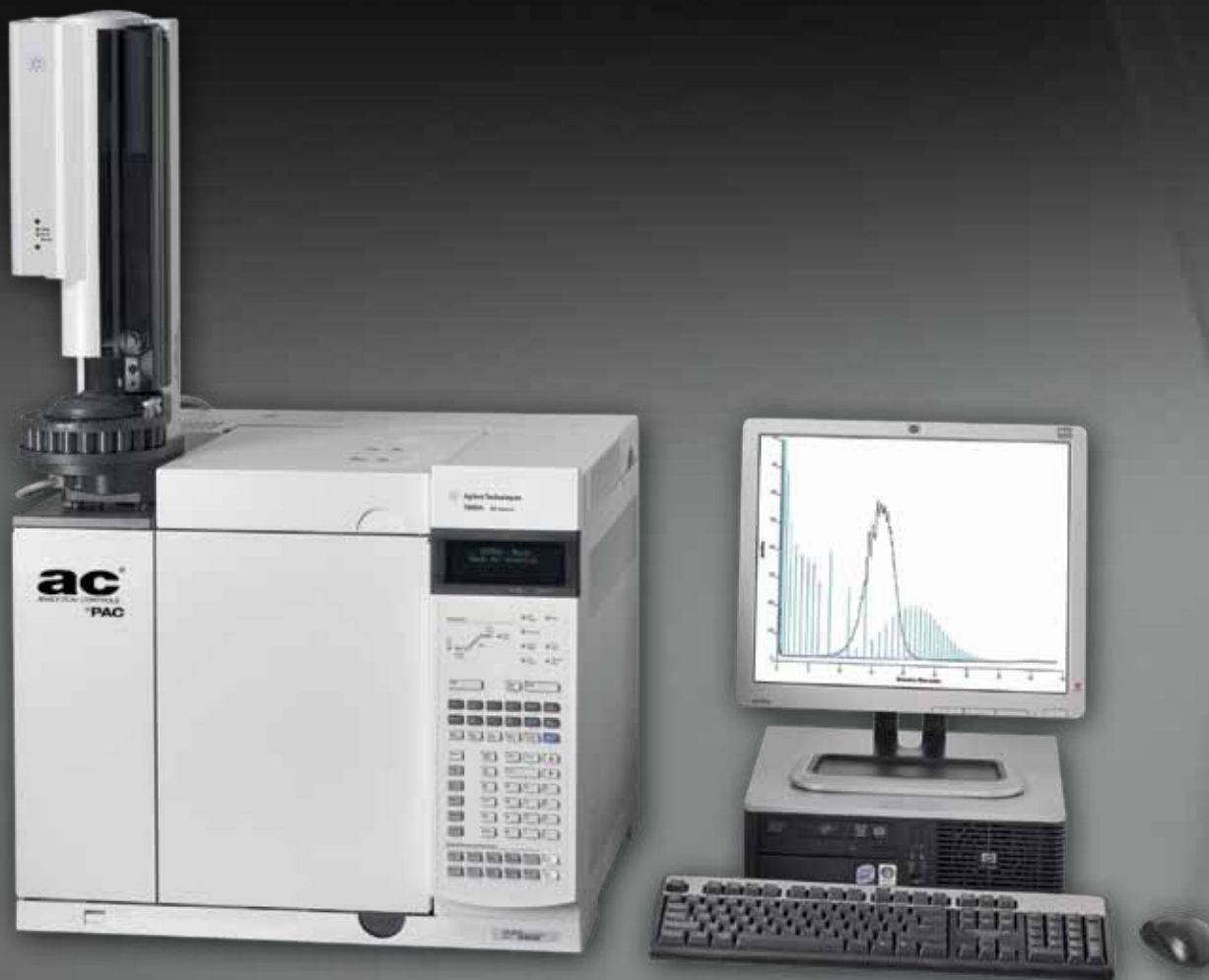


Simulated Distillation Solutions for True Boiling Point  
determination up to C120



# Full Range of SIMDIS Solutions



**ac**<sup>®</sup>  
ANALYTICAL CONTROLS  
by **PAC**

## Simulated Distillation Solutions for True Boiling Point Determination upto C120

- User-friendly, Complete Turn-key Solutions
- Widest Analysis Range for all Sample Types: from Crudes to Mid Distillates
- Includes Calibration and System Performance Check Samples, Automated Calculations
- Compliant with Global Standard Test Methods

## COMPLETE RANGE OF SIMULATED DISTILLATION ANALYSIS SOLUTIONS UPTO C120

Boiling point data is a major specification in characterizing petroleum streams. AC Analytical Controls (AC) provides complete, turn-key gas chromatographic solutions for accurate determination of true boiling point data – from naphtha up to crude oil samples. By completely automating every step in the analysis AC SIMDIS applications provide fast and accurate boiling point results.

