

# REFERENCE STANDARDS PETROLEUM & PETROCHEMICAL MATERIALS

## ASTM Methods

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**ASTM Simulated Distillation Petrochemical Mixtures**

American Society for Testing and Materials (ASTM International) Method D2887-01 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 sufficient low to permit sampling at ambient temperature.

**ASTM D2887-01 Calibration Mix** (20 components)

<i>n</i> -pentane (C5)	<i>n</i> -hexadecane (C16)
<i>n</i> -hexane (C6)	<i>n</i> -heptadecane (C17)
<i>n</i> -heptane (C7)	<i>n</i> -octadecane (C18)
<i>n</i> -octane (C8)	<i>n</i> -eicosane (C20)
<i>n</i> -nonane (C9)	<i>n</i> -tetracosane (C24)
<i>n</i> -decane (C10)	<i>n</i> -octacosane (C28)
<i>n</i> -undecane (C11)	<i>n</i> -dotriacontane (C32)
<i>n</i> -dodecane (C12)	<i>n</i> -hexatriacontane (C36)
<i>n</i> -tetradecane (C14)	<i>n</i> -tetracontane (C40)
<i>n</i> -pentadecane (C15)	<i>n</i> -tetratetracontane (C44)

1% w/w in carbon disulfide, 1g solution/ampul\*  
cat. # 31674 (ea.)

5% w/w, Neat, 1g /ampul  
cat. # 31675 (ea.)

No data pack available.

\*Orders in the US ship FedEx only. Call for options when shipping outside the US.

**ASTM Methods D2887 and D3710-95**

These calibration mixtures are made with pure, highly characterized neat material, and 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)	6	<i>n</i> -octadecane (C18)	5
<i>n</i> -heptane (C7)	6	<i>n</i> -eicosane (C20)	2
<i>n</i> -octane (C8)	8	<i>n</i> -tetracosane (C24)	2
<i>n</i> -nonane (C9)	8	<i>n</i> -octacosane (C28)	1
<i>n</i> -decane (C10)	12	<i>n</i> -dotriacontane (C32)	1
<i>n</i> -undecane (C11)	12	<i>n</i> -hexatriacontane (C36)	1
<i>n</i> -dodecane (C12)	12	<i>n</i> -tetracontane (C40)	1
<i>n</i> -tetradecane (C14)	12	<i>n</i> -tetratetracontane (C44)	1
<i>n</i> -hexadecane (C16)	10		

Packaged 1mL/ampul  
cat. # 31222 (ea.)

No data pack available.

**D3710-95 Calibration Mix** (16 components)

Compound	Conc. (% vol/vol)	Compound	Conc. (% vol/vol)
<i>n</i> -pentane (C5)	8	<i>n</i> -pentadecane (C15)	2
<i>n</i> -hexane (C6)	6	2-methylbutane	10
<i>n</i> -heptane (C7)	10	2-methylpentane	6
<i>n</i> -octane (C8)	5	2,4-dimethylpentane	6
<i>n</i> -decane (C10)	4	toluene	12
<i>n</i> -dodecane (C12)	4	<i>p</i> -xylene	14
<i>n</i> -tridecane (C13)	2	<i>n</i> -propylbenzene	5
<i>n</i> -tetradecane (C14)	2	<i>n</i> -butylbenzene	4

Packaged 1mL/ampul  
cat. # 31223 (ea.)

No data pack available.

**ASTM D3606-07 (Determination of Benzene & Toluene in Finished Motor & Aviation Gasoline by GC)**

**ASTM D3606 Calibration Kit without Internal Standard**



Contains 25mL 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)

Quantity discounts not available.

**ASTM D3606 Calibration Kit with MEK Internal Standard**



Contains 1mL 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)

Quantity discounts not available.

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



Contains 1mL 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)

Quantity discounts not available.

**ASTM D3606 Backflush Standard**



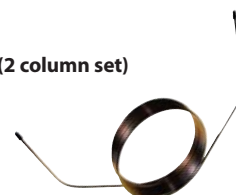
2,2,4-trimethylpentane (isooctane)  
5% vol/vol in nonane, 1mL/ampul  
cat. # 30671 (ea.)



