

Reference Standards

Petroleum & Petrochemical



Biodiesel
Finished Motor Oil & Aviation Gasoline
Leaking Underground Storage Tank (LUST)
PCBs in Transformer Oil
Simulated Distillation
Spark Ignition Engine Fuels



Biodiesel

ASTM Method D6584-10 and EN14105 (Biodiesel)

Determining Free and Total Glycerin in B100 Biodiesel Methyl Esters by GC

In the manufacture of biodiesel fuel, triglycerides are split into their monoalkyl ester components via transesterification. The fatty acid monoalkyl esters can be used as fuel in diesel engines. Amounts of free glycerin and total glycerin indicate the quality of the conversion of the oil or fat to monoalkyl esters. D6584-10 and DIN EN14105 are test methods for quantitative determination of free glycerin, total glycerin, and mono-, di-, and triglycerides in biodiesel fuel methyl esters by GC, after silylation of the sample with N-methyl-N-(trimethylsilyl) trifluoroacetamide (MSTFA).

(s)-(-)-1,2,4-Butanetriol

(s)-(-)-1,2,4-Butanetriol (42890-76-6)

1,000 µg/mL in pyridine, 1 mL/ampul

cat.# 33024 (ea.)

1,000 µg/mL in pyridine, 5 mL/ampul

cat.# 33032 (ea.)

Diolein (1,3-di[*cis*-octadecenoyl]glycerol)

Diolein (1,3-di[*cis*-octadecenoyl]glycerol) (2465-32-9)

5,000 µg/mL in pyridine, 1 mL/ampul

cat.# 33022 (ea.)

Glycerin

Glycerin (56-81-5)

500 µg/mL in pyridine, 1 mL/ampul

cat.# 33020 (ea.)

Monolein (1-mono[*cis*-9-octadecenoyl]-*rac*-glycerol)

Monolein (1-mono[*cis*-9-octadecenoyl]-*rac*-glycerol) (111-03-5)

5,000 µg/mL in pyridine, 1 mL/ampul

cat.# 33021 (ea.)

Monopalmitin

Monopalmitin (524-44-9)

5,000 µg/mL in pyridine, 1 mL/ampul

cat.# 33026 (ea.)

Tricaprin (1,2,3-tricaprinoylglycerol)

Tricaprin (1,2,3-tricaprinoylglycerol) (621-71-6)

8,000 µg/mL in pyridine, 1 mL/ampul

cat.# 33025 (ea.)

8,000 µg/mL in pyridine, 5 mL/ampul

cat.# 33033 (ea.)

Triolein (1,2,3-tri[*cis*-octadecenoyl]glycerol)

Triolein (1,2,3-tri[*cis*-octadecenoyl]glycerol) (122-32-7)

5,000 µg/mL in pyridine, 1 mL/ampul

cat.# 33023 (ea.)

Diesel:Biodiesel (80:20) Blend Standard

The biodiesel component is methyl soyate.

Diesel:biodiesel (80:20) (67784-80-9)

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

cat.# 31880 (ea.)



MXT[®] Capillary Columns

Ideal for High-Temperature GC Analysis

- Metal tubing won't become brittle at high temperatures (430 °C).*
- Exclusive Siltek[®] layer provides an internal surface with excellent inertness.
- Can be tightly coiled well under 4.5" without breaking, even under stress.

*Maximum temperature of finished column may vary by phase.

See **page 104**.

www.restek.com/mxt



Finished Motor Oil & Aviation Gasoline

ASTM D3606-10 (Determination of Benzene & Toluene in Finished Motor & Aviation Gasoline by GC)

ASTM D3606 Calibration Kit Without Internal Standard

Contains 25 mL each of these mixtures.

