

# Fuel & Hydrocarbon Standards

Fuels &amp; Hydrocarbon Standards (in 1 mL of solvent, unless otherwise noted)

Individual Fuel &amp; Hydrocarbons

FUEL & HYDROCARBON STANDARDS	CAS NO.	QTY./CONC.	MATRIX	CAT. NO.
5-alpha Androstane	438-22-2	1 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	GRH-IS
		10 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	GRH-IS-10X
Arctic Diesel Fuel	68334-30-5-AR	0.5 mg/mL	MeOH	FU-023
		20 mg/mL	MeOH	FU-023-40X
		20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FU-023-D-40X
Aviation (gas) grade 100-LL		0.5 mg/mL	MeOH	GA-004
		20 mg/mL	MeOH	GA-004-40X
		20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	GA-004-D-40X
p-Bromofluorobenzene	460-00-4	2.5 mg/mL	Acetone	GARH-SS
1-Chloro-4-fluorobenzene	352-33-0	2 mg/mL	MeOH	AK-101.0-IS-10X
1-Chlorooctadecane	3386-33-2	1 mg/mL	Hexane	DRH-007-SS
1-Chloro-4-fluorobenzene	352-33-0	1 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	GARH-IS
2,5-Dibromotoluene	615-59-8	50 µg/mL	MeOH	GRH-004-SS
		500 µg/mL	MeOH	GRH-004-SS-10X
		5 mg/mL	MeOH	GRH-004-SS-100X
Diesel Fuel		0.5 mg/mL	MeOH	FU-009
		5 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FU-009-D-10X
		20 mg/mL	MeOH	FU-009-40X
		20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FU-009-D-40X
#1 Diesel - Low Sulfur		0.5 mg/mL	MeOH	FU-013
		20 mg/mL	MeOH	FU-013-40X
		20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FU-013-D-40X
#2 Diesel Fuel	68334-30-5	50 mg/mL	Acetone	AK-102-LCS-R1-10X
#2 Diesel Fuel (Extra Low Sulfur)	68476-43-6	0.5 mg/mL	MeOH	FU-017
		5 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FU-017-D-10X
		5 mg/mL	Acetone	AK-102.0-LCS
		50 mg/mL	Acetone	AK-102.0-LCS-10X
		20 mg/mL	MeOH	FU-017-40X
		20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FU-017-D-40X
#2 Diesel Fuel (Low Sulfur) - 25% Weathered		5 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FD2-W25-10X
#2 Diesel Fuel (Low Sulfur) - 50% Weathered		5 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FD2-W50-10X
#2 Diesel Fuel (Low Sulfur) - 75% Weathered		5 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FD2-W75-10X
#2 Diesel Fuel - 25% Weathered		5 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FD2-W25-R1-10X
#2 Diesel Fuel - 50% Weathered		5 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FD2-W50-R1-10X
#2 Diesel Fuel - 75% Weathered		5 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FD2-W75-R1-10X
Docosane	629-97-0	50 % w/w	Toluene	D-5186-91-PM
n-Dodecane	112-40-3	5 mg/mL	MeOH	AS-E0238
		1.5 % w/w	Isooctane	M-GRA-SCS-AS
#1 Fuel oil	70892-10-3	0.5 mg/mL	MeOH	FU-001
		20 mg/mL	MeOH	FU-001-40X
		20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FU-001-D-40X
#2 Fuel oil	68476-30-2	0.5 mg/mL	MeOH	FU-002
		20 mg/mL	MeOH	FU-002-40X
		20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FU-002-D-40X
#3 Fuel oil		0.5 mg/mL	Hexane	FU-003
		20 mg/mL	Hexane	FU-003-40X
		20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FU-003-D-40X
#4 Fuel oil	68476-31-3	0.5 mg/mL	Hexane	FU-004
		20 mg/mL	Hexane	FU-004-40X
		20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FU-004-D-40X
#5 Fuel Oil		0.5 mg/mL	Hexane	FU-007
		20 mg/mL	Hexane	FU-007-40X
		20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FU-007-D-40X
#6 Fuel Oil	68553-00-4	0.5 mg/mL	Hexane	FU-008
		20 mg/mL	Hexane	FU-008-40X
		20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FU-008-D-40X
Gasoline - Regular, unleaded		0.5 mg/mL	MeOH	GA-001
		5 mg/mL	MeOH	GA-001-10X
		20 mg/mL	MeOH	GA-001-40X
		20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	GA-001-D-40X
Gasoline - Premium		0.5 mg/mL	MeOH	GA-003
		20 mg/mL	MeOH	GA-003-40X
		20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	GA-003-D-40X
Hydraulic Fluid	64742-54-7	20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FU-020-D-40X
Jet Reference Fuel - Type I		0.5 mg/mL	MeOH	FU-011
		20 mg/mL	MeOH	FU-011-40X
		20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FU-011-D-40X
JP-4 (Jet Fuel)		0.5 mg/mL	MeOH	FU-010
		20 mg/mL	MeOH	FU-010-40X
		20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FU-010-D-40X
JP-5 Fuel		0.5 mg/mL	MeOH	FU-012
		20 mg/mL	MeOH	FU-012-40X
		20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FU-012-D-40X
JP-7 Fuel		0.5 mg/mL	MeOH	FU-014
		20 mg/mL	MeOH	FU-014-40X
		20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FU-014-D-40X
JP-8 Fuel		0.5 mg/mL	MeOH	FU-015
		20 mg/mL	MeOH	FU-015-40X
		20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FU-015-D-40X
JP-TS Aviation Fuel	64742-47-8	0.5 mg/mL	MeOH	FU-016
		20 mg/mL	MeOH	FU-016-40X
		20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FU-016-D-40X

# Fuel & Hydrocarbon Standards

Fuels &amp; Hydrocarbon Standards (in 1 mL of solvent, unless otherwise noted)

