SCION
INSTRUMENTS

Simulated Distillation Analyzers

● A Full Range of Simulated Distillation Analysis Solution

Scion Simulated Distillation Analyzers

Scion's range of Simulated Distillation Analyzers provide boiling point distribution up to 750°C. Designed to meet all industry standard methods, Scion's analyzer software includes both ASTM D86 and ASTM D1160 correlations.

A gas chromatographic (GC) technique, Simulated Distillation (SimDist) reproduces the physical distillation of petroleum materials and products by determining boiling point distribution. Used for controlling refinery operations, Scion's range of SimDist analyzers deliver fast, accurate standard test method results. Scion's highly automated Scion GC, compassCDS Chromatography Data Handling Software, and integrated SimDist software are also designed to meet worldwide industry standard test methods.

Key Benefits include:

- **Accurate boiling point distribution up to 750 ºC**
  The Scion SimDist Analyzer range tests a variety of distillates, blends, fuels, residues and crude oil, ranging from carbon number C1 to C120 and higher. This enables refinery processes to be monitored and controls product quality with fast, accurate boiling points versus mass distributions up to 750 0C.

- **Integrated standard test methods**
  Scion offers SimDist analyzers with built-in applications to help monitor refinery processes and control product quality. These applications fully comply with ASTM, IP, EN, DIN and ISO standard test methods used globally. New methods will be added to Scion's SimDist software as they are approved and released.

- **Complete, single vendor solution**
  Scion's single vendor approach includes the latest hardware, software and column technologies. Our solutions maximize uptime and increase the speed of data generation.

- **Complete control from initial setup to final report**
  The SimDist analyzers are controlled by Scion's advanced CompassCDS Chromatography Data System software package. The SimDist software is fully integrated into compassCDS for system operation, automation, calibration and report generation.

- **ASTM D86 and ASTM D1160 correlation**
  SimDist software includes both ASTM D86 and ASTM D1160 correlations. Dedicated to a sample type, these correlations are crude independent. With the fully automated Scion SimDist Analyzer, data is generated rapidly and with increased precision, making ASTM D86 and ASTM D1160 correlations faster and easier.

Figure 1a: Scion456-GC SimDist Analyzer.

Figure 1b: 436-GC with Sampler
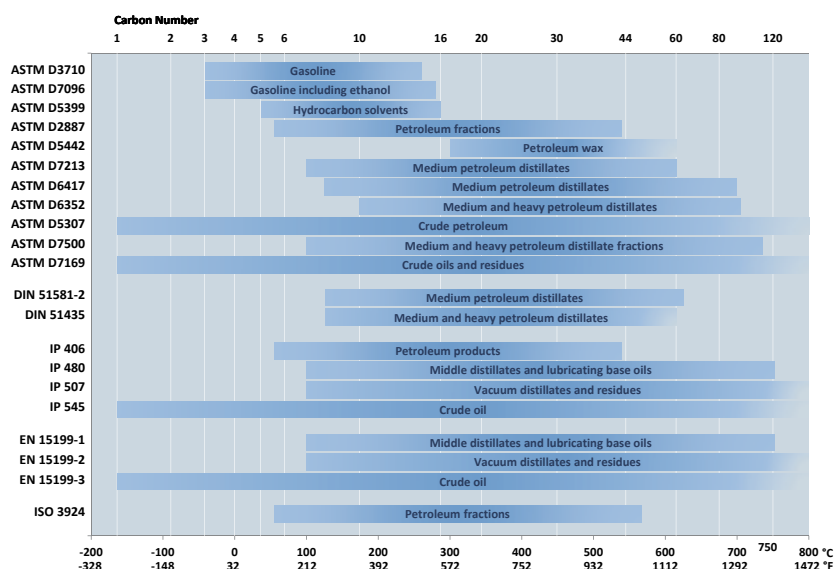
Figure 2: Standard Test Methods.