30647: ASTM D3606 Calibration Standard #1 Without Internal Standard
 30648: ASTM D3606 Calibration Standard #2 Without Internal Standard
 30649: ASTM D3606 Calibration Standard #3 Without Internal Standard
 30650: ASTM D3606 Calibration Standard #4 Without Internal Standard
 30651: ASTM D3606 Calibration Standard #5 Without Internal Standard
 30652: ASTM D3606 Calibration Standard #6 Without Internal Standard
 30653: ASTM D3606 Calibration Standard #7 Without Internal Standard

cat.# 30672 (kit)

kit

Find complete compound lists for our **D3606 reference standards** at

www.restek.com/D3606standards

ASTM D3606 Calibration Kit With MEK Internal Standard

Contains 1 mL each of these mixtures.

30654: ASTM D3606 Calibration Standard #1 With MEK Internal Standard
 30655: ASTM D3606 Calibration Standard #2 With MEK Internal Standard
 30656: ASTM D3606 Calibration Standard #3 With MEK Internal Standard
 30657: ASTM D3606 Calibration Standard #4 With MEK Internal Standard
 30658: ASTM D3606 Calibration Standard #5 With MEK Internal Standard
 30659: ASTM D3606 Calibration Standard #6 With MEK Internal Standard
 30660: ASTM D3606 Calibration Standard #7 With MEK Internal Standard

cat.# 30673 (kit)

kit

ASTM D3606 Calibration Kit With *sec*-Butanol Internal Standard

Contains 1 mL each of these mixtures.

30661: ASTM D3606 Calibration Standard #1 With *sec*-Butanol Internal Standard
 30662: ASTM D3606 Calibration Standard #2 With *sec*-Butanol Internal Standard
 30663: ASTM D3606 Calibration Standard #3 With *sec*-Butanol Internal Standard
 30664: ASTM D3606 Calibration Standard #4 With *sec*-Butanol Internal Standard
 30665: ASTM D3606 Calibration Standard #5 With *sec*-Butanol Internal Standard
 30666: ASTM D3606 Calibration Standard #6 With *sec*-Butanol Internal Standard
 30667: ASTM D3606 Calibration Standard #7 With *sec*-Butanol Internal Standard

cat.# 30674 (kit)

kit

ASTM D3606 Backflush Standard

2,2,4-Trimethylpentane (isooctane) (540-84-1)

5% vol/vol in nonane, 1 mL/ampul

cat.# 30671 (ea.)

PCBs in Transformer Oil

ASTM Method D4059-00 (PCB Standards in Oil)

ASTM Method D4059-00 is used for determining PCB concentrations in various types of transformer oil using GC-ECD detection. The analyst must dilute transformer oil samples in a solvent prior to injection. The oil in the sample has been shown to quench the ECD. Calibration mixtures of PCBs in transformer oil must be prepared and diluted identically to eliminate the detector quenching bias resulting when samples are analyzed.

We prepare these solutions in a mineral oil-based transformer oil (Exxon® Univolt® N-61), which has been tested to ensure it is PCB-free.

PCB-Free Transformer Oil

Neat, 5 mL

cat.# 32424 (ea.)

Neat, 50 mL

cat.# 32425 (ea.)

No data pack available.

Aroclor Standards

Volume is 1 mL/ampul.

Compound	CAS #	Solvent	Conc.	cat.#
Aroclor 1016	12674-11-2	TO	500 mg/kg	32076
Aroclor 1242	53469-21-9	TO	50 mg/kg	32081
Aroclor 1242	53469-21-9	TO	500 mg/kg	32082
Aroclor 1254	11097-69-1	TO	50 mg/kg	32085
Aroclor 1254	11097-69-1	TO	500 mg/kg	32086
Aroclor 1260	11096-82-5	TO	50 mg/kg	32087
Aroclor 1260	11096-82-5	TO	500 mg/kg	32088

TO = transformer oil (PCB-free)

also available

D3606 Application Column
(2 column set)

See **page 138** for details.