FUEL & HYDROCARBON STANDARDS	CAS NO.	QTY./CONC.	MATRIX	CAT. NO.
JP-10 Aviation Fuel	2825-82-3	0.5 mg/mL	MeOH	FU-022
		20 mg/mL	MeOH	FU-022-40X
		20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FU-022-D-40X
Kerosene - 25% Weathered		5 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FK-W25-10X
Kerosene - 50% Weathered		5 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FK-W50-10X
Kerosene - 75% Weathered		5 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FK-W75-10X
Kerosene	8008-20-6	0.5 mg/mL	MeOH	FU-005
		20 mg/mL	MeOH	FU-005-40X
		5 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FU-005-D-10X
		20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FU-005-D-40X
Lacquer Thinner		1 gram	Neat	HS-001N
		0.5 mg/mL	MeOH	HS-001S
		20 mg/mL	MeOH	HS-001S-40X
		20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	HS-001S-D-40X
Mineral Spirits	8030-30-6	1 gram	Neat	HS-002N
		0.5 mg/mL	MeOH	HS-002S
		20 mg/mL	MeOH	HS-002S-40X
		20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	HS-002S-D-40X
Naphtha	64742-89-8	1 gram	Neat	HS-003N
		0.5 mg/mL	MeOH	HS-003S
		20 mg/mL	MeOH	HS-003S-40X
		20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	HS-003S-D-40X
Nonatriacontane	7194-86-7	750 µg/mL	Chloroform	DRH-FL-SS-R1
		1 mg/mL	CS <sub>2</sub>	DRH-FL-SS
		3 mg/mL	CS <sub>2</sub>	DRH-FL-SS-3X
n-Pentadecane	629-62-9	5 mg/mL	MeOH	AS-E0241
RFA Gasoline (oxygenate-free)		0.5 mg/mL	MeOH	GA-005
		20 mg/mL	MeOH	GA-005-40X
		20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	GA-005-D-40X
RFA Gasoline		10 mL	Neat	M-GRO-BLNK-10ML
SAE 5W30 Motor Oil		0.5 mg/mL	Hexane	FU-025-H
		20 mg/mL	Hexane	FU-025-H-40X
		20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FU-025-D-40X
SAE 10W30 Motor Oil		0.5 mg/mL	Hexane	FU-026-H
		20 mg/mL	Hexane	FU-026-H-40X
		20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FU-026-D-40X
SAE 10W40 Motor Oil		0.5 mg/mL	Hexane	FU-027-H
		20 mg/mL	Hexane	FU-027-H-40X
		20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FU-027-D-40X
SAE 20W50 Motor Oil		0.5 mg/mL	Hexane	FU-028-H
		20 mg/mL	Hexane	FU-028-H-40X
		20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FU-028-D-40X
SAE 30W Motor Oil		0.5 mg/mL	Hexane	FU-018-H
		20 mg/mL	Hexane	FU-018-H-40X
		20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FU-018-D-40X
SAE 40W Motor Oil		0.5 mg/mL	Hexane	FU-019-H
		5 mg/mL	Acetone	AK-103.0-LCS
		20 mg/mL	Hexane	FU-019-H-40X
		20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FU-019-D-40X
SAE 50W Motor Oil		25 mg/mL	Acetone:CH <sub>2</sub> Cl <sub>2</sub>	AK-103.0-LCS-5X
		20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FU-021-D-40X
Stoddard solvent	8052-41-3	1 gram	Neat	HS-005N
		0.5 mg/mL	MeOH	HS-005S
		5 mg/mL	MeOH	HS-005S-10X
		20 mg/mL	MeOH	HS-005S-40X
		20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	HS-005S-D-40X
o-Terphenyl	84-15-1	200 µg/mL	Acetone	AK-102.0-SS
		1 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	DRH-006-SS
		2 mg/mL	Acetone	AK-102.0-SS-10X
		2 mg/mL	Acetone	GRH-SS
n-Tetradecane	629-59-4	5 mg/mL	MeOH	AS-E0240
Tetracosane	646-31-1	500 µg/mL	CS <sub>2</sub>	D-5480-C40-5ML
		500 µg/mL	Chloroform	D-5480-C40-R1-5ML
n-Tridecane	629-50-5	5 mg/mL	MeOH	AS-E0239
1,2,3-Trimethylbenzene	526-73-8	1 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	V-028S-D-10X
n-Triacontane-d <sub>32</sub>	93952-07-9	500 µg/mL	Acetone	AK-103.0-SS
		5 mg/mL	Acetone:THF (3:1)	AK-103.0-SS-10X
		5 mg/mL	THF	DRH-SS
Turbine (Jet) fuel		0.5 mg/mL	MeOH	FU-006
		20 mg/mL	MeOH	FU-006-40X
		20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	FU-006-D-40X
Turpentine	8006-64-2	1 gram	Neat	HS-004N
		0.5 mg/mL	MeOH	HS-004S
		20 mg/mL	MeOH	HS-004S-40X
		20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	HS-004S-D-40X
Unleaded Gasoline - 25% Weathered		5 mg/mL	MeOH	GA-W25-10X
Unleaded Gasoline - 50% Weathered		5 mg/mL	MeOH	GA-W50-10X
Unleaded Gasoline - 75% Weathered		5 mg/mL	MeOH	GA-W75-10X

# Fuel & Hydrocarbon Standards

## Complete Set of Total Petroleum Hydrocarbon (TPH) Pattern Recognition Standards

AccuStandard has assembled the following sets to identify specific petroleum product types found during LUFT/LUST investigations. The sets can be purchased using one convenient Cat. No. or as individuals. **Other concentrations are listed in the Individual Section on the previous pages.**

### TPH-SET

33 x 1 mL (includes TPH-001-SET, TPH-002-SET, TPH-003-SET, TPH-004-SET)

