 34)	5 x 1 mL
Component	**CAS Number**	Concentration
nonane	111-84-2	1000 +/- 50 mg/L
decane	124-18-5	1000 +/- 50 mg/L
dodecane	112-40-3	1000 +/- 50 mg/L
tetradecane	629-59-4	1000 +/- 50 mg/L
hexadecane	544-76-3	1000 +/- 50 mg/L
octadecane	593-45-3	1000 +/- 50 mg/L
eicosane	112-95-8	1000 +/- 50 mg/L
docosane	629-97-0	1000 +/- 50 mg/L
tetracosane	646-31-1	1000 +/- 50 mg/L
hexacosane	630-01-3	1000 +/- 50 mg/L
octacosane	630-02-4	1000 +/- 50 mg/L
triacontane	638-68-6	1000 +/- 50 mg/L
dotriacontane	544-85-4	1000 +/- 50 mg/L
tetratriacontane	14167-59-0	1000 +/- 50 mg/L
hexatriacontane	630-06-8	1000 +/- 50 mg/L

Massachusetts EPH standards		
Catalog#	**Product**	
DRE-YS09000043HE Solvent: Hexane	EPH MA Aliphatics Mix, 1000 mg/L (RM, ISO GUIDE 34)	5 x 1 mL
Component	**CAS Number**	Concentration
decane (C10)	124-18-5	1000 +/- 50 mg/L
docosane (C22)	629-97-0	1000 +/- 50 mg/L
dodecane (C12)	112-40-3	1000 +/- 50 mg/L
eicosane (C20)	112-95-8	1000 +/- 50 mg/L
hexacosane (C26)	630-01-3	1000 +/- 50 mg/L
n-hexadecane (C16)	544-76-3	1000 +/- 50 mg/L
hexatriacontane (C36)	630-06-8	1000 +/- 50 mg/L
nonane (C9)	111-84-2	1000 +/- 50 mg/L
octacosane (C28)	630-02-4	1000 +/- 50 mg/L
triacontane (C30)	638-68-6	1000 +/- 50 mg/L
tetradecane (C14)	629-59-4	1000 +/- 50 mg/L
octadecane (C18)	593-45-3	1000 +/- 50 mg/L
tetracosane (C24)	646-31-1	1000 +/- 50 mg/L
nonadecane (C19)	629-92-5	1000 +/- 50 mg/L

EPH standards *continued*

Massachusetts EPH standards		
Catalog#	**Product**	
DRE-YS09000044DI Solvent: Methylene Chloride	EPH MA Aromatics Mix, 1000 mg/L (RM, ISO GUIDE 34)	5 x 1 mL
Component	**CAS Number**	Concentration
acenaphthene	83-32-9	1000 +/- 50 mg/L
acenaphthylene	208-96-8	1000 +/- 50 mg/L
anthracene	120-12-7	1000 +/- 50 mg/L
benzo[a]anthracene	56-55-3	1000 +/- 50 mg/L
benzo[a]pyrene	50-32-8	1000 +/- 50 mg/L
benzo[b]fluoranthene	205-99-2	1000 +/- 50 mg/L
benzo[ghi]perylene	191-24-2	1000 +/- 50 mg/L
benzo[k]fluoranthene	207-08-9	1000 +/- 50 mg/L
chrysene	218-01-9	1000 +/- 50 mg/L
dibenz[a,h]anthracene	53-70-3	1000 +/- 50 mg/L
fluoranthene	206-44-0	1000 +/- 50 mg/L
fluorene	86-73-7	1000 +/- 50 mg/L
indeno[1,2,3-cd]pyrene	193-39-5	1000 +/- 50 mg/L
2-methylnaphthalene	91-57-6	1000 +/- 50 mg/L
naphthalene	91-20-3	1000 +/- 50 mg/L
phenanthrene	85-01-8	1000 +/- 50 mg/L
pyrene	129-00-0	1000 +/- 50 mg/L