Simulated Distillation

ASTM Simulated Distillation Petroleum Fractions

ASTM D2887-12 Calibration Standard (20 components)

American Society for Testing and Materials (ASTM International) Method D2887-12 is used to determine the boiling range distribution of petroleum products and fractions having a final boiling point of 538 °C (1,000 °F) or lower, a boiling range greater than 55 °C (131 °F), and a vapor pressure sufficiently low to permit sampling at ambient temperature.

<i>n</i> -Pentane (C5) (109-66-0)	<i>n</i> -Hexadecane (C16) (544-76-3)
<i>n</i> -Hexane (C6) (110-54-3)	<i>n</i> -Heptadecane (C17) (629-78-7)
<i>n</i> -Heptane (C7) (142-82-5)	<i>n</i> -Octadecane (C18) (593-45-3)
<i>n</i> -Octane (C8) (111-65-9)	<i>n</i> -Eicosane (C20) (112-95-8)
<i>n</i> -Nonane (C9) (111-84-2)	<i>n</i> -Tetracosane (C24) (646-31-1)
<i>n</i> -Decane (C10) (124-18-5)	<i>n</i> -Octacosane (C28) (630-02-4)
<i>n</i> -Undecane (C11) (1120-21-4)	<i>n</i> -Dotriacontane (C32) (544-85-4)
<i>n</i> -Dodecane (C12) (112-40-3)	<i>n</i> -Hexatriacontane (C36) (630-06-8)
<i>n</i> -Tridecane (C13) (112-40-3)	<i>n</i> -Tetracontane (C40) (4181-95-7)
<i>n</i> -Tetradecane (C14) (629-59-4)	<i>n</i> -Tetratetracontane (C44) (7098-22-8)
<i>n</i> -Pentadecane (C15) (629-62-9)	

1% w/w in carbon disulfide, 1 g solution/ampul

cat.# 31674 (ea.)

5% w/w, Neat, 1 g /ampul

cat.# 31675 (ea.)

No data pack available.

ASTM Methods D2887 and D3710-95

These calibration mixtures are made with pure, highly characterized neat material and are prepared using NIST-traceable balances and weights. Each ampul is supplied with a data sheet indicating the exact concentration and a sample chromatogram.

D2887 Calibration Mix (17 components)

Compound	Conc. (% w/w)	Compound	Conc. (% w/w)
<i>n</i> -Hexane (C6) (110-54-3)	6	<i>n</i> -Octadecane (C18) (593-45-3)	5
<i>n</i> -Heptane (C7) (142-82-5)	6	<i>n</i> -Eicosane (C20) (112-95-8)	2
<i>n</i> -Octane (C8) (111-65-9)	8	<i>n</i> -Tetracosane (C24) (646-31-1)	2
<i>n</i> -Nonane (C9) (111-84-2)	8	<i>n</i> -Octacosane (C28) (630-02-4)	1
<i>n</i> -Decane (C10) (124-18-5)	12	<i>n</i> -Dotriacontane (C32) (544-85-4)	1
<i>n</i> -Undecane (C11) (1120-21-4)	12	<i>n</i> -Hexatriacontane (C36) (630-06-8)	1
<i>n</i> -Dodecane (C12) (112-40-3)	12	<i>n</i> -Tetracontane (C40) (4181-95-7)	1
<i>n</i> -Tridecane (C13) (112-40-3)	12	<i>n</i> -Tetratetracontane (C44) (7098-22-8)	1
<i>n</i> -Tetradecane (C14) (629-59-4)	12		
<i>n</i> -Hexadecane (C16) (544-76-3)	10		

Packaged 1 mL/ampul

cat.# 31222 (ea.)

No data pack available.