**ASTM D3606 Standards**  
Visit us at [www.restek.com/astm](http://www.restek.com/astm)

**also available**

**D3606 Application Column (2 column set)**  
See **page 128** for details.



# ASTM Methods

## ASTM Method D4059-96 (PCB Standards in Oil)

ASTM Method D4059-96 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, 5mL	cat. # 32424 (ea.)
Neat, 50mL	cat. # 32425 (ea.)

No data pack available.

### Aroclor Standards

Volume is 1mL/ampul.

Compound	Solvent	Conc.	cat.# (ea.)	price
Aroclor 1016	TO	50mg/kg	32075	
Aroclor 1016	TO	500mg/kg	32076	
Aroclor 1221	TO	50mg/kg	32077	
Aroclor 1221	TO	500mg/kg	32078	
Aroclor 1232	TO	50mg/kg	32079	
Aroclor 1232	TO	500mg/kg	32080	
Aroclor 1242	TO	50mg/kg	32081	
Aroclor 1242	TO	500mg/kg	32082	
Aroclor 1248	TO	50mg/kg	32083	
Aroclor 1248	TO	500mg/kg	32084	
Aroclor 1254	TO	50mg/kg	32085	
Aroclor 1254	TO	500mg/kg	32086	
Aroclor 1260	TO	50mg/kg	32087	
Aroclor 1260	TO	500mg/kg	32088	

TO = transformer oil (PCB-free)

## ASTM Method D6352-98 (Polywax® Standards)

These high molecular weight hydrocarbon waxes are useful for simulated distillation and other high-temperature GC work.

Volume is 1mL/ampul.

Compound	qty.	cat.# (ea.)	price
Polywax 500	1g	36224	
Polywax 655	1g	36225	
Polywax 850	1g	36226	
Polywax 1000	1g	36227	

No data pack available.

## ASTM Method D6584-00 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. D6584-00 is a test method 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

1,000µg/mL in pyridine, 1mL/ampul	cat. # 33024 (ea.)
1,000µg/mL in pyridine, 5mL/ampul	cat. # 33032 (ea.)

## ASTM Method D6584-00 and EN14105 (Biodiesel) cont'd

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

5,000µg/mL in pyridine, 1mL/ampul	cat. # 33022 (ea.)
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### Glycerin

500µg/mL in pyridine, 1mL/ampul	cat. # 33020 (ea.)
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### Monolein (1-mono[*cis*-9-octadecenoyl]-*rac*-glycerol)

5,000µg/mL in pyridine, 1mL/ampul	cat. # 33021 (ea.)
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### Monopalmitin

5,000µg/mL in pyridine, 1mL/ampul	cat. # 33026 (ea.)
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### Tricaprin

8,000µg/mL in pyridine, 1mL/ampul	cat. # 33025 (ea.)
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8,000µg/mL in pyridine, 5mL/ampul	cat. # 33033 (ea.)
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### Triolein

5,000µg/mL in pyridine, 1mL/ampul	cat. # 33023 (ea.)
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### Diesel/Biodiesel 80:20 Blend Standard

The biodiesel component is methyl soyate.

5,000µg/mL in methylene chloride, 1mL/ampul	cat. # 31880 (ea.)
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## ASTM Method D6730-01 (Determination of Individual Components in Spark Ignition Engine Fuels)

ASTM method D6730-01 is specifically designed for the determination of the individual hydrocarbons present in spark ignition fuels, as well as fuel blends containing oxygenates such as methyl *tert*-butyl ether, ethyl *tert*-butyl ether, *tert*-butanol, ethanol, etc.

### Oxy Set-Up Blend (30 components)

Gravimetrically prepared and NIST-traceable.

benzene	1.00%	1-methylcyclopentene	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-methyl-2-butene	2.50%	undecane	0.50%
methyl <i>tert</i> -butyl ether	10.0%	<i>p</i> -xylene	1.00%

2mL prescored ampul	cat. # 33034 (ea.)
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ASTM Method D6730-01 (Determination of Individual Components in Spark Ignition Engine Fuels) *cont'd*

**DHA PONA VI Mix**

PONA-VI (PONA 6) 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 for DHA method setup.