New Jersey EPH standards		
Catalog#	**Product**	
DRE-YS09000046CY Solvent: Cyclohexane	EPH NJ Aliphatics Mix, 1000 mg/L (RM, ISO GUIDE 34)	5 x 1 mL
Component	**CAS Number**	Concentration
decane (C10)	124-18-5	1000 +/- 50 mg/L
n-docosane (C22)	629-97-0	1000 +/- 50 mg/L
n-dodecane (C12)	112-40-3	1000 +/- 50 mg/L
dotriacontane (C32)	544-85-4	1000 +/- 50 mg/L
n-eicosane (C20)	112-95-8	1000 +/- 50 mg/L
n-heneicosane (C21)	629-94-7	1000 +/- 50 mg/L
hexacosane (C26)	630-01-3	1000 +/- 50 mg/L
n-hexadecane (C16)	544-76-3	1000 +/- 50 mg/L
hexatriacontane (C36)	630-06-8	1000 +/- 50 mg/L
nonane (C9)	111-84-2	1000 +/- 50 mg/L
octacosane (C28)	630-02-4	1000 +/- 50 mg/L
n-octadecane (C18)	593-45-3	1000 +/- 50 mg/L
octatriacontane (C38)	7194-85-6	1000 +/- 50 mg/L
tetracontane (C40)	4181-95-7	1000 +/- 50 mg/L
n-tetracosane (C24)	646-31-1	1000 +/- 50 mg/L
n-tetradecane (C14)	629-59-4	1000 +/- 50 mg/L
tetratriacontane (C34)	14167-59-0	1000 +/- 50 mg/L
triacontane (C30)	638-68-6	1000 +/- 50 mg/L

EPH standards *continued*

New Jersey EPH standards		
Catalog#	**Product**	
DRE-YS09000021DI	EPH NJ Aromatics Mix, 2000 mg/L, (RM, ISO GUIDE 34)	5 x 1 mL
Solvent: Methylene Chloride		
Component	**CAS Number**	Concentration
acenaphthene	83-32-9	2000 +/- 100 mg/L
acenaphthylene	208-96-8	2000 +/- 100 mg/L
anthracene	120-12-7	2000 +/- 100 mg/L
benzo[a]anthracene	56-55-3	2000 +/- 100 mg/L
benzo[a]pyrene	50-32-8	2000 +/- 100 mg/L
benzo[b]fluoranthene	205-99-2	2000 +/- 100 mg/L
benzo[ghi]perylene	191-24-2	2000 +/- 100 mg/L
benzo[k]fluoranthene	207-08-9	2000 +/- 100 mg/L
chrysene	218-01-9	2000 +/- 100 mg/L
dibenz[a,h]anthracene	53-70-3	2000 +/- 100 mg/L
fluoranthene	206-44-0	2000 +/- 100 mg/L
fluorene	86-73-7	2000 +/- 100 mg/L
indeno[1,2,3-cd]pyrene	193-39-5	2000 +/- 100 mg/L
2-methylnaphthalene	91-57-6	2000 +/- 100 mg/L
naphthalene	91-20-3	2000 +/- 100 mg/L
phenanthrene	85-01-8	2000 +/- 100 mg/L
pyrene	129-00-0	2000 +/- 100 mg/L
1,2,3-trimethylbenzene	526-73-8	2000 +/- 100 mg/L

New Jersey EPH standards		
Catalog#	**Product**	
DRE-YS09000045HC	EPH NJ Rev. 2 Aliphatics Mix, 2000 mg/L (RM, ISO GUIDE 34)	5 x 1 mL
Solvent: Hexane:Carbon Disulfide (80:20)		
Component	**CAS Number**	Concentration
decane (C10)	124-18-5	2000 +/- 100 mg/L
n-docosane (C22)	629-97-0	2000 +/- 100 mg/L
n-dodecane (C12)	112-40-3	2000 +/- 100 mg/L
dotriacontane (C32)	544-85-4	2000 +/- 100 mg/L
n-eicosane (C20)	112-95-8	2000 +/- 100 mg/L
n-heneicosane (C21)	629-94-7	2000 +/- 100 mg/L
hexacosane (C26)	630-01-3	2000 +/- 100 mg/L
n-hexadecane (C16)	544-76-3	2000 +/- 100 mg/L
hexatriacontane (C36)	630-06-8	2000 +/- 100 mg/L
2-methylnaphthalene	91-57-6	2000 +/- 100 mg/L
naphthalene	91-20-3	2000 +/- 100 mg/L
nonane (C9)	111-84-2	2000 +/- 100 mg/L
octacosane (C28)	630-02-4	2000 +/- 100 mg/L
n-octadecane (C18)	593-45-3	2000 +/- 100 mg/L
octatriacontane (C38)	7194-85-6	2000 +/- 100 mg/L
tetracontane (C40)	4181-95-7	2000 +/- 100 mg/L
n-tetracosane (C24)	646-31-1	2000 +/- 100 mg/L
n-tetradecane (C14)	629-59-4	2000 +/- 100 mg/L
tetratriacontane (C34)	14167-59-0	2000 +/- 100 mg/L
triacontane (C30)	638-68-6	2000 +/- 100 mg/L