D3710-95 Calibration Mix (16 components)

Compound	Conc. (% vol/vol)	Compound	Conc. (% w/w)
<i>n</i> -Pentane (C5) (109-66-0)	8	<i>n</i> -Pentadecane (C15) (629-62-9)	2
<i>n</i> -Hexane (C6) (110-54-3)	6	<i>n</i> -Butylbenzene (104-51-8)	4
<i>n</i> -Heptane (C7) (142-82-5)	10	2,4-Dimethylpentane (108-08-7)	6
<i>n</i> -Octane (C8) (111-65-9)	5	2-Methylbutane (Isopentane) (78-78-4)	10
<i>n</i> -Decane (C10) (124-18-5)	4	2-Methylpentane (107-83-5)	6
<i>n</i> -Dodecane (C12) (112-40-3)	4	<i>n</i> -Propylbenzene (103-65-1)	5
<i>n</i> -Tridecane (C13) (112-40-3)	2	Toluene (108-88-3)	12
<i>n</i> -Tetradecane (C14) (629-59-4)	2	<i>p</i> -Xylene (106-42-3)	14

Packaged 1 mL/ampul

cat.# 31223 (ea.)

No data pack available.

ASTM Method 6352-04 (Polywax® Standards)

Polywax® Standards

These high molecular weight hydrocarbon waxes are useful for simulated distillation and other high-temperature GC work. Supports ASTM Methods D2887, D6352, D7169, D7398, and D7500.

Volume is 1 mL/ampul.

Compound	CAS #	Solvent	Conc.	cat.#
Polywax 500	9002-88-4	Neat	1 g	36224
Polywax 655	9002-88-4	Neat	1 g	36225
Polywax 850	9002-88-4	Neat	1 g	36226
Polywax 1,000	9002-88-4	Neat	1 g	36227

No data pack available.

Petroleum Standards

These petroleum standards are gravimetrically prepared, NIST-traceable by weight, and have been verified by one or more analytical methods.

Sulfur Simulated Distillation Standard (SSDS)

30 ppm total sulfur by weight from ethanethiol
 60 ppm total sulfur by weight from 1-propanethiol
 30 ppm total sulfur by weight from 1-butanethiol
 60 ppm total sulfur by weight from 1-pentanethiol
 30 ppm total sulfur by weight from 1-hexanethiol
 60 ppm total sulfur by weight from 1-heptanethiol
 30 ppm total sulfur by weight from 3,5-dimethylbenzenethiol
 60 ppm total sulfur by weight from 1-octanethiol
 30 ppm total sulfur by weight from 1-nonanethiol
 60 ppm total sulfur by weight from 1-decanethiol
 30 ppm total sulfur by weight from 1-pentadecanethiol
 60 ppm total sulfur by weight from 1-hexadecanethiol
 30 ppm total sulfur by weight from 1-octadecanethiol
 Balance: toluene:isooctane (1:15)

1 mL amber ampul.

cat.# 33049 (ea.)

Speciated Sulfur System Suitability Checkout Standard (SSSSCS)

0.50 ppm total sulfur by weight from dimethylsulfide
 35.0 ppm total sulfur by weight from tertiary butyl mercaptan
 50.0 ppm total sulfur by weight from thiopene
 15.0 ppm total sulfur by weight from dimethyl disulfide
 25.0 ppm total sulfur by weight from benzothiopene
 Balance: isooctane

1 mL amber ampul.

cat.# 33050 (ea.)



Restek Offers a Full Line of Certified Reference Materials

See pages 464-465.



www.restek.com/iso

Spark Ignition Engine Fuels

ASTM Method D6730-01 (Determination of Individual Components in Spark Ignition Engine Fuels)

ASTM Methods D6729, D6730, and D6733 are designed for the determination of the individual hydrocarbons present in spark engine ignition fuels, as well as fuel blends containing oxygenates such as methyl *tert*-butyl ether, ethyl *tert*-butyl ether, *tert*-butanol, ethanol, etc.

These standards are produced for refineries performing detailed hydrocarbon analysis (DHA) of crude oil feedstocks and fuels. They help with calibrating complex hydrocarbon analyses and provide the greatest number of gravimetrically determined values for quantitative calibration to help our customers optimize production and maximize profitability—while fulfilling requirements such as ASTM Methods D6729, D6730, and D6733.

Oxy Set-Up Blend (30 components)

Gravimetrically prepared and NIST-traceable.