Contact us for component listing.

Neat, 0.1mL in Autosampler Vial

cat. # 30723 (ea.)



Neat, 0.1mL in Vial with Mininert Valve

cat. # 30724 (ea.)

No data pack available.

Quantity discounts not available.

**PIANO Standards**

The PIANO blends are standards used for calibrating complex hydrocarbon analyses and provide the greatest number of gravimetrically determined values for quantitative calibration.

**DHA PIANO Blend** (136 components)

Contact us for component listing.

Neat, 0.1mL in Autosampler Vial

cat. # 30712 (ea.)



Neat, 0.1mL in Vial with Mininert Valve

cat. # 30709 (ea.)

No data pack available.

Quantity discounts not available.

**DHA Paraffins Mix** (11 components)

decane	9.11%	pentadecane	9.09%
dodecane	9.13%	pentane	9.06%
heptane	9.08%	tetradecane	9.14%
hexane	9.11%	tridecane	9.05%
nonane	9.08%	undecane	9.05%
octane	9.10%		

Neat, 0.1mL in Autosampler Vial

cat. # 30713 (ea.)



Neat, 0.1mL in Vial with Mininert Valve

cat. # 30714 (ea.)

No data pack available.

Quantity discounts not available.

**DHA Isoparaffins Mix** (34 components)

3,3-diethylpentane	1.87%	3-ethylhexane	0.29%
2,3-dimethylbutane	2.27%	3-ethyloctane	1.04%
2,3-dimethylheptane	1.12%	3-ethylpentane	0.85%
2,5-dimethylheptane	3.64%	isopentane	1.53%
3,3-dimethylheptane	1.71%	3-methylcycloheptane	5.73%
3,4-dimethylheptane	0.80%	4-methylcycloheptane	1.41%
3,5-dimethylheptane	2.27%	2-methylheptane	4.54%
2,2-dimethylhexane	0.76%	2-methylhexane	4.54%
2,3-dimethylhexane	3.29%	3-methylhexane	2.28%
2,4-dimethylhexane	1.40%	2-methylnonane	1.53%
2,5-dimethylhexane	5.69%	3-methylnonane	5.10%
2,2-dimethyloctane	2.05%	2-methyloctane	1.20%
3,3-dimethylheptane	0.78%	3-methyloctane	6.81%
2,2-dimethylpentane	2.36%	2-methylpentane	6.17%
2,3-dimethylpentane	4.54%	3-methylpentane	10.23%
2,4-dimethylpentane	5.77%	2,2,3-trimethylbutane	0.64%
3,3-dimethylpentane	2.23%	2,2,3-trimethylpentane	3.56%

Neat, 0.1mL in Autosampler Vial

cat. # 30715 (ea.)



Neat, 0.1mL in Vial with Mininert Valve

cat. # 30716 (ea.)

No data pack available.

Quantity discounts not available.

**DHA Aromatics Mix** (38 components)

benzene	8.20%	isopropylbenzene	2.07%
<i>n</i> -butylbenzene	2.06%	2-methylbutylbenzene	0.11%
<i>sec</i> -butylbenzene	3.07%	1-methyl-2-isopropylbenzene	2.76%
<i>tert</i> -butylbenzene	2.04%	1-methyl-3-isopropylbenzene	1.05%
<i>tert</i> -1-butyl-3,5-dimethylbenzene	3.31%	1-methyl-4-isopropylbenzene	4.09%
1- <i>tert</i> -butyl-4-ethylbenzene	2.05%	1-methyl-2- <i>n</i> -propylbenzene	2.13%
1- <i>tert</i> -butyl-2-methylbenzene	2.05%	1-methyl-3- <i>n</i> -propylbenzene	2.06%
1,2-diethylbenzene	0.84%	1-methyl-4- <i>n</i> -propylbenzene	2.06%
1,2-dimethyl-3-ethylbenzene	2.13%	pentylbenzene	2.05%
1,2-dimethyl-4-ethylbenzene	0.90%	<i>n</i> -propylbenzene	3.07%
1,3-dimethyl-2-ethylbenzene	0.79%	1,2,4,5-tetramethylbenzene	0.85%
1,3-dimethyl-5-ethylbenzene	0.39%	toluene	12.36%
1,4-dimethyl-2-ethylbenzene	2.05%	1,2,4-triethylbenzene	1.02%
ethylbenzene	8.18%	1,3,5-triethylbenzene	2.04%
1-ethyl-2-methylbenzene	1.55%	1,2,4-trimethylbenzene	2.05%
1-ethyl-3-methylbenzene	2.77%	1,3,5-trimethylbenzene	0.41%
1-ethyl-4-methylbenzene	2.05%	<i>m</i> -xylene	3.08%
hexylbenzene	5.11%	<i>p</i> -xylene	1.03%
isobutylbenzene	3.08%	<i>o</i> -xylene	3.10%