EPH standards *continued*

Florida TRPH standards		
Catalog#	**Product**	
DRE-YS09000020CD Solvent: Carbon Disulfide	Florida TRPH Mix, 2000 mg/L, (RM, ISO GUIDE 34)	5 x 1 mL
Component	**CAS Number**	Concentration
decane (C10)	124-18-5	2000 +/- 100 mg/L
docosane (C22)	629-97-0	2000 +/- 100 mg/L
dodecane (C12)	112-40-3	2000 +/- 100 mg/L
dotriacontane (C32)	544-85-4	2000 +/- 100 mg/L
eicosane (C20)	112-95-8	2000 +/- 100 mg/L
hexacosane (C26)	630-01-3	2000 +/- 100 mg/L
n-hexadecane (C16)	544-76-3	2000 +/- 100 mg/L
hexatriacontane (C36)	630-06-8	2000 +/- 100 mg/L
octacosane (C28)	630-02-4	2000 +/- 100 mg/L
octane (C8)	111-65-9	2000 +/- 100 mg/L
octatriacontane (C38)	7194-85-6	2000 +/- 100 mg/L
tetracontane (C40)	4181-95-7	2000 +/- 100 mg/L
tetratriacontane (C34)	14167-59-0	2000 +/- 100 mg/L
triacontane (C30)	638-68-6	2000 +/- 100 mg/L
tetradecane (C14)	629-59-4	2000 +/- 100 mg/L
octadecane (C18)	593-45-3	2000 +/- 100 mg/L
tetracosane (C24)	646-31-1	2000 +/- 100 mg/L

Volatile petroleum hydrocarbon standards		
Catalog#	**Product**	
DRE-YS09000048ME Solvent: P/T Methanol	VPH Calibration Mix, 50 mg/L (RM, ISO GUIDE 34)	5 x 1 mL
Component	**CAS Number**	Concentration
benzene	71-43-2	50 +/- 2.5 mg/L
butylcyclohexane	1678-93-9	50 +/- 2.5 mg/L
decane (C10)	124-18-5	50 +/- 2.5 mg/L
2,5-dibromotoluene	615-59-8	50 +/- 2.5 mg/L
ethylbenzene	100-41-4	50 +/- 2.5 mg/L
isooctane	540-84-1	50 +/- 2.5 mg/L
methyl t-butyl ether	1634-04-4	50 +/- 2.5 mg/L
2-methylpentane	107-83-5	50 +/- 2.5 mg/L
naphthalene	91-20-3	50 +/- 2.5 mg/L
toluene	108-88-3	50 +/- 2.5 mg/L
1,2,4-trimethylbenzene	95-63-6	50 +/- 2.5 mg/L
m-xylene	108-38-3	50 +/- 2.5 mg/L
o-xylene	95-47-6	50 +/- 2.5 mg/L
p-xylene	106-42-3	50 +/- 2.5 mg/L
nonane	95-47-6	50 +/- 2.5 mg/L
n-pentane	109-66-0	50 +/- 2.5 mg/L

For further information, or if you require substances or materials not currently listed please contact one of our local sales offices.

Brazil
Tel: +55 12 3302 5880
Email: bz@lgcstandards.com

Bulgaria
Tel: +359 (0)2 971 4955
Email: bg@lgcstandards.com

China
Tel: +86 (10)56315129
Email: infochina@lgcgroup.com

France
Tel: +33 (0)3 88 04 82 82
Email: fr@lgcstandards.com

Germany
Tel: +49 (0)281 9887 0
Email: de@lgcstandards.com

Hungary
Tel: +40 364 116890
Email: ro@lgcstandards.com

India
Tel: +91 (0)80 6701 2000
Email: in@lgcpromochem.com

Ireland
Tel: +44 (0)20 8943 8480
Email: uksales@lgcstandards.com

Italy
Tel: +39 02 2247 6412
Email: it@lgcstandards.com

Middle East
Tel: +49 (0)281 9887 0
Email: de@lgcstandards.com

Netherlands
Tel: +31 (0)643 775 422
Email: nl@lgcstandards.com

Poland
Tel: +48 22 751 31 40
Email: pl@lgcstandards.com

Romania
Tel: +40 364 116890
Email: ro@lgcstandards.com

Russia
Tel: +7 812 7770488
Email: ru@lgcgroup.com

Scandinavia
Tel: +49 (0)281 9887 0
Email: de@lgcstandards.com

South Africa
Tel: +27 (0)11 466 4321
Email: info@industrialanalytical.co.za

Spain
Tel: +34 (0)93 308 4181
Email: es@lgcstandards.com

Turkey
Tel: +90 216 360 0870
Email: tur@lgcstandards.com

United Kingdom
Tel: +44 (0)20 8943 8480
Email: uksales@lgcstandards.com

USA + Canada
Tel: +1 (603) 622 7660
Email: custsvc@lgcgroup.com

www.lgcstandards.com

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