Figure 3: Easy to use industry standard test methods are fully integrated into Scion's SimDist software.

Scion's compassCDS Software has pre-programmed settings which streamline instrument setup, analysis and reporting to ensure outstanding data precision and reproducibility.

Once the preferred industry standard method is selected, Scion's SimDist software automatically corrects any offset to the baseline signal and removes the blank analysis to provide a corrected net area and precise boiling point data. In addition, users may choose to modify individual settings to suit their specific requirements.
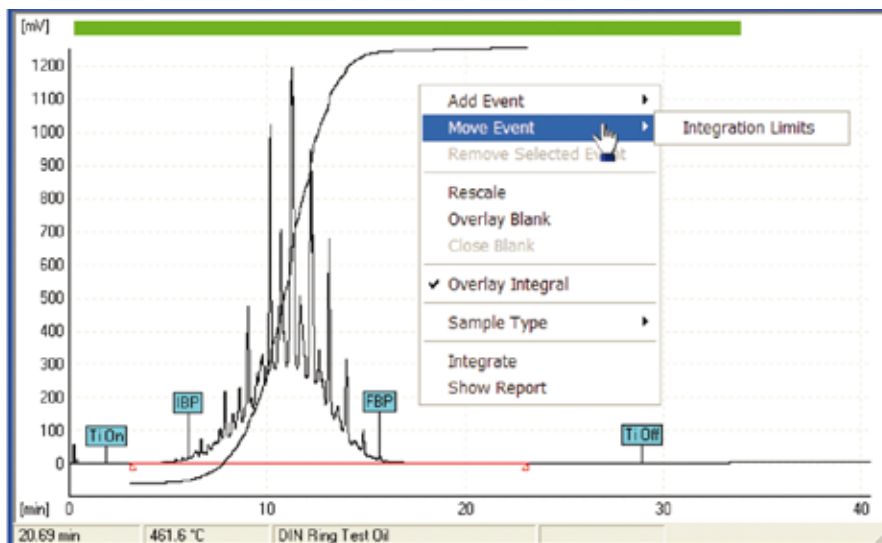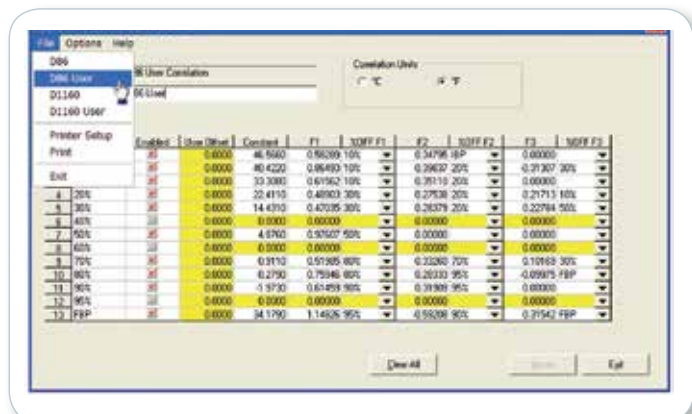

Figure 4: The intuitive interface enables easy adjustments of integration parameters and result overlays.

● Modification of Variables

Figure 5: ASTM D86 and ASTM D1160 Correlation Editor to customize and add correlation data.

ASTM D86 and ASTM D1160 Correlation Editor

As the composition of raw materials and intermediates change, the ability to modify the ASTM D86 or ASTM D1160 variables to improve correlation results is required. The Correlation Editor also allows new correlation data at the 40 %, 60 % and 95 % cut-off points to be generated for additional information between the two methods.