Benzene	1.00%	1-Methylcyclopentane	0.50%
<i>tert</i> -Butanol	0.50%	1-Methyl-2-ethylbenzene	0.50%
Cyclohexane	28.9%	1-Methylnaphthalene	0.25%
<i>n</i> -Decane	1.00%	5-Methylnonane	0.20%
2,3-Dimethylbutane	0.50%	Naphthalene	0.50%
<i>trans</i> -1,2-Dimethylcyclopentane	0.50%	<i>n</i> -Nonane	2.00%
2,3-Dimethylheptane	0.20%	<i>n</i> -Octane	2.00%
Dodecane	0.25%	<i>n</i> -Pentane	2.00%
Ethanol	8.00%	1,2,3,5-Tetramethylbenzene	0.25%
Ethylbenzene	25.0%	Toluene	7.00%
3-Ethylpentane	0.20%	Tridecane	0.25%
<i>n</i> -Heptane	2.00%	2,2,3-Trimethylpentane	0.52%
<i>n</i> -Hexane	2.00%	2,3,3-Trimethylpentane	0.50%
2-Methylbutene-2	2.50%	Undecane	0.50%
Methyl <i>tert</i> -butyl ether	10.0%	<i>p</i> -Xylene	1.00%

2 mL prescored ampul

cat.# 33034 (ea.)

DHA PONA Standard (188 components)

This standard is a qualitative mixture of various gasoline and refinery materials prepared to provide nearly every component that may be encountered in feedstock and finished gasolines. Some oxygenates have been added to allow this blend to be used by refineries for detailed hydrocarbon analysis (DHA) method setup and to fulfill requirements such as ASTM Methods D6729, D6730, and D6733.

For a full component list, visit www.restek.com and search for "30731".

Neat, 0.15 mL in Autosampler Vial

cat.# 30731 (ea.)

No data pack available.



DHA PiONA Standard (133 components)