AC adds unique value to the industry by offering a 100% guaranteed solution, delivered fully factory calibrated, tested to certified reference materials, fine-tuned fully dedicated to methods specified by the user. AC Qualified Service Engineers commission the instrument and provide operator/user training.

## IN FULL COMPLIANCE WITH WORLDWIDE STANDARD TEST METHODS

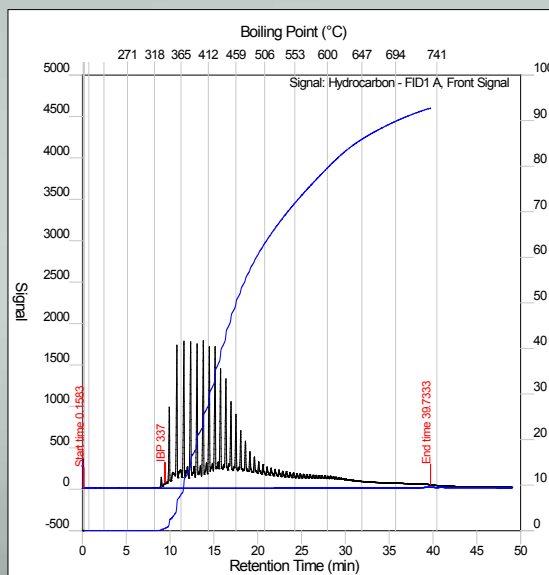
AC's dedicated involvement in regulatory organizations guarantees that the system and the software calculations are in accordance with with accepted methods (ASTM, IP, ISO, DIN and others) listed in current gasoline, jet fuel and diesel specifications.

## UNIQUE AC SIMDIS SOLUTIONS

AC pioneers new and unique SIMDIS solutions, that provide faster analysis and more detailed data:

- AC CNS SIMDIS analyzer for simultaneous determination of boiling range distribution of Carbon, Nitrogen, and Sulfur in crudes as such or in final products
- AC 8634™ analyzer for accelerated D86 correlation data of jet fuel and diesel
- AC Crude Oil analyzer which merges DHA Front End with High Temp SIMDIS Technique
- AC Wax ASTM D5442 application
- 'Light Solvent Optimized' Automated Liquid Sampler (ALS): Additional cooling in ALS and GC optimizes airflows around sample trays in ALS, lowers temperatures and improves injection precision

For more information, contact your local sales representative or visit the AC Analytical Controls section on [www.paclp.com](http://www.paclp.com)



Lube Oil Analysis using AC SIMDIS D7213

Method Number	ASTM D3710	ASTM D7096	ASTM D2887	ASTM D5307*	ASTM D5442	ASTM D7213	ASTM D7398	ASTM D6352	ASTM D7169	ASTM D7500
Maximum Carbon Number Reported	C <sub>15</sub>	C <sub>16</sub>	C <sub>44</sub>	C <sub>44</sub>	C <sub>44</sub>	C <sub>60</sub>	C <sub>60</sub>	C <sub>90</sub>	C <sub>100</sub>	C <sub>110</sub>
Sample Range	• Gasoline • Naphtha	• Gasoline • Naphtha	• Jet Fuel • Diesel	• Crude Oil	• Petroleum Derived Waxes	• Lube Oil Base Stocks	• FAMES (biodiesel, B100) Blends of Diesel and Biodiesel (B1 through B100)	• Lube Oil Base Stocks	• Residue • Crude Oil	• Distillates, • Base Oils • Lubricating • Base Stocks
Boiling Range Sample	FBP < 260°C (500°F)	FBP < 280°C (536°F)	FBP < 538°C (1000°F)	n.a.	FBP < 538°C (1000°F)	IBP > 100°C (212°F) FBP < 615°C (1138°F)	FBP < 538°C (1000°F) FBP < 700°C (1292°F)	IBP > 174°C (345°F) FBP < 700°C (1292°F)	FBP > 720°C (1328°F)	IBP > 100°C (212°F) FBP < 735°C (1355°F)