Built-in Reports

Scion's SimDist software provides a wide variety of report options to meet specific lab requirements including:
- Chromatogram with merged corrected blank analysis and IBP/FBP marks versus retention time
- Table with boiling point versus percentage of sample
- Table and plot with retention time versus boiling point

- Table with D86 and D1160 correlations
- DIN Noak and motor oil volatility reports
- Table with cutpoints and fractions
- Residue analysis with recovery calculation up to C120

Simplified, Accurate Analysis

In order to obtain accurate results:
- Run a blank to obtain an accurate baseline signal
- Run a standard configuration to obtain retention time versus boiling point calibration
- Run the reference sample to validate system performance and to determine the response factor
- Analyze samples
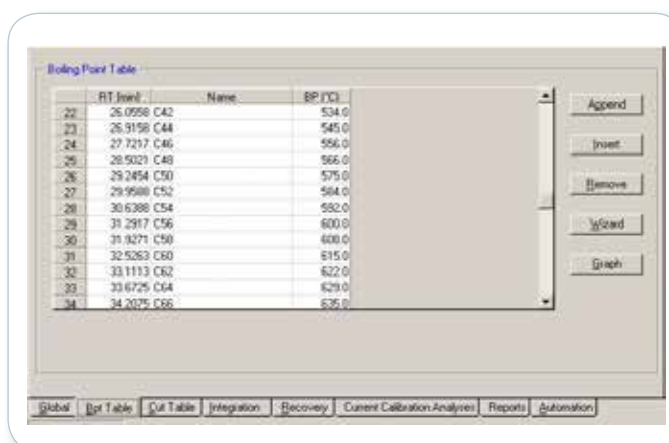
Figure 6: Accurate Analysis.
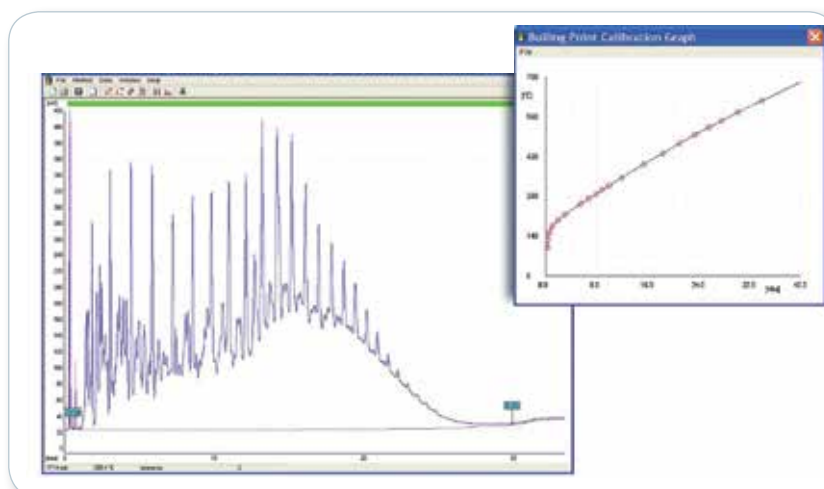
Figure 7: The integrated CompassCDS SimDist software for calibration and analysis.

● SimDist Analyzer Specifications

Hardware

- Gas chromatograph: Scion 456-GC or 436-GC
- Injector: temperature controlled on-column injector for capillary columns full Electronic Flow Control (EFC)
- Column oven: with CO_2 sub ambient cooling
- Detector: FID with EFC control
- Computer: with monitor
- Autosampler: CP-8400 or CP-8410 autosampler with carousel heating and cooling plate

Software

- Scion's compassCDS system control, data acquisition and report generation software
- Scion's compassCDS SimDist application software (fully integrated)

SimDist Analyzer Configurations Applicability

Six standard configurations are available for the test methods listed in Table 1. Optional mode kits are available to facilitate the change from one standard configuration to another. Each mode kit contains all the necessary components, including column and standard samples for a given configuration.
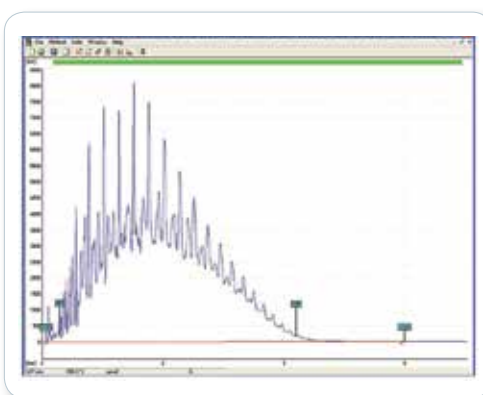
Figure 8: Diesel fuel analysis with fast 2887 SimDist method reduces analysis time by a factor of five compared to ASTM D2887 (6 rather than 30 minutes).