#### Motor Fuels & Lubricating Oils Set

TPH-001-SET	mg/mL	Solv.	Cat. No.
Regular unleaded	20	MeOH	GA-001-40X
Regular leaded	20	MeOH	GA-002-40X
Premium	20	MeOH	GA-003-40X
RFA Gasoline (oxygenate free)	20	MeOH	GA-005-40X
#2 Diesel (conventional)	20	CH <sub>2</sub> Cl <sub>2</sub>	FU-009-D-40X
#1 Diesel (low sulfur)	20	CH <sub>2</sub> Cl <sub>2</sub>	FU-013-D-40X
#2 Diesel (extra low sulfur)	20	CH <sub>2</sub> Cl <sub>2</sub>	FU-017-D-40X
Arctic Diesel	20	CH <sub>2</sub> Cl <sub>2</sub>	FU-023-D-40X
SAE 30 W motor oil	20	CH <sub>2</sub> Cl <sub>2</sub>	FU-018-D-40X
SAE 40 W motor oil	20	CH <sub>2</sub> Cl <sub>2</sub>	FU-019-D-40X
SAE 50 W motor oil	20	CH <sub>2</sub> Cl <sub>2</sub>	FU-021-D-40X

#### Aviation Fuels & Oils Set

TPH-003-SET	mg/mL	Solv.	Cat. No.
Aviation (gas) Grade 100 LL	20	CH <sub>2</sub> Cl <sub>2</sub>	GA-004-D-40X
JP-4 Fuel	20	CH <sub>2</sub> Cl <sub>2</sub>	FU-010-D-40X
JP-5 Fuel	20	CH <sub>2</sub> Cl <sub>2</sub>	FU-012-D-40X
JP-7 Fuel	20	CH <sub>2</sub> Cl <sub>2</sub>	FU-014-D-40X
JP-8 Fuel	20	CH <sub>2</sub> Cl <sub>2</sub>	FU-015-D-40X
JP-10 Fuel (Cruise Missile)	20	CH <sub>2</sub> Cl <sub>2</sub>	FU-022-D-40X
JP-TS	20	CH <sub>2</sub> Cl <sub>2</sub>	FU-016-D-40X
Jet Fuel (type 1)	20	CH <sub>2</sub> Cl <sub>2</sub>	FU-011-D-40X
Turbine (Jet A) Fuel	20	CH <sub>2</sub> Cl <sub>2</sub>	FU-006-D-40X
Hydraulic oil	20	CH <sub>2</sub> Cl <sub>2</sub>	FU-020-D-40X

#### Heating Fuel Oils Set

TPH-002-SET	mg/mL	Solv.	Cat. No.
#1 Fuel Oil	20	CH <sub>2</sub> Cl <sub>2</sub>	FU-001-D-40X
#2 Fuel Oil	20	CH <sub>2</sub> Cl <sub>2</sub>	FU-002-D-40X
#3 Fuel Oil	20	CH <sub>2</sub> Cl <sub>2</sub>	FU-003-D-40X
#4 Fuel Oil	20	CH <sub>2</sub> Cl <sub>2</sub>	FU-004-D-40X
#5 Fuel Oil	20	CH <sub>2</sub> Cl <sub>2</sub>	FU-007-D-40X
#6 Fuel Oil	20	CH <sub>2</sub> Cl <sub>2</sub>	FU-008-D-40X
Kerosene	20	CH <sub>2</sub> Cl <sub>2</sub>	FU-005-D-40X

#### Household & Industrial Solvent Set

TPH-004-SET	mg/mL	Solv.	Cat. No.
Lacquer thinner	20	CH <sub>2</sub> Cl <sub>2</sub>	HS-001S-D-40X
Mineral spirits	20	CH <sub>2</sub> Cl <sub>2</sub>	HS-002S-D-40X
Naphtha	20	CH <sub>2</sub> Cl <sub>2</sub>	HS-003S-D-40X
Turpentine	20	CH <sub>2</sub> Cl <sub>2</sub>	HS-004S-D-40X
Stoddard	20	CH <sub>2</sub> Cl <sub>2</sub>	HS-005S-D-40X

## Motor Oil Standards

mg/mL	Solv.	Cat. No.	mg/mL	Solv.	Cat. No.		
SAE 5W 30 Motor Oil	0.5	Hexane	FU-025-H	SAE 10W 40 Motor Oil	0.5	Hexane	FU-027-H
	20.0	Hexane	FU-025-H-40X		20.0	Hexane	FU-027-H-40X
	20.0	CH <sub>2</sub> Cl <sub>2</sub>	FU-025-D-40X		20.0	CH <sub>2</sub> Cl <sub>2</sub>	FU-027-D-40X
SAE 10W 30 Motor Oil	0.5	Hexane	FU-026-H	SAE 20W 50 Motor Oil	0.5	Hexane	FU-028-H
	20.0	Hexane	FU-026-H-40X		20.0	Hexane	FU-028-H-40X
	20.0	CH <sub>2</sub> Cl <sub>2</sub>	FU-026-D-40X		20.0	CH <sub>2</sub> Cl <sub>2</sub>	FU-028-D-40X

## Weathered LUFT/LUST Fuel Sets

Petroleum Products contain many different chemicals, plus synthetic product additives. Typically, these petroleum products are subdivided into two groups based on their volatility: [a] gasoline related products (more volatile) and [b] fuel related products (less volatile such as kerosene, aviation fuels, diesel fuels and heating oils).