\*withdrawn in 2011

Overview of SIMDIS ASTM methods

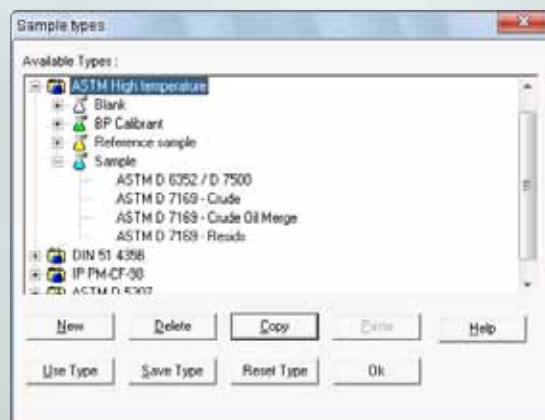
Method Number	ISO 3924 IP 406	IP 480 EN 15199-1 DIN 51.435	IP 507 EN 15199-2	EN 15199-3 IP 545
Maximum Carbon Number Reported	C <sub>44</sub>	C <sub>120</sub>	C <sub>120</sub>	C <sub>120</sub>
Sample Range	• Jet Fuel • Diesel	• Lube Oil Base Stocks (totally eluting)	• Jet Fuel • Diesel	• Crude Oil
Boiling Range Sample	FBP < 538°C (1000°F)	IBP > 100°C (212°F) FBP < 750°C (1382°F)	FBP < 538°C (1000°F)	

Overview of SIMDIS CEN, DIN, IP, ISO methods

## USER-FRIENDLY AC SIMDIS SOFTWARE CONTRIBUTES TO AN EXCELLENT ANALYSIS PRECISION

### EASY OPERATION FOR ACCURATE ANALYSIS

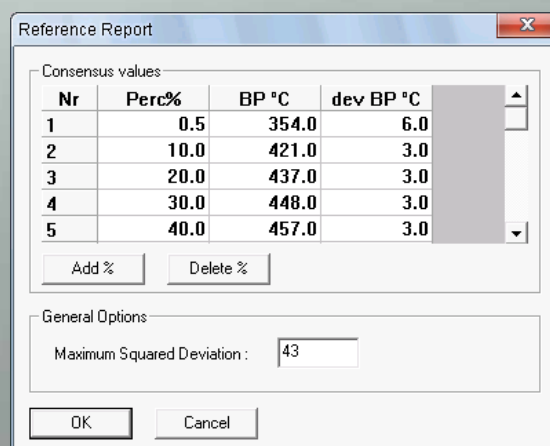
- Automatic blank subtraction, calibration and system validation
- Pre-programmed sample types
- Customer selective start and end elution algorithm
- Automatic validation of the Analyzer through user-configurable reference value checks
- AC software puts the instrument in standby mode after analysis to save gas and to keep it in optimal condition.
- One-click access to the blank, calibration and reference analysis for quick validation



Sample type menu displays the pre-programmed sample types

### DEDICATED CORRELATIONS AND CALCULATIONS

- Correlation to Physical Distillation
- D86 and D1160 (ASTM D2887; IP 406; ISO 3924),
- NOACK - DIN 51581-2
- MOV - ASTM D6417
- Conversion to volume % for crude oil
- Cutpoints & fractions
- Flashpoint (ASTM D7215)
- Volume Average Boiling Point (VABP)
- Bureau of Mines Correlation Index (BMCI)
- Average Molar Mass



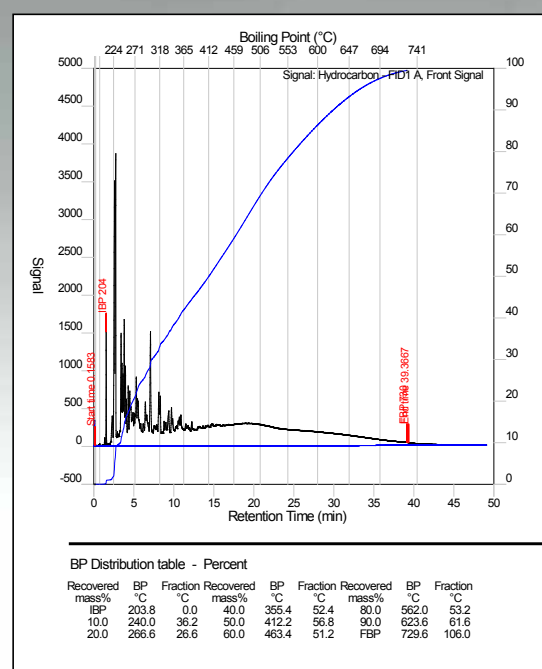
Reference check report

### EXTENSIVE SIMDIS REPORT OPTIONS, FULLY CONFIGURABLE PER SAMPLE TYPE

- Chromatogram and boiling point distribution plot
- List of calculation parameters
- Quality control report check
- Report of peak skew and column resolution parameters
- Special report included in the High temp SIMDIS for conversion from Mass% to Volume% for crude oils with: FBP > 538 °C (1000°F) and  $T_{(50wt\%)} < 538$  °C (1000°F)
- Tables and graphs of boiling point versus retention time or versus mass%
- Output of report to several formats, such as CSV, PDF file, for reviewing the results outside the SIMDIS software, direct import to excel, or direct upload to a LIMS system.