Sample Type	Configu-ration	Method	Min IBP	Max FBP
Gasoline	1	ASTM D3710	--	260°C
		ASTM D7096	--	280°C
Hydrocarbon solvents	1	ASTM D5399	37°C	285°C
Petroleum fractions	2	ASTM D2887, ISO 3924 and IP 406	55°C	538°C
	4	ASTM D 2887 accelerated	55°C	538°C
Middle distillates and lubricating base stocks	4	ASTM D7213	100°C	615°C
		ASTM D6417	126°C	615°C
		DIN 51581-2	160°C	635°C
		DIN 51435	165°C	615°C
	5	EN15199-1	100°C	750°C
		IP 480	100°C	750°C
Medium and heavy petroleum distillate fractions	5	ASTM D6352	174°C	700°C
		ASTM D7500	100°C	750°C
Petroleum wax	6	ASTM D5442	302°C	>548°C*
Vacuum distillates and residual fuels	5	EN15199-2 and IP 507	100°C	>750°C*
Crude petroleum	3	ASTM D5307	--	>538°C*
	5	EN15199-3 and IP 545	--	>750°C*
Crude oils and residues	5	ASTM D7169	--	>720°C*

* The method allows sample types that have a higher final boiling point than the maximum temperature analyzed by the method. This higher boiling faction is reported as "greater than".

Table 1: Analyzer configurations for standard SimDist methods.

Scion-Certified Consumables for Your SCION GC Series

Scion GC columns span a broad range of column diameters, stationary phases, and capillary column materials: Fused Silica (FS) and Inert Steel (IS). Ideal for either routine or research type analyses. Scion GC column offerings bridge across many important applications and include a number of offerings such as:

- Standard WCOT (Wall Coated Open Tubular)
- Solid Stationary Phase PLOT (Porous Layer Open Tubular)
- Inert Steel Micro-Packed and Packed
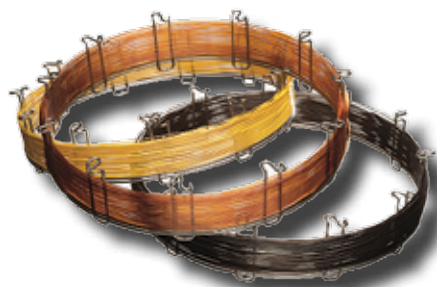
Super Clean™ Gas Filters

Scion Gas Purification Systems have the range to satisfy your needs from individual to combination filters, from Ultra purity combined with Ultra capacity, to all in one solution kits. Innovative features designed into the product yield extensive benefits to the user.

- Ultra-high capacity for long life, less change and improved productivity
- High-purity output ensures 99.9999% Pure Gas
- "Quick connect" fittings for easy, leak-tight filter changes
- Glass internals prevent diffusion; plastic externally for safety
- Easy-to-read indicators for planned maintenance and improved up-time

elementec
Scientific Technologies
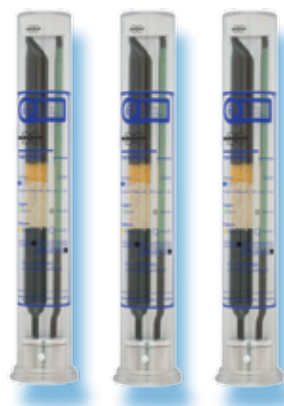
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