### Weathered Gasoline Set

WGA-SET	mg/mL	Solv.	Cat. No.	4 x 1 mL
Gasoline - Regular, unleaded	5.0	MeOH	GA-001-10X	1 x 1 mL
Gasoline - Regular, unleaded (25% Weathered)	5.0	MeOH	GA-W25-10X	1 x 1 mL
Gasoline - Regular, unleaded (50% Weathered)	5.0	MeOH	GA-W50-10X	1 x 1 mL
Gasoline - Regular, unleaded (75% Weathered)	5.0	MeOH	GA-W75-10X	1 x 1 mL

### Weathered Kerosene Set

WFK-SET	mg/mL	Solv.	Cat. No.	4 x 1 mL
Kerosene	5.0	CH <sub>2</sub> Cl <sub>2</sub>	FU-005-D-10X	1 x 1 mL
Kerosene (25% Weathered)	5.0	CH <sub>2</sub> Cl <sub>2</sub>	FK-W25-10X	1 x 1 mL
Kerosene (50% Weathered)	5.0	CH <sub>2</sub> Cl <sub>2</sub>	FK-W50-10X	1 x 1 mL
Kerosene (75% Weathered)	5.0	CH <sub>2</sub> Cl <sub>2</sub>	FK-W75-10X	1 x 1 mL

### Weathered #2 Diesel (extra Low Sulfur Content) Set

WFD2-SET	mg/mL	Solv.	Cat. No.	4 x 1 mL
#2 Diesel fuel (extra Low Sulfur)	5.0	CH <sub>2</sub> Cl <sub>2</sub>	FU-017-D-10X	1 x 1 mL
#2 Diesel fuel (extra Low Sulfur) (25% Weathered)	5.0	CH <sub>2</sub> Cl <sub>2</sub>	FD2-W25-10X	1 x 1 mL
#2 Diesel fuel (extra Low Sulfur) (50% Weathered)	5.0	CH <sub>2</sub> Cl <sub>2</sub>	FD2-W50-10X	1 x 1 mL
#2 Diesel fuel (extra Low Sulfur) (75% Weathered)	5.0	CH <sub>2</sub> Cl <sub>2</sub>	FD2-W75-10X	1 x 1 mL

### Weathered #2 Diesel (Conventional) Set

WFD2-R1-SET	mg/mL	Solv.	Cat. No.	4 x 1 mL
#2 Diesel fuel (Conventional)	5.0	CH <sub>2</sub> Cl <sub>2</sub>	FU-009-D-10X	1 x 1 mL
#2 Diesel fuel (Conventional) (25% Weathered)	5.0	CH <sub>2</sub> Cl <sub>2</sub>	FD2-W25-R1-10X	1 x 1 mL
#2 Diesel fuel (Conventional) (50% Weathered)	5.0	CH <sub>2</sub> Cl <sub>2</sub>	FD2-W50-R1-10X	1 x 1 mL
#2 Diesel fuel (Conventional) (75% Weathered)	5.0	CH <sub>2</sub> Cl <sub>2</sub>	FD2-W75-R1-10X	1 x 1 mL

Most analytical methods for petroleum products focus on several items: the level of BTEX, the total petroleum hydrocarbon number (TPH), and the fingerprint of the petroleum product. Depending on the volatility of the petroleum product spilled, the nature of the contaminated soil, and the age of the spill, analysis becomes even more difficult. Weathering, evaporation, and the migration of the lighter volatiles at the contamination site can affect the fingerprint identification portion of the fuel products analysis.

AccuStandard designed the weathered fuel line to artificially mimic the weathering, evaporation, and migration process. Use of these standards can help in the identification of the fuel type if it has been present in the ground for some time, in a sandy type soil with possible evaporation loss, or has migrated from the plume point of origin.

# Fuel & Hydrocarbon Standards

## Gasoline Range Hydrocarbon Analysis

### Gasoline Additives

GAD-001		1 x 1 mL
GAD-001-PAK	<b>SAVE</b>	5 x 1 mL
0.2 mg/mL each in MeOH		4 comps.

Dibromomethane  
1,2-Dibromoethane  
1,2-Dichloroethane  
Methyl t-butyl ether

### Technical Note

#### Simultaneous BTEX/Gasoline QA/QC

AccuStandard's QA/QC department has certified the benzene, toluene, ethyl benzene and xylene concentrations in our unleaded gasoline standard. Use of **GA-001-20X-BTEX** allows the analytical chemist in a single injection to verify that QA/QC requirements are being met for the BTEX analytes as well as the gasoline.

### Certified BTEX in Unleaded Gasoline

GA-001-20X-BTEX		1 x 1 mL
10.0 mg/mL in MeOH		

Regular unleaded gasoline

### Hexadecane Extraction Volatiles

CLP-BTEX		1 x 1 mL
CLP-BTEX-PAK	<b>SAVE</b>	5 x 1 mL
0.2 mg/mL each in MeOH		6 comps.
CLP-BTEX-10X		1 x 1 mL
CLP-BTEX-10X-PAK	<b>SAVE</b>	5 x 1 mL
2.0 mg/mL each in MeOH		6 comps.

Benzene  
Ethyl benzene  
Toluene  
o-Xylene  
m-Xylene  
p-Xylene

## Total Recoverable Petroleum Hydrocarbon (FTRPH) Standard & Surrogates

### Calibration/Window Defining Hydrocarbon Standard

DRH-004S-R1-5X		1 x 1 mL
DRH-004S-R1-5X-PAK	<b>SAVE</b>	5 x 1 mL
1.0 mg/mL each in Chloroform		17 comps.

Octane	C <sub>8</sub>	Hexacosane	C <sub>26</sub>
Decane	C <sub>10</sub>	Octacosane	C <sub>28</sub>
Dodecane	C <sub>12</sub>	Triacosane	C <sub>30</sub>
Tetradecane	C <sub>14</sub>	Dotriacontane	C <sub>32</sub>
Hexadecane	C <sub>16</sub>	Tetraatriacontane	C <sub>34</sub>
Octadecane	C <sub>18</sub>	Hexatriacontane	C <sub>36</sub>
Eicosane	C <sub>20</sub>	Octatriacontane	C <sub>38</sub>
Docosane	C <sub>22</sub>	Tetracontane	C <sub>40</sub>
Tetracosane	C <sub>24</sub>		

### FTRPH Calibration / Window Defining Standard

DRH-FTRPH		1 x 1 mL
DRH-FTRPH-PAK	<b>SAVE</b>	5 x 1 mL
500 µg/mL each in Hexane		17 comps.

n-Octane	n-Hexacosane
n-Decane	n-Octacosane
n-Dodecane	n-Triacontane
n-Tetradecane	n-Dotriacontane
n-Hexadecane	n-Tetraatriacontane
n-Octadecane	n-Hexatriacontane
n-Eicosane	n-Octatriacontane
n-Docosane	n-Tetracontane
n-Tetracosane	

The above FTRPH Calibration/Window Defining Standard was formulated at a lower concentration to insure solubility of the analytes & eliminate the odor caused by the introduction of Carbon disulfide as a cosolvent.