Neat, 0.1mL in Autosampler Vial

cat. # 30717 (ea.)



Neat, 0.1mL in Vial with Mininert Valve

cat. # 30718 (ea.)

No data pack available.

Quantity discounts not available.

**DHA Naphthenes Mix** (27 components)

ctc-123-TMCCYC6	3.40%	methylcyclohexane	3.39%
cyclohexane	4.41%	methylcyclopentane	5.48%
cyclopentane	8.75%	<i>trans</i> -1-methyl-2-(4MP)cyclopentane	3.31%
<i>cis</i> -1,2-dimethylcyclohexane	7.74%	<i>trans</i> -1-methyl-2-propylcyclohexane	4.43%
<i>trans</i> -1,2-dimethylcyclohexane	3.29%	<i>n</i> -propylcyclopentane	4.06%
<i>trans</i> -1,4-dimethylcyclohexane	4.38%	1,1,2-trimethylcyclohexane	1.69%
<i>trans</i> -1,2-dimethylcyclopentane	3.37%	1,1,4-trimethylcyclohexane	5.83%
<i>cis</i> -1,3-dimethylcyclopentane	3.39%	ctc-1,2,4-trimethylcyclohexane	0.98%
<i>trans</i> -1,3-dimethylcyclopentane	5.36%	ctt-1,2,4-trimethylcyclohexane	1.70%
ethylcyclopentane	7.25%	ccc-1,3,5-trimethylcyclohexane	2.16%
1-ethyl-1-methylcyclopentane	1.35%	ccc-1,2,3-trimethylcyclopentane	0.73%
isobutylcyclohexane	3.28%	ctc-1,2,3-trimethylcyclopentane	3.48%
isobutylcyclopentane	1.23%		
isopropylcyclohexane	4.37%		
isopropylcyclopentane	1.20%		

Neat, 0.1mL in Autosampler Vial

cat. # 30719 (ea.)



Neat, 0.1mL in Vial with Mininert Valve

cat. # 30720 (ea.)

No data pack available.

Quantity discounts not available.

**DHA Olefins Mix** (26 components)

1-decene	2.27%	2-methyl-2-pentene	3.43%
1-heptene	6.81%	4-methyl-1-pentene	3.41%
<i>cis</i> -2-heptene	3.42%	1-nonene	6.94%
<i>trans</i> -2-heptene	0.52%	<i>trans</i> -2-nonene	2.29%
<i>cis</i> -3-heptene	3.41%	<i>cis</i> -3-nonene	3.02%
<i>trans</i> -3-heptene	1.37%	<i>trans</i> -3-nonene	2.29%
1-hexene	11.30%	<i>cis</i> -4-nonene	4.38%
<i>cis</i> -2-hexene	2.30%	1-octene	11.37%
<i>trans</i> -2-hexene	2.26%	<i>cis</i> -2-octene	2.32%
2-methyl-1,3-butadiene	3.69%	<i>trans</i> -2-octene	3.42%
2-methyl-1-butene	2.18%	1-pentene	8.76%
3-methyl-1-butene	1.48%	<i>cis</i> -2-pentene	2.01%
2-methyl-1-nonene	3.42%	<i>trans</i> -2-pentene	1.94%

Neat, 0.1mL in Autosampler Vial

cat. # 30721 (ea.)



