



SIMDIST Analysers

- Solutions comply with ASTM, CEN, DIN, IP and ISO SIMDIST methods
- SIMDIST software fully integrated in Chromeleon datasystem
- Optimised injector technology
- Data merge of High Temp SIMDIST and DHA Front End

GAS offers custom configured GC analysers for many application fields since 40 years. GAS analysers are designed to meet many standardised methods from GPA, ASTM, UOP, ISO, EN and others. The efficient configurations are based on proven GC technology, resulting in robust instruments with an optimal return on investment.

The determination of boiling point distribution of petroleum products and crudes by GC is a fast and reliable tool, which is widely used to replace conventional labour intensive distillation methods like D86 and D1160. This proven technology is supported by several standardised methods.

GAS offers fully automated solutions for SIMDIST which enables you to generate TBP data according to international reference methods. The instruments are fully factory calibrated, fine-tuned to the specified method and tested to certified reference materials. Proven GC technology with optimised inlets offer reliable SIMDIST results. GAS SIMDIST Calculator software is completely integrated in Chromeleon data system, providing a clear and user friendly workflow as a result. Figure 1 shows the sample sequence list with samples, calibrations runs, blanks and check standards, while figure 2 displays a typical SIMDIST chromatogram with baseline subtraction.

#	FID	Name	Type	Position	Inject Time	Volume [µl]	*Check Type	*Correlation	Instrument Method	Processing Method	Status
1		blank	Blank	1	6/24/2014 9:15:17 PM +02...	0.3	Ref D2887	D86	ASTM2887	Analysis	Finished
2		rt	Calibration Standard	2	6/24/2014 9:49:53 PM +02...	0.3	Ref D2887	D86	ASTM2887	Calibration	Finished
3		blank	Blank	1	6/24/2014 10:23:18 PM +02...	0.3	Ref D2887	D86	ASTM2887	Analysis	Finished
4		QA oil	Check Standard	3	6/24/2014 10:57:10 PM +02...	0.3	Ref D2887	D86	ASTM2887	Analysis	Finished
5		blank	Blank	1	6/24/2014 11:30:56 PM +02...	0.3	Ref D2887	D86	ASTM2887	Analysis	Finished
6		SWEET	Unknown	2	7/7/2014 2:40:16 PM +02:00	0.3	Ref D2887	D86	ASTM2887	Analysis	Finished
7		blank	Blank	1	7/7/2014 3:50:36 PM +02:00	0.3	Ref D2887	D86	ASTM2887	Analysis	Finished
8		HN	Unknown	3	7/7/2014 4:25:35 PM +02:00	0.3	Ref D2887	D86	ASTM2887	Analysis	Finished
9		blank	Blank	1	7/7/2014 9:55:07 PM +02:00	0.3	Ref D2887	D86	ASTM2887	Analysis	Finished
10		Sample oil	Unknown	8	7/8/2014 4:13:31 AM +02:00	0.3	Ref D2887	D86	ASTM2887	Analysis	Finished
11		blank	Unknown	1	7/8/2014 4:54:22 AM +02:00	0.3	Ref D2887	D86	ASTM2887	Analysis	Finished

Figure 1. Chromeleon datasystem with SIMDIST Calculator software showing clear and accessible acquisition list

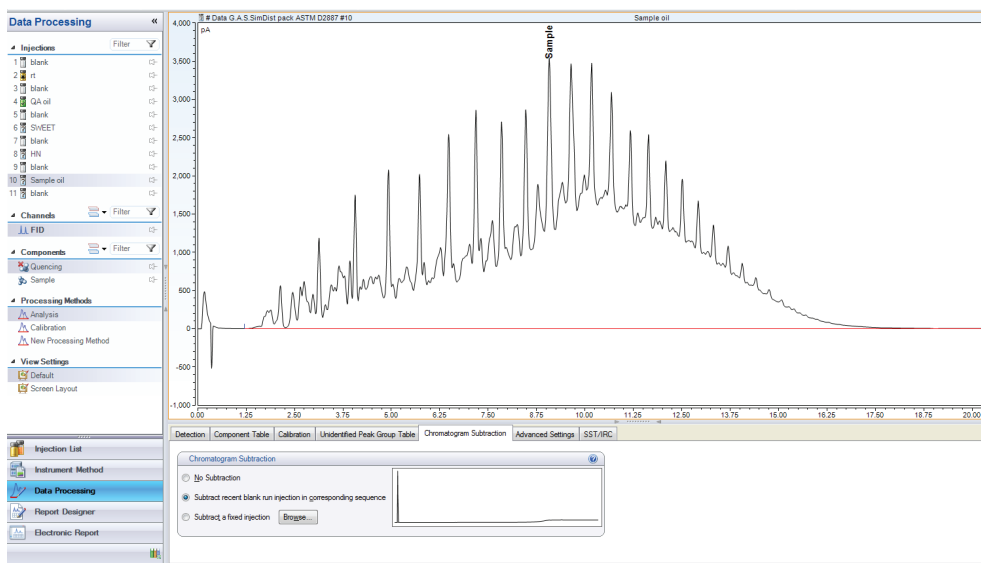


Figure 2. SIMDIST D2887 chromatogram with baseline subtraction



Figure 3. GC Trace 1610 with AS 1610 autosampler

SIMDIST Calculator software provides:

- ▲ ASTM D86 and D1160: correlation for atmospheric and vacuum distillation
- ▲ Custom correlation models can be added by the user
- ▲ DIN 51.581 (NOACK): evaporative loss in mass% of lubricants at 250°C
- ▲ ASTM D6417 (MOV): evaporation loss in mass% of lubricants at 371°C
- ▲ Flashpoint correlations according to ASTM D56, D93 and D3828
- ▲ Cut point tables
- ▲ SIMDIST/DHA MERGE of ASTM D7169/ IP545 data according to ASTM D7900
- ▲ Carbon number report: list of carbon numbers with their appropriate boiling points. See figure 7.

Besides the boiling point distribution report (figure 4), a quality control report is available as well (figure 5). This report shows the conformity with reference samples, and is therefore very important for the overall reliability of the method.

Available hardware solutions:

- ▲ Thermo Trace 1600/1610 GC with InstantConnect injector and detector modules
- ▲ Split/Splitless Injector (medium volatile sample range)
- ▲ Optimised PTV injector module for true quantitative analytical results for all sample types
- ▲ PTV-Backflush for ASTM D7900 (application note available)
- ▲ Optional On-Column injector
- ▲ Triplus RSH or AI/AS 1610 autosamplers

SIMDIST application package including:

- ▲ Set of standards, Polywax (500, 655 or 1000) or hydrocarbon mix according to the required method to set the boiling point distribution versus retention time
- ▲ External reference sample, for quantification and performance verification
- ▲ Analytical column, MXT-1 2887, or MXT-1HT for high temperature SIMDIST up to FBP 750 °C

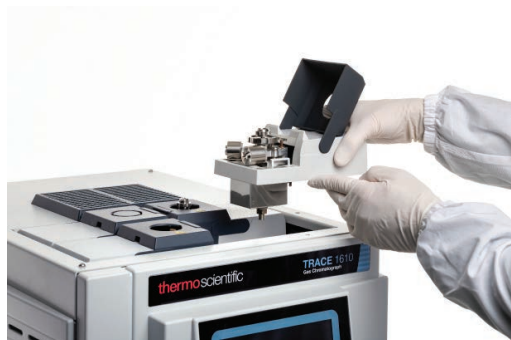


Figure 6. Easy injector/detector exchange with InstantConnect modules