### Internal Standard

GRH-IS		1 x 1 mL
GRH-IS-PAK	<b>SAVE</b>	5 x 1 mL
1.0 mg/mL in CH <sub>2</sub> Cl <sub>2</sub>		

5-alpha Androstane

### Surrogate Standards

DRH-SS		1 x 1 mL
DRH-SS-PAK	<b>SAVE</b>	5 x 1 mL
5.0 mg/mL in THF		

n-Triacontane-d<sub>32</sub>

GRH-SS		1 x 1 mL
GRH-SS-PAK	<b>SAVE</b>	5 x 1 mL
2.0 mg/mL in Acetone		

o-Terphenyl (OTP)

### DRO Defining Mix

AK-102.0-NAS-10X		1 x 1 mL
AK-102.0-NAS-10X-PAK	<b>SAVE</b>	5 x 1 mL
2.0 mg/mL each in CH <sub>2</sub> Cl <sub>2</sub>		16 comps.

n-Decane	n-Octadecane
n-Undecane	n-Nonadecane
n-Dodecane	n-Eicosane
n-Tridecane	n-Heneicosane
n-Tetradecane	n-Docosane
n-Pentadecane	n-Tricosane
n-Hexadecane	n-Tetracosane
n-Heptadecane	n-Pentacosane

### Multi-State Method Hydrocarbon Window Defining

DRH-008S-R2		1 x 1 mL
DRH-008S-R2-PAK	<b>SAVE</b>	5 x 1 mL
500 µg/mL each in Chloroform		35 comps.

Octane	Tetracosane
Nonane	Pentacosane
Decane	Hexacosane
Undecane	Heptacosane
Dodecane	Octacosane
Tridecane	Nonacosane
Tetradecane	Triacosane
Pentadecane	n-Hentriacontane
Hexadecane	Dotriacontane
Heptadecane	Triatriacontane
Pristane	Tetraatriacontane
Octadecane	Pentatriacontane
Phytane	Hexatriacontane
Nonadecane	Heptatriacontane
Eicosane	Octatriacontane
Heneicosane	Nonatriacontane
Docosane	Tetracontane
Tricosane	

### Technical Note

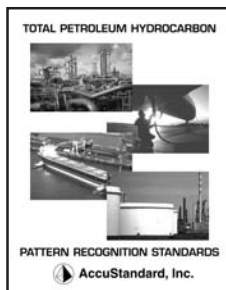
AccuStandard offers a hydrocarbon window defining standard with the C<sub>9</sub> to C<sub>30</sub> odd and even alkanes. Use of this one standard should meet the numerous state-to-state variations for hydrocarbon validation and reporting. As an added benefit, AccuStandard has included Pristane and Phytane in the formulation. Again, use of this one standard can meet numerous LUFT/LUST programs requiring that the C<sub>17</sub> (Pristane) and C<sub>18</sub> (Phytane) ratio be used to estimate subsurface degradation of fuel oil spills.

### Total Petroleum Hydrocarbon Pattern Recognition Standards

This book contains chromatography for the various petroleum products typically found during LUFT/LUST site investigations. The chromatography shows each fuel pattern in a 25 minute analytical run for early eluting petroleum products like gasoline to late eluting products like motor oil. In addition, an n-alkane standard (DRH-008S) analyzed under identical conditions has been overlaid on each petroleum product chromatogram. Use of the book will assist the chemist's identification of the fuel for pattern recognition.

The n-alkane standard (DRH-008S) overlay provides n-alkane reference points between the standard and the unknown sample. These beginning and ending n-alkane reference points can be used to establish gross hydrocarbon concentrations. By comparing the specific n-alkane range of the closest identified petroleum standard to that of the unknown sample, a reproducible gross hydrocarbon number can be achieved.

To Order, **BOOK-TPH**



# Fuel & Hydrocarbon Standards

## Kits for Qualitative Analysis & Identification

### Alkanes nC<sub>6</sub>-nC<sub>10</sub>

**PS-211C** 15 units  
2 mL each at the stated concentrations by weight % in Ethylbenzene solvent.

(01) n-Hexane	Neat
(02) n-Heptane	Neat
(03) n-Octane	Neat
(04) n-Nonane	Neat
(05) n-Decane	Neat
(06) n-Undecane	Neat
(07) n-Dodecane	Neat
(08) n-Tridecane	Neat
(09) n-Tetradecane	Neat
(10) n-Pentadecane	Neat
(11) n-Hexadecane	10%
(12) n-Heptadecane	10%
(13) n-Octadecane	10%
(14) n-Nonadecane	10%
(15) Normal Hydrocarbons Mixture PS-21C	Neat at the stated weight
n-Dodecane	24.6%
n-Tridecane	24.9%
n-Tetradecane	25.1%
n-Hexadecane	25.4%

### Calibration Mixture

**PS-21C** 1 x 2 mL  
Neat at the stated weight % listed above.

### Alkanes nC<sub>6</sub>-nC<sub>10</sub> NEAT

**PS-211CX**  
Ampules 1 through 5 2 mL each  
Vials 6 through 10, & 15 2 mL each  
Vials 11 through 14 0.5 g each

### Alkenes C<sub>6</sub>-C<sub>10</sub>

**PS-231C** 15 units  
Neat at the stated quantities.

(01) Hexene-1	2 mL
(02) Hexene-2 (cis, trans)	0.5 mL
(03) 2-Methylpentene-1	2 mL
(04) 4-Methylpentene-1	2 mL
(05) 4-Methylpentene-2 (cis, trans)	0.5 mL
(06) 2-Ethylbutene-1	0.5 mL
(07) Heptene-1	2 mL
(08) Heptene-2 (cis, trans)	0.5 mL
(09) Heptene-3 (cis, trans)	0.5 mL
(10) Octene-1	2 mL
(11) Octene-2	2 mL
(12) 2-Ethylhexene-1	0.5 mL
(13) Nonene-1	2 mL
(14) Decene-1	2 mL
(15) 1-Olefins C <sub>7</sub> -C <sub>9</sub> Mixture PS-23C	2 mL
Neat at the stated weight %.	
1-Pentene	14.65%
1-Hexene	11.93%
1-Heptene	37.53%
1-Octene	15.38%
1-Nonene	20.51%