Neat, 0.1mL in Vial with Mininert Valve

cat. # 30722 (ea.)

No data pack available.

Quantity discounts not available.

also available

Rtx®-DHA Columns. See page 75.



www.restek.com 517

# Petroleum Standards

## Petroleum Standards

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

### Sulfur Simulated Distillation Standard

#### 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  
 1mL pre-scored amber ampul.

cat. # 33049 (ea.)

Quantity discounts not available.

### Speciated Sulfur System Suitability Checkout Standard

#### 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

1mL pre-scored amber ampul.

cat. # 33050 (ea.)

Quantity discounts not available.

## EPA Ultra Low & Low Sulfur Diesel Standards and Samples in Diesel Fuel to Meet EPA Requirements for Lab Qualification

### EPA Ultra Low Sulfur Diesel Precision Sample # 1

EPA Section 80.580-80.585 Title 40, Chapter 1, Part 80

Homogenous commercially available diesel fuel with sulfur content of 5-15 ppm.  
 1 x 200mL amber bottle.

cat. # 33051 (ea.)

Quantity discounts not available.

### EPA Low Sulfur Diesel Precision Sample # 2

EPA Section 80.580-80.585 Title 40, Chapter 1, Part 80

Homogenous commercially available diesel fuel with sulfur content of 200-500 ppm.  
 1 x 200mL amber bottle.

cat. # 33052 (ea.)

Quantity discounts not available.

### EPA Ultra Low Sulfur Diesel Accuracy Standard # 1

EPA Section 80.520(a)(1) and 80.510(b)

1-10 ppm total sulfur in a diesel fuel matrix for motor vehicle diesel and diesel additives subject to the 15 ppm sulfur standard.  
 1 x 200mL amber bottle.

cat. # 33053 (ea.)

Quantity discounts not available.

### EPA Ultra Low Sulfur Diesel Accuracy Standard # 2

EPA Section 80.520(a)(1) and 80.510(b)

10-20 ppm total sulfur in a diesel fuel matrix for motor vehicle diesel and diesel additives subject to the 15 ppm sulfur standard.  
 1 x 200mL amber bottle.

cat. # 33054 (ea.)

Quantity discounts not available.

### EPA Low Sulfur Diesel Accuracy Standard # 3

EPA Section 80.520(c) and 80.510(c)

100-200 ppm total sulfur in a diesel fuel matrix for motor vehicle diesel and diesel additives subject to the 500 ppm sulfur standard.  
 1 x 200mL amber bottle.

cat. # 33055 (ea.)

Quantity discounts not available.

### EPA Low Sulfur Diesel Accuracy Standard # 4

EPA Section 80.520(c) and 80.510(c)

400-500 ppm total sulfur in a diesel fuel matrix for motor vehicle diesel and diesel additives subject to the 500 ppm sulfur standard.  
 1 x 200mL amber bottle.

cat. # 33056 (ea.)

Quantity discounts not available.

## also available

Custom ULSD and LSD calibration standards are also available in 100mL, 200mL, 500mL, and 1 liter bottles.

Call our Analytical Reference Department at 800-356-1688 or 814-353-1300, or your Restek representative for details.

## Gas Calibration Standards





Regulators available too!

See pages 433-434

See pages 427-432 or visit [www.restek.com/air](http://www.restek.com/air)

## Ultra Low &amp; Low Sulfur in Diesel Fuel Calibration Kits

EPA Section 80.580-80.585 Title 40, Chapter 1, Part 80

**Cal Kit ULSD 1 - 20**

Blank  
 1.0 ppm total sulfur from di-*n*-butylsulfide in diesel fuel  
 2.5 ppm total sulfur from di-*n*-butylsulfide in diesel fuel  
 5.0 ppm total sulfur from di-*n*-butylsulfide in diesel fuel  
 10.0 ppm total sulfur from di-*n*-butylsulfide in diesel fuel  
 15.0 ppm total sulfur from di-*n*-butylsulfide in diesel fuel  
 20.0 ppm total sulfur from di-*n*-butylsulfide in diesel fuel

Set of seven 20mL bottles.

cat. # 33060 (kit)

Quantity discounts not available.