Compound	Conc (wt/wt%)	4-Methylheptane	0.286	<i>cis</i> -2-Pentene	0.21	<i>tert</i> -1-Butyl-4-Ethylbenzene	0.478
Paraffins		2-Methylhexane	0.891	<i>trans</i> -2-Pentene	0.542	<i>tert</i> -1-Butyl-2-Methylbenzene	0.478
N-Decane	1.736	3-Methylhexane	0.451	Naphthenes		<i>tert</i> -1-Butyl-3,4,5-Trimethylbenzene	0.772
N-Dodecane	1.727	2-Methylnonane	0.3	Cyclohexane	0.954	1,2-Dimethyl-3-Ethylbenzene	0.495
N-Heptane	1.723	3-Methylnonane	1.001	Cyclopentane	1.891	1,2-Dimethyl-4-Ethylbenzene	0.21
N-Hexane	1.729	2-Methyloctane	0.245	<i>cis</i> -1,2-Dimethylcyclohexane	2.055	1,3-Dimethyl-2-Ethylbenzene	0.184
N-Nonane	1.727	3-Methyloctane	1.329	<i>trans</i> -1,2-Dimethylcyclohexane	0.328	1,3-Dimethyl-5-Ethylbenzene	0.094
N-Octane	1.721	2-Methylpentane	1.211	<i>trans</i> -1,4-Dimethylcyclohexane	0.941	1,4-Dimethyl-2-Ethylbenzene	0.478
N-Pentadecane	1.734	3-Methylpentane	1.998	<i>trans</i> -1,2-Dimethylcyclopentane	0.73	Ethylbenzene	1.897
N-Pentane	1.728	2,2,3-Trimethylbutane	0.125	<i>cis</i> -1,3-Dimethylcyclopentane	0.06	Hexylbenzene	1.186
N-Tetradecane	1.735	2,2,3-Trimethylpentane	0.698	<i>trans</i> -1,3-Dimethylcyclopentane	1.16	Isobutylbenzene	0.713
N-Tridecane	1.723	Olefins		Ethylcyclopentane	1.567	Isopropylbenzene	0.48
N-Undecane	1.723	1-Decene	0.43	1-Ethyl-1-Methylcyclopentane	0.292	2-Methylbutylbenzene	0.027
Isoparaffins		1-Heptene	1.29	Isobutylcyclohexane	0.733	1-Methyl-2-Ethylbenzene	0.361
3,3-Diethylpentane	0.364	<i>cis</i> -2-Heptene	0.649	Isopropylcyclopentane	0.267	1-Methyl-3-Ethylbenzene	0.643
2,3-Dimethylbutane	0.447	<i>trans</i> -2-Heptene	0.101	Methylcyclohexane	0.735	1-Methyl-4-Ethylbenzene	0.476
2,3-Dimethylheptane	0.22	<i>cis</i> -3-Heptene	0.194	Methylcyclopentane	1.184	1-Methyl-2-Isopropylbenzene	0.645
2,5-Dimethylheptane	0.733	<i>trans</i> -3-Heptene	0.712	t-1-Methyl-2(4-Methylphenyl)cyclopentane	0.718	1-Methyl-3-Isopropylbenzene	0.245
3,3-Dimethylheptane	0.335	1-Hexene	2.137	t-1-Methyl-2-N-Propylcyclohexane	0.927	1-Methyl-4-Isopropylbenzene	0.949
3,4-Dimethylheptane	0.159	<i>cis</i> -2-Hexene	0.555	hexane	0.27	1-Methyl-2- <i>n</i> -Propylbenzene	0.494
3,5-Dimethylheptane	0.445	<i>trans</i> -2-Hexene	0.31	N-Propylcyclopentane	0.874	1-Methyl-3- <i>n</i> -Propylbenzene	0.479
2,2-Dimethylhexane	0.149	2-Methyl-1,3-Butadiene	0.699	1,1,2-Trimethylcyclohexane	0.368	1-Methyl-4- <i>n</i> -Propylbenzene	0.477
2,4-Dimethylhexane	0.276	2-Methyl-1-Butene	0.42	1,1,4-Trimethylcyclohexane	1.261	N-Propylbenzene	0.711
2,5-Dimethylhexane	1.112	3-Methyl-1-Butene	0.291	ctc-1,2,3-Trimethylcyclohexane	0.735	1,2,4,5-Tetramethylbenzene	0.198
2,2-Dimethyloctane	0.398	2-Methyl-1-Nonene	0.648	ctc-1,2,4-Trimethylcyclohexane	0.212	Toluene	2.839
3,3-Dimethyloctane	0.153	2-Methyl-2-Pentene	0.654	ctt-1,2,4-Trimethylcyclohexane	0.368	1,2,4-Triethylbenzene	0.233
2,2-Dimethylpentane	0.463	4-Methyl-1-Pentene	0.646	ccc-1,3,5-Trimethylcyclohexane	0.469	1,3,5-Triethylbenzene	0.48
2,3-Dimethylpentane	0.887	1-Nonene	1.313	ccc-1,2,3-Trimethylcyclopentane	0.159	1,2,4-Trimethylbenzene	0.475
2,4-Dimethylpentane	1.127	<i>trans</i> -2-Nonene	0.434	ctc-1,2,3-Trimethylcyclopentane	0.747	1,3,5-Trimethylbenzene	0.097
3,3-Dimethylpentane	0.438	<i>trans</i> -3-Nonene	0.575	Aromatics		<i>m</i> -Xylene	0.715
3-Ethylhexane	0.058	<i>trans</i> -3-Nonene	0.44	Benzene	1.899	<i>o</i> -Xylene	0.719
3-Ethylheptane	0.203	<i>cis</i> -4-Nonene	0.829	N-Butylbenzene	0.478	<i>p</i> -Xylene	0.239
3-Ethylpentane	0.168	1-Octene	2.155	<i>sec</i> -Butylbenzene	0.711		
Isopentane	0.304	<i>cis</i> -2-Octene	0.439	<i>tert</i> -Butylbenzene	0.473		
2-Methylheptane	0.899	<i>trans</i> -2-Octene	0.656				
3-Methylheptane	1.122	1-Pentene	1.669				

Neat, 0.15 mL in Autosampler Vial

cat.# 30730 (ea.)