### Calibration Mixture

**PS-23C** 1 x 2 mL  
Neat at the stated weight % listed above.

### Branched Alkanes C<sub>6</sub>-C<sub>9</sub>

**PS-221D** 15 units  
Neat at stated quantities.

(01) 2-Methylpentane	2 mL
(02) 3-Methylpentane	2 mL
(03) 2,2-Dimethylbutane	2 mL
(04) 2,3-Dimethylbutane	2 mL
(05) 3-Methylhexane	2 mL
(06) 2,3-Dimethylpentane	2 mL
(07) 2,4-Dimethylpentane	1 mL
(08) 3-Methylheptane	2 mL
(09) 2,5-Dimethylhexane	1 mL
(10) 2,2,4-Trimethylpentane	2 mL
(11) 2,3,4-Trimethylpentane	2 mL
(12) 2,2,5-Trimethylhexane	1 mL
(13) Cyclohexane	2 mL
(14) Methylcyclohexane	2 mL
(15) Branched Chain Hydrocarbons Mixture PS-22D	2 mL
Neat at the stated weight %	
2-Methylpentane	14%
n-Hexane	24%
2,3-Dimethylpentane	14%
2,2,4-Trimethylpentane	33%
2,5-Dimethylhexane	15%

### Calibration Mixture

**PS-22D** 1 x 2 mL  
Neat at the stated weight % listed above.

### Alkenes C<sub>6</sub>-C<sub>22</sub>

**PS-241D** 15 units  
Neat at the stated quantities.

(01) 2,4,4-Trimethylpentene-1	2 mL
(02) 2,4,4-Trimethylpentene-2	0.5 mL
(03) Nonene-1	0.5 mL
(04) Nonene-4 (cis, trans)	0.5 mL
(05) 3,5,5-Trimethyl-1-hexene	0.5 mL
(06) Decene-1	2 mL
(07) Undecene-1	0.5 mL
(08) Dodecene-1	2 mL
(09) Tridecene-1	2 mL
(10) Tetradecene-1	2 mL
(11) Hexadecene-1	2 mL
(12) Octadecene-1	2 mL
(13) Eicosene-1	2 mL
(14) Docosene-1	0.5 mL
(15) 1-Olefins C <sub>12</sub> -C <sub>18</sub> Mixture PS-24D	2 mL
Neat at the stated weight %	
Decene-1	10%
Dodecene-1	15%
Tetradecene-1	20%
Hexadecene-1	25%
Octadecene-1	30%

### Calibration Mixture

**PS-24D** 1 x 2 mL  
Neat at the stated weight % listed above.

### Alkanes nC<sub>19</sub>-nC<sub>40</sub>

**PS-261C** 15 units  
2 mL at the stated concentrations by weight % in Ethylbenzene solvent.

(01) n-Nonadecane	10%
(02) n-Eicosane	10%
(03) n-Heneicosane	10%
(04) n-Docosane	10%
(05) n-Tricosane	10%
(06) n-Tetracosane	10%
(07) n-Pentacosane	10%
(08) n-Hexacosane	10%
(09) n-Octacosane	10%
(10) n-Triacontane	1%
(11) n-Dotriacontane	1%
(12) n-Hexatriacontane	1%
(13) n-Octatriacontane	1%
(14) n-Tetracontane	1%
(15) Normal Hydrocarbons Mixture PS-26C	2 mL
At the stated concentrations.	
Ethylbenzene	80%
n-Octadecane	2%
n-Nonadecane	5%
n-Heneicosane	6%
n-Docosane	7%

### Calibration Mixture

**PS-26C** 1 x 2 mL  
Neat at the stated weight % listed above.

### Alkanes nC<sub>19</sub>-nC<sub>40</sub>, NEAT

**PS-261CX**  
Vials 1 through 14 0.5 g each  
Vial 15 2 mL

### Naphthenes C<sub>5</sub>-C<sub>10</sub>

**PS-281C** 15 units  
2 mL each. Neat.

(01) Cyclopentane	
(02) Methylcyclopentane	
(03) Cyclohexane	
(04) Methylcyclohexane	
(05) cis-1,2-Dimethylcyclohexane	
(06) trans-1,2-Dimethylcyclohexane	
(07) cis and trans-1,3-Dimethylcyclohexane	
(08) cis and trans-1,4-Dimethylcyclohexane	
(09) Ethylcyclohexane	
(10) n-Propylcyclohexane	
(11) iso-Propylcyclohexane	
(12) n-Butylcyclohexane	
(13) iso-Butylcyclohexane	
(14) tert-Butylcyclohexane	
(15) Branched chain Hydrocarbons Mixture PS-28D	
Neat at the stated weight %	
Methylcyclopentane	16%
Cyclohexane	17%
Methylcyclohexane	17%
Ethylcyclohexane	17%
n-Propylcyclohexane	17%
n-Butylcyclohexane	16%

### Calibration Mixture

**PS-28D** 1 x 2 mL  
Neat at the stated weight % listed above.



# Fuel & Hydrocarbon Standards

## Leaking Underground Storage Tank Retention Time Standard

This product can be used to screen a sample to determine what type of petroleum spill that may have caused the contamination.