**Cal Kit ULSD 20 - 100**

Blank  
 20.0 ppm total sulfur from di-*n*-butylsulfide in diesel fuel  
 35.0 ppm total sulfur from di-*n*-butylsulfide in diesel fuel  
 50.0 ppm total sulfur from di-*n*-butylsulfide in diesel fuel  
 75.0 ppm total sulfur from di-*n*-butylsulfide in diesel fuel  
 100 ppm total sulfur from di-*n*-butylsulfide in diesel fuel

Set of six 20mL bottles.

cat. # 33061 (kit)

Quantity discounts not available.

**Cal Kit LSD 100 - 500**

Blank  
 100 ppm total sulfur from di-*n*-butylsulfide in diesel fuel  
 200 ppm total sulfur from di-*n*-butylsulfide in diesel fuel  
 300 ppm total sulfur from di-*n*-butylsulfide in diesel fuel  
 400 ppm total sulfur from di-*n*-butylsulfide in diesel fuel  
 500 ppm total sulfur from di-*n*-butylsulfide in diesel fuel

Set of six 20mL bottles.

cat. # 33062 (kit)

Quantity discounts not available.



## Low Sulfur in Gasoline Calibration Standards

EPA Section 80.190-80.415 Title 40, Chapter 1, Part 80

**Cal Kit SG 10 - 50**

Blank  
 10 ppm sulfur from di-*n*-butylsulfide in gasoline by weight  
 20 ppm sulfur from di-*n*-butylsulfide in gasoline by weight  
 30 ppm sulfur from di-*n*-butylsulfide in gasoline by weight  
 40 ppm sulfur from di-*n*-butylsulfide in gasoline by weight  
 50 ppm sulfur from di-*n*-butylsulfide in gasoline by weight

Set of six 5mL amber bottles.

cat. # 33043 (kit)

Quantity discounts not available.

**Check Standard SG 25**

25 ppm sulfur from di-*n*-butylsulfide in gasoline by weight.  
 Set of five 5mL amber bottles.

cat. # 33044 (ea.)

Quantity discounts not available.

Low Sulfur in Gasoline Calibration Standards *cont'd***Cal Kit SG 50 - 125**

Blank  
 50 ppm sulfur from di-*n*-butylsulfide in gasoline by weight  
 65 ppm sulfur from di-*n*-butylsulfide in gasoline by weight  
 80 ppm sulfur from di-*n*-butylsulfide in gasoline by weight  
 95 ppm sulfur from di-*n*-butylsulfide in gasoline by weight  
 110 ppm sulfur from di-*n*-butylsulfide in gasoline by weight  
 125 ppm sulfur from di-*n*-butylsulfide in gasoline by weight

Set of seven 5mL amber bottles.

cat. # 33045 (kit)

Quantity discounts not available.

**Check Standard SG 75**

75 ppm sulfur from di-*n*-butylsulfide in gasoline by weight.  
 Set of five 5mL amber bottles.

cat. # 33046 (ea.)

Quantity discounts not available.

**Cal Kit SG 110 - 500**

Blank  
 110 ppm sulfur from di-*n*-butylsulfide  
 200 ppm sulfur from di-*n*-butylsulfide  
 300 ppm sulfur from di-*n*-butylsulfide  
 400 ppm sulfur from di-*n*-butylsulfide  
 500 ppm sulfur from di-*n*-butylsulfide

Set of six 5mL amber bottles.

cat. # 33047 (kit)

Quantity discounts not available.

**Check Standard SG 175**

175 ppm sulfur from di-*n*-butylsulfide in gasoline by weight.  
 Set of five 5mL amber bottles.

cat. # 33048 (ea.)

Quantity discounts not available.

## Sulfur in Isooctane Calibration Kits and Check Standards

ASTM Methods D3120, D4045, D5453, D6920

**Cal Kit SISO 0.125 - 2.5ppm**

Blank  
 0.125 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane  
 0.25 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane  
 0.50 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane  
 1.00 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane  
 2.50 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane

Calibration kit for total sulfur by weight from di-*n*-butylsulfide in isooctane  
 0.125–2.5ppm range. Set of six 1mL pre-scored ampuls.

cat. # 33035 (kit)

Quantity discounts not available.