No data pack available.



Spark Ignition Engine Fuels, *cont.*

ASTM Method D6730-01 (Determination of Individual Components in Spark Ignition Engine Fuels), *cont.*

DHA Paraffins Standard (11 components)

Compound	Conc (wt/wt%)		
N-Decane	9.134	N-Octane	9.054
N-Dodecane	9.089	N-Pentadecane	9.123
N-Heptane	9.066	N-Pentane	9.094
N-Hexane	9.097	N-Tetradecane	9.128
N-Nonane	9.086	N-Tridecane	9.064
		N-Undecane	9.064

Neat, 0.15 mL in Autosampler Vial

cat.# 30725 (ea.)

No data pack available.

NEW!

DHA Isoparaffins Standard (33 components)

Compound	Conc (wt/wt%)		
3,3-Diethylpentane	1.914	3-Ethylhexane	0.307
2,3-Dimethylbutane	2.352	3-Ethyldecane	1.068
2,3-Dimethylheptane	1.16	3-Ethylpentane	0.882
2,5-Dimethylheptane	3.86	Isopentane	1.599
3,3-Dimethylheptane	1.765	2-Methylheptane	4.731
3,4-Dimethylheptane	0.839	3-Methylheptane	5.909
3,5-Dimethylheptane	2.344	4-Methylheptane	1.508
2,2-Dimethylhexane	0.786	2-Methylhexane	4.689
2,4-Dimethylhexane	1.454	3-Methylhexane	2.374
2,5-Dimethylhexane	5.854	2-Methylnonane	1.582
2,2-Dimethyloctane	2.095	3-Methylnonane	5.272
3,3-Dimethyloctane	0.804	2-Methyloctane	1.289
2,2-Dimethylpentane	2.438	3-Methyloctane	6.995
2,3-Dimethylpentane	4.668	2-Methylpentane	6.377
2,4-Dimethylpentane	5.931	3-Methylpentane	10.517
3,3-Dimethylpentane	2.305	2,2,3-Trimethylbutane	0.66
		2,2,3-Trimethylpentane	3.673

Neat, 0.15 mL in Autosampler Vial

cat.# 30726 (ea.)

No data pack available.

NEW!

DHA Olefins Standard (26 components)

Compound	Conc (wt/wt%)		
1-Decene	2.265	2-Methyl-2-Pentene	3.444
1-Heptene	6.787	4-Methyl-1-Pentene	3.398
<i>cis</i> -2-Heptene	3.418	1-Nonene	6.912
<i>trans</i> -2-Heptene	0.53	<i>trans</i> -2-Nonene	2.282
<i>cis</i> -3-Heptene	1.02	<i>cis</i> -3-Nonene	3.027
<i>trans</i> -3-Heptene	3.747	<i>trans</i> -3-Nonene	2.315
1-Hexene	11.249	<i>cis</i> -4-Nonene	4.365
<i>cis</i> -2-Hexene	2.921	1-Octene	11.339
<i>trans</i> -2-Hexene	1.632	<i>cis</i> -2-Octene	2.312
2-Methyl-1,3-Butadiene	3.68	<i>trans</i> -2-Octene	3.453
2-Methyl-1-Butene	2.211	1-Pentene	8.786
3-Methyl-1-Butene	1.534	<i>cis</i> -2-Pentene	1.107
2-Methyl-1-Nonene	3.412	<i>trans</i> -2-Pentene	2.852

Neat, 0.15 mL in Autosampler Vial

cat.# 30727 (ea.)