### Retention Time Standard

<b>DRH-010S</b>		<b>1 x 1 mL</b>
<b>DRH-010S-PAK</b>	<b>SAVE</b>	<b>5 x 1 mL</b>
25 µg/mL each in CH <sub>2</sub> Cl <sub>2</sub>		7 comps.
<i>n</i> -Hexane	<i>n</i> -Octacosane	
<i>n</i> -Decane	<i>n</i> -Triacontane	
<i>n</i> -Dodecane	<i>n</i> -Tetracontane	
<i>n</i> -Tetracosane		

### Technical Note

A sample showing peaks in the C<sub>6</sub>-C<sub>10</sub> range generally indicates a gasoline spill. Samples with the peaks in the C<sub>24</sub>-C<sub>12</sub> range are indicative of a diesel spill while samples with the higher carbon numbers above C<sub>24</sub> are typically oils or lubricants. Once the initial screen is complete, more detailed work can be done to further identify the contaminant.

### VPH Solution

<b>WA-VPH</b>		<b>1 x 1 mL</b>
<b>WA-VPH-PAK</b>	<b>SAVE</b>	<b>5 x 1 mL</b>
200 µg/mL each in MeOH		15 comps.
Benzene	<i>n</i> -Hexane	
Ethylbenzene	<i>n</i> -Octane	
Toluene	<i>n</i> -Decane	
<i>o</i> -Xylene	<i>n</i> -Dodecane	
<i>m</i> -Xylene	1-Methylnaphthalene	
<i>p</i> -Xylene	Naphthalene	
MtBE	1,2,3-Trimethylbenzene	
<i>n</i> -Pentane		

## Determination of Aromatic & Aliphatic Hydrocarbons in Gasoline Range Organics

### AK101AA Aromatics Mix

<b>AK-101AA-ARO</b>		<b>1 x 1 mL</b>
<b>AK-101AA-ARO-PAK</b>	<b>SAVE</b>	<b>5 x 1 mL</b>
2000 µg/mL each in MeOH		14 comps.
Benzene	1,2,4-Trimethylbenzene	
Toluene	1,3,5-Trimethylbenzene	
Ethylbenzene	Isopropylbenzene	
<i>m</i> -Xylene	<i>m</i> -Ethyltoluene	
<i>p</i> -Xylene	<i>p</i> -Ethyltoluene	
<i>o</i> -Xylene	<i>o</i> -Ethyltoluene	
1,2,3-Trimethylbenzene	<i>n</i> -Propylbenzene	

### Surrogate Standard

<b>M-602-SS</b>		<b>1 x 1 mL</b>
<b>M-602-SS-PAK</b>	<b>SAVE</b>	<b>5 x 1 mL</b>
0.2 mg/mL in MeOH		
<i>α,α,α</i> -Trifluorotoluene		

Fuel & Hydrocarbons Mixtures

## Canadian Ministry of the Environment Brownfield Regulations

### Brownfield Regulation for Light Petroleum Fraction

<b>CCME-LPF-SET</b>					<b>5 x 1 mL</b>
At stated conc. in <i>n</i> -Hexane					8 comps.
	<b>CCME-LPF-0.05X</b>	<b>CCME-LPF-0.1X</b>	<b>CCME-LPF-0.25X</b>	<b>CCME-LPF-0.5X</b>	<b>CCME-LPF</b>
	µg/mL	µg/mL	µg/mL	µg/mL	µg/mL
<i>n</i> -Decane	12.5	25	50	125	250
<i>n</i> -Hexane	12.5	25	50	125	250
Toluene	12.5	25	50	125	250
Benzene	12.5	25	50	125	250
<i>o</i> -Xylene	12.5	25	50	125	250
<i>m</i> -Xylene	6.25	12.5	25	62.5	125
<i>p</i> -Xylene	6.25	12.5	25	62.5	125
Ethylbenzene	12.5	25	50	125	250

Approved by the Canadian Ministry of the Environment as of October 1, 2004.

### Brownfield Regulation for Medium & Heavy Petroleum Fraction

<b>CCME-MHPF-SET</b>			<b>3 x 1 mL</b>
At stated conc. in <i>n</i> -Hexane			3 comps.
	<b>CCME-MHPF-0.1X</b>	<b>CCME-MHPF-0.5X</b>	<b>CCME-MHPF</b>
	µg/mL	µg/mL	µg/mL
<i>n</i> -Decane	40	200	400
<i>n</i> -Hexadecan	40	200	400
<i>n</i> -Tetracontane	40	200	400

### Hydrocarbon Standard Brownfield Regulation

<b>D-5442-R1</b>	<b>1 x 1 mL</b>
100 µg/mL each in Cyclohexane	
18 comps.	
<i>n</i> -Decane	
<i>n</i> -Dodecane	
<i>n</i> -Tetradecane	
<i>n</i> -Hexadecane	
<i>n</i> -Octadecane	
<i>n</i> -Eicosane	
<i>n</i> -Docosane	
<i>n</i> -Tetracosane	
<i>n</i> -Hexacosane	
<i>n</i> -Octacosane	
<i>n</i> -Triacontane	
<i>n</i> -Dotriacontane	
<i>n</i> -Tetracontane	
<i>n</i> -Hexatriacontane	
<i>n</i> -Octatriacontane	
<i>n</i> -Tetracontane	
<i>n</i> -Tetracontane	
<i>n</i> -Pentacontane	

### Brownfield Regulation Performance Check Standard

<b>CCME-QC</b>	<b>1 x 1 mL</b>
<b>CCME-QC-PAK</b>	<b>5 x 1 mL</b>
At 40 µg/mL each in <i>n</i> -Hexane:Cyclohexane	
2 comps.	
<i>n</i> -Pentacontane	
<i>n</i> -Tetracontane	

### Brownfield Regulation Spike

<b>CCME-SPIKE</b>	<b>1 x 1 mL</b>
At 2500 µg/mL each in <i>n</i> -Hexane	
2 comps.	
SAE 30W Motor Oil - Non-Detergent Formula	
#2 Diesel Fuel - 50% Weathered	