**Check Standard SISO 0.75**

0.75ppm total sulfur by weight from di-*n*-butylsulfide in isooctane.  
 Set of five 1mL pre-scored ampuls.

cat. # 33036 (ea.)

Quantity discounts not available.

## Reference Standards Search

Search by compound name, synonym, or CAS #.

Visit us at [www.restek.com/reference](http://www.restek.com/reference)please **note**

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

# Petroleum Standards

## Sulfur in Isooctane Calibration Kits and Check Standards *cont'd*

### Cal Kit SISO 2.5 - 50 ppm

Blank  
 2.50 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane  
 5.00 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane  
 10.00 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane  
 15.00 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane  
 20.00 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane  
 25.00 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane  
 50.00 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane  
 Calibration kit for total sulfur by weight from di-*n*-butylsulfide in isooctane  
 2.5–50 ppm range. Set of eight 1mL pre-scored ampuls.  
 cat. # 33037 (kit)

Quantity discounts not available.

### Check Standard SISO 30

30 ppm total sulfur by weight from di-*n*-butylsulfide in isooctane.  
 Set of five 1mL pre-scored ampuls.  
 cat. # 33038 (ea.)

Quantity discounts not available.

### Cal Kit SISO 50 - 1000 ppm

Blank  
 50 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane  
 75 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane  
 100 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane  
 250 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane  
 500 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane  
 1000 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane  
 Calibration kit for total sulfur by weight from di-*n*-butylsulfide in isooctane  
 50–1000 ppm range. Set of seven 1mL pre-scored ampuls.  
 cat. # 33039 (kit)

Quantity discounts not available.

### Check Standard SISO 300

300 ppm total sulfur by weight from di-*n*-butylsulfide in isooctane.  
 Set of five 1mL pre-scored ampuls.  
 cat. # 33040 (ea.)

Quantity discounts not available.

### Cal Kit SISO 1000 - 6000

Blank  
 1000 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane  
 1500 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane  
 2000 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane  
 4000 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane  
 6000 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane  
 Calibration kit for total sulfur by weight from di-*n*-butylsulfide in isooctane  
 1000–6000 ppm range. Set of six 1mL pre-scored ampuls.  
 cat. # 33041 (kit)

Quantity discounts not available.

### Check Standard SISO 3000

3000 ppm total sulfur by weight from di-*n*-butylsulfide in isooctane.  
 Set of five 1mL pre-scored ampuls.  
 cat. # 33042 (ea.)

Quantity discounts not available.

## also available

Custom total sulfur & total nitrogen in isooctane check standards also available.

Call our Analytical Reference Department at 800-356-1688 or 814-353-1300, or your Restek representative for details.

## Total Sulfur & Total Nitrogen in Isooctane Calibration Kits

ASTM Methods D3120, D4045, D4629, D5453, D5762, D6069, D6920

### Cal Kit SNISO 0.125 - 5.0

Blank  
 0.125 w/w ppm total sulfur from thiophene & total nitrogen from pyridine in isooctane  
 0.25 w/w ppm total sulfur from thiophene & total nitrogen from pyridine in isooctane  
 0.50 w/w ppm total sulfur from thiophene & total nitrogen from pyridine in isooctane  
 1.00 w/w ppm total sulfur from thiophene & total nitrogen from pyridine in isooctane  
 2.50 w/w ppm total sulfur from thiophene & total nitrogen from pyridine in isooctane  
 5.00 w/w ppm total sulfur from thiophene & total nitrogen from pyridine in isooctane

Set of seven 1mL pre-scored amber ampuls.

Quantity discounts not available.

### Cal Kit SNISO 5.0 - 50.0

Blank  
 5.00 w/w ppm total sulfur from thiophene & total nitrogen from pyridine in isooctane  
 10.0 w/w ppm total sulfur from thiophene & total nitrogen from pyridine in isooctane  
 25.0 w/w ppm total sulfur from thiophene & total nitrogen from pyridine in isooctane  
 50.0 w/w ppm total sulfur from thiophene & total nitrogen from pyridine in isooctane

Set of five 1mL pre-scored amber ampuls.

cat. # 33058 (kit)

Quantity discounts not available.