### COMPATABILITY WITH MAJOR CHROMATOGRAPHIC DATASYSTEMS

- OpenLab ChemStation
- OpenLab EZChrom (Workstation, Distributed Network)



Dual Channel SIMDIS ASTM D7500 analysis



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PAC Authorized Representatives are also located in most countries worldwide. For more information visit [www.pacpl.com](http://www.pacpl.com)

## AC Analytical Controls® by PAC,

has been the recognized leader in chromatography analyzers for gas, naphtha and gasoline streams in crude oil refining since 1981. AC also provides technology for residuals analysis for the hydrocarbon processing industry. Applications cover the entire spectrum of petroleum, petrochemical and refinery, gas and natural gas analysis; ACs Turn-Key Application solutions include the AC Reformulyzer, SimDis, HiSpeed RGA and DHA instruments.

## SIMDIS USER GROUP

AC regularly schedules worldwide SIMDIS inter laboratory studies and User Group Meetings for SIMDIS users. Hundreds of labs worldwide participate in these studies resulting in powerful statistical data that is shared and discussed in User Group Meetings. These studies provides a second tier QC program to any SIMDIS operator, to ensure consistent high quality of data long term.

## QC SAMPLES ENSURE AN OPTIMIZED ANALYSIS PERFORMANCE

AC offers a wide range of materials to support AC SIMDIS instruments. These are 'certified finished products' and other QC checks that will hold up in any QC-audit. Most often these materials have been part of extensive inter laboratory studies in the industry, and have been used as the basis for of hundreds of successful AC SIMDIS System installations. Calibration standards, QC checks and 'finished product' reference materials is available for each specific AC SIMDIS solution. These materials are subject to stringent Quality Control on manufacturing & storage. Every sample includes chromatogram, MSDS data, certification in a comprehensive booklet to guide users to a better QC system in the lab.

## SPECIFICATIONS

ORDERING INFORMATION*		
SINGLE CHANNEL SYSTEMS	CCG2123.894A/C	SIMDIS D2887 SYSTEM ON 120V/230V 7890 GC, INCLUDES AC FAST SIMDIS AND AC8634
	CCG2123.884A/C	SIMDIS D3710 SYSTEM ON 120V /230V 7890 GC
	CCG2123.886A/C	SIMDIS HT 750 SYSTEM ON 120V/230V 7890 GC
	CCG2123.890A/C	SIMDIS D 5442 WAX SYSTEM ON 120V/230V 7890 GC
	CCG2123.891A/C	SIMDIS D 7096 SYSTEM ON 120V/230V 7890 GC
	CCG2123.892A/C	SIMDIS D 7213 SYSTEM ON 120V/230V 7890 GC
	CCG2120AA/AC	AC 8612 SYSTEM ON 120V/230V 7890 GC
DUAL CHANNEL SYSTEMS	CCG2125.884A/C	DC SIMDIS D3710 SYSTEM ON 120V/230V 7890 GC
CHANNEL SYSTEMS	CCG2125.886A/C	DC SIMDIS HT 750 SYSTEM ON 120V/230V 7890 GC
	CCG2125.890A/C	DC SIMDIS D 5442 WAX SYSTEM ON 120V/230V 7890 GC
	CCG2125.891A/C	DC SIMDIS D 7096 SYSTEM ON 120V/230V 7890 GC
<i>*Additional SIMDIS Channels are available upon request (other channel must also be SIMDIS)</i>		
ANALYSIS PERFORMANCE		
Precision	According specific method or better	
Sensitivity	According specific method or better	
Accessories included	Operating manual; Calibration samples; Reference samples; Startup kit; Carrier gas filters; Oven exhaust deflector; Column	
UTILITIES & REQUIREMENTS		
Carrier gas	Helium or nitrogen	
Fid fuel	Hydrogen (99.999%)	
	Nitrogen (99.999%)	
	And compressed air (99.999%)	
Cooling	Liquid nitrogen, or co2 (depending on method) for fast cooling	
System power	110-230V	