112-40-3:118	AS-E0240:119	FD2-W75-	40X:118	FU-026-H:119
2825-82-3:118	AS-E0241:119	10X:118, 120	FU-012:118	FU-026-H-
3386-33-2:118	BOOK-TPH:121	FD2-W75-R1-	FU-012-40X:118	40X:119
352-33-0:118	CCME-LPF-	10X:118, 120	FU-012-D-	FU-027-D-
438-22-2:118	SET:123	FK-W25-10X:119,	40X:118	40X:119
460-00-4:118	CCME-MHPF-	120	FU-012N:118	FU-027-H:119
526-73-8:119	SET:123	FK-W50-10X:119,	FU-013:118	FU-027-H-
615-59-8:118	CCME-QC:123	120	FU-013-40X:118	40X:119
629-50-5:119	CCME-QC-	FK-W75-10X:119,	FU-013-D-	FU-028-D-
629-59-4:119	PAK:123	120	40X:118	40X:119
629-62-9:119	CCME-	FU-001:118	FU-014:118	FU-028-H:119
629-97-0:118	SPIKE:123	FU-001-40X:118	FU-014-40X:118	FU-028-H-
646-31-1:119	CLP-BTEX:121	FU-001-D-	FU-014-D-	40X:119
64742-47-8:118	CLP-BTEX-	40X:118	40X:118	GA-001:118
64742-54-7:118	10X:121	FU-002:118	FU-015:118	GA-001-10X:118,
64742-89-8:119	CLP-BTEX-10X-	FU-002-40X:118	FU-015-40X:118	120
68334-30-5:118	PAK:121	FU-002-D-	FU-015-D-	GA-001-20X-
68476-30-2:118	CLP-BTEX-	40X:118	40X:118	BTEX:121
68476-31-3:118	PAK:121	FU-003:118	FU-016:118	GA-001-40X:118
68476-43-6:118	D-5186-91-	FU-003-40X:118	FU-016-40X:118	GA-001-D-
68553-00-4:118	PM:118	FU-003-D-	FU-016-D-	40X:118
70892-10-3:118	D-5442-R1:123	40X:118	40X:118	GA-003:118
7194-86-7:119	D-5480-C40-	FU-004:118	FU-017:118	GA-003-40X:118
8006-64-2:119	5ML:119	FU-004-40X:118	FU-017-40X:118	GA-003-D-
8008-20-6:119	D-5480-C40-R1-	FU-004-D-	FU-017-D-	40X:118
8030-30-6:119	5ML:119	40X:118	10X:118, 120	GA-004:118
8052-41-3:119	DRH-004S-R1-	FU-005:119	FU-017-D-	GA-004-40X:118
84-15-1:119	5X:121	FU-005-40X:119	40X:118	GA-004-D-
93952-07-9:119	DRH-004S-R1-	FU-005-D-	FU-018-D-	40X:118
AK-101.0-IS-	5X-PAK:121	10X:119, 120	40X:119	GA-005:119
10X:118	DRH-006-SS:119	FU-005-D-	FU-018-H:119	GA-005-40X:119
AK-101AA-	DRH-007-SS:118	40X:119	FU-018-H-	GA-005-D-
ARO:123	DRH-008S-	FU-006:119	40X:119	40X:119
AK-101AA-ARO-	R2:121	FU-006-40X:119	FU-019-D-	GA-W25-
PAK:123	DRH-008S-R2-	FU-006-D-	40X:119	10X:119, 120
AK-102-LCS-R1-	PAK:121	40X:119	FU-019-H:119	GA-W50-
10X:118	DRH-010S:123	FU-007:118	FU-019-H-	10X:119, 120
AK-102.0-	DRH-010S-	FU-007-40X:118	40X:119	GA-W75-
LCS:118	PAK:123	FU-007-D-	FU-020-D-	10X:119, 120
AK-102.0-LCS-	DRH-FL-SS:119	40X:118	40X:118	GAD-001:121
10X:118	DRH-FL-SS-	FU-008:118	FU-021-D-	GAD-001-
AK-102.0-NAS-	3X:119	FU-008-40X:118	40X:119	PAK:121
10X:121	DRH-FL-SS-	FU-008-D-	FU-022:118	GARH-IS:118
AK-102.0-NAS-	R1:119	40X:118	FU-022-40X:119	GARH-SS:118
10X-PAK:121	DRH-FTRPH:121	FU-009:118	FU-022-D-	GRH-004-SS:118
AK-102.0-SS:119	DRH-FTRPH-	FU-009-40X:118	40X:119	GRH-004-SS-
AK-102.0-SS-	PAK:121	FU-009-D-	FU-023:118	100X:118
10X:119	DRH-SS:119, 121	10X:118, 120	FU-023-40X:118	GRH-004-SS-
AK-103.0-	DRH-SS-PAK:121	FU-009-D-	FU-023-D-	10X:118
LCS:119	FD2-W25-	40X:118	40X:118	GRH-IS:118, 121
AK-103.0-LCS-	10X:118, 120	FU-010:118	FU-025-D-	GRH-IS-10X:118
5X:119	FD2-W25-R1-	FU-010-40X:118	40X:119	GRH-IS-PAK:121
AK-103.0-SS:119	10X:118, 120	FU-010-D-	FU-025-H:119	GRH-SS:119,
AK-103.0-SS-	FD2-W50-	40X:118	FU-025-H-	121
10X:119	10X:118, 120	FU-011:118	40X:119	GRH-SS-PAK:121
AS-E0238:118	FD2-W50-R1-	FU-011-40X:118	FU-026-D-	HS-001N:119
AS-E0239:119	10X:118, 120	FU-011-D-	40X:119	HS-001S:119

HS-001S-	SET:120
40X:119	TPH-SET:120
HS-001S-D-	V-028S-D-
40X:119	10X:119
HS-002N:119	WA-VPH:123
HS-002S:119	WA-VPH-
HS-002S-	PAK:123
40X:119	
HS-002S-D-	
40X:119	
HS-003N:119	
HS-003S:119	
HS-003S-	
40X:119	
HS-003S-D-	
40X:119	
HS-004N:119	
HS-004S:119	
HS-004S-	
40X:119	
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