### Cal Kit SNISO 50.0 - 1000

Blank  
 50.0 w/w ppm total sulfur from thiophene & total nitrogen from pyridine in isooctane  
 75.0 w/w ppm total sulfur from thiophene & total nitrogen from pyridine in isooctane  
 100 w/w ppm total sulfur from thiophene & total nitrogen from pyridine in isooctane  
 250 w/w ppm total sulfur from thiophene & total nitrogen from pyridine in isooctane  
 500 w/w ppm total sulfur from thiophene & total nitrogen from pyridine in isooctane  
 1000 w/w ppm total sulfur from thiophene & total nitrogen from pyridine in isooctane

Set of seven 1mL pre-scored amber ampuls.

cat. # 33059 (kit)

Quantity discounts not available.



## Documentation Search

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- Certificates of analysis
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## Sulfur in Mineral Oil Calibration Kits and Check Standards

ASTM Methods D2622, D3120, D4045, D4294, D5453, D6212, D6313, D6428, D6445, D7039

**Cal Kit SMO 2 - 20**

Blank  
 2.00 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil  
 5.00 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil  
 7.00 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil  
 10.00 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil  
 15.00 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil  
 20.00 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil

Set of seven 100mL bottles.

cat. # 33063 (kit)

Quantity discounts not available.

**Check Standard SMO 11**

11.0 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil.  
 1 liter bottle.

cat. # 33064 (ea.)

Quantity discounts not available.

**Cal Kit SMO 10 - 100**

Blank  
 10.0 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil  
 25.0 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil  
 50.0 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil  
 100 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil

Set of five 100mL bottles.

cat. # 33065 (kit)

Quantity discounts not available.

**Check Standard SMO 30**

30.0 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil.  
 1 liter bottle.

cat. # 33066 (ea.)

Quantity discounts not available.

**Cal Kit SMO 100 - 1000**

Blank  
 100 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil  
 200 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil  
 300 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil  
 400 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil  
 500 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil  
 600 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil  
 750 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil  
 1000 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil

Set of nine 100mL bottles.

cat. # 33067 (kit)

Quantity discounts not available.

**Check Standard SMO 350**

350 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil.  
 1 liter bottle.

cat. # 33068 (ea.)

Quantity discounts not available.

**Cal Kit SMO 1000 - 25000**

Blank  
 1000 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil  
 2500 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil  
 5000 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil  
 1.00% total sulfur by weight from di-*n*-butylsulfide in mineral oil  
 1.50% total sulfur by weight from di-*n*-butylsulfide in mineral oil  
 2.00% total sulfur by weight from di-*n*-butylsulfide in mineral oil  
 2.50% total sulfur by weight from di-*n*-butylsulfide in mineral oil

Set of eight 100mL bottles.

cat. # 33069 (kit)

Quantity discounts not available.

**Check Standard SMO 3000**

3000 w/w ppm total sulfur from di-*n*-butylsulfide.  
 1 liter bottle.

cat. # 33070 (ea.)

Quantity discounts not available.

**Cal Kit SMO 25000 - 50000**

Blank  
 2.50% total sulfur by weight from di-*n*-butylsulfide in mineral oil  
 3.00% total sulfur by weight from di-*n*-butylsulfide in mineral oil  
 3.50% total sulfur by weight from di-*n*-butylsulfide in mineral oil  
 4.00% total sulfur by weight from di-*n*-butylsulfide in mineral oil  
 4.50% total sulfur by weight from di-*n*-butylsulfide in mineral oil  
 5.00% total sulfur by weight from di-*n*-butylsulfide in mineral oil

Set of seven 100mL bottles.

cat. # 33071 (kit)

Quantity discounts not available.

**Check Standard SMO 37000**

3.70% total sulfur by weight from di-*n*-butylsulfide in mineral oil.  
 1 liter bottle.

cat. # 33072 (ea.)

Quantity discounts not available.

please **note**

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

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