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DHA Naphthenes Standard (26 components)

Compound	Conc (wt/wt%)		
Cyclohexane	4.773	Methylcyclopentane	5.921
Cyclopentane	9.455	<i>t</i> -1-Methyl-2-(Methylphenyl)cyclopentane	3.592
<i>cis</i> -1,2-Dimethylcyclohexane	10.276	<i>t</i> -1-Methyl-2- <i>n</i> -Propylcyclohexane	4.637
<i>trans</i> -1,2-Dimethylcyclohexane	1.642	N-Propylcyclopentane	4.373
<i>trans</i> -1,4-Dimethylcyclohexane	4.705	1,1,2-Trimethylcyclohexane	1.842
<i>trans</i> -1,2-Dimethylcyclopentane	3.653	1,1,4-Trimethylcyclohexane	6.304
<i>cis</i> -1,3-Dimethylcyclopentane	0.3	<i>ctc</i> -1,2,3-Trimethylcyclohexane	3.676
<i>trans</i> -1,3-Dimethylcyclopentane	5.799	<i>ctc</i> -1,2,4-Trimethylcyclohexane	1.062
Ethylcyclopentane	7.837	<i>ctt</i> -1,2,4-Trimethylcyclohexane	1.839
1-Ethyl-1-Methylcyclopentane	1.459	<i>ccc</i> -1,3,5-Trimethylcyclohexane	2.343
Isobutylcyclohexane	3.666	<i>ccc</i> -1,2,3-Trimethylcyclopentane	0.795
Isobutylcyclopentane	1.334	<i>ctc</i> -1,2,3-Trimethylcyclopentane	3.738
Isopropylcyclopentane	1.305		
Methylcyclohexane	3.677		

Neat, 0.15 mL in Autosampler Vial

cat.# 30728 (ea.)

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DHA Aromatics Standard (37 components)

Compound	Conc (wt/wt%)		
Benzene	8.255	1-Methyl-3-Ethylbenzene	2.795
<i>n</i> -Butylbenzene	2.077	1-Methyl-4-Ethylbenzene	2.07
<i>sec</i> -Butylbenzene	3.09	1-Methyl-2-Isopropylbenzene	2.806
<i>tert</i> -Butylbenzene	2.058	1-Methyl-3-Isopropylbenzene	1.066
<i>tert</i> -1-Butyl-4-Ethylbenzene	2.076	1-Methyl-4-Isopropylbenzene	4.126
<i>tert</i> -1-Butyl-2-Methylbenzene	2.077	1-Methyl-2- <i>n</i> -Propylbenzene	2.148
<i>tert</i> -1-Butyl-3,4,5-Trimethylbenzene	3.355	1-Methyl-3- <i>n</i> -Propylbenzene	2.084
1,2-Dimethyl-3-Ethylbenzene	2.152	1-Methyl-4- <i>n</i> -Propylbenzene	2.073
1,2-Dimethyl-4-Ethylbenzene	0.915	Pentylbenzene	2.058
1,3-Dimethyl-2-Ethylbenzene	0.799	N-Propylbenzene	3.091
1,3-Dimethyl-5-Ethylbenzene	0.407	1,2,4,5-Tetramethylbenzene	0.86
1,4-Dimethyl-2-Ethylbenzene	2.076	Toluene	12.342
Ethylbenzene	8.248	1,2,4-Triethylbenzene	1.014
Hexylbenzene	5.155	1,3,5-Triethylbenzene	2.087
Isobutylbenzene	3.099	1,2,4-Trimethylbenzene	2.066
Isopropylbenzene	2.085	1,3,5-Trimethylbenzene	0.422
2-Methylbutylbenzene	0.118	<i>m</i> -Xylene	3.108
1-Methyl-2-Ethylbenzene	1.571	<i>o</i> -Xylene	3.125
		<i>p</i> -Xylene	1.041

Neat, 0.15 mL in Autosampler Vial

cat.# 30729 (ea.)

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Compound Index for Reference Standards

See pages 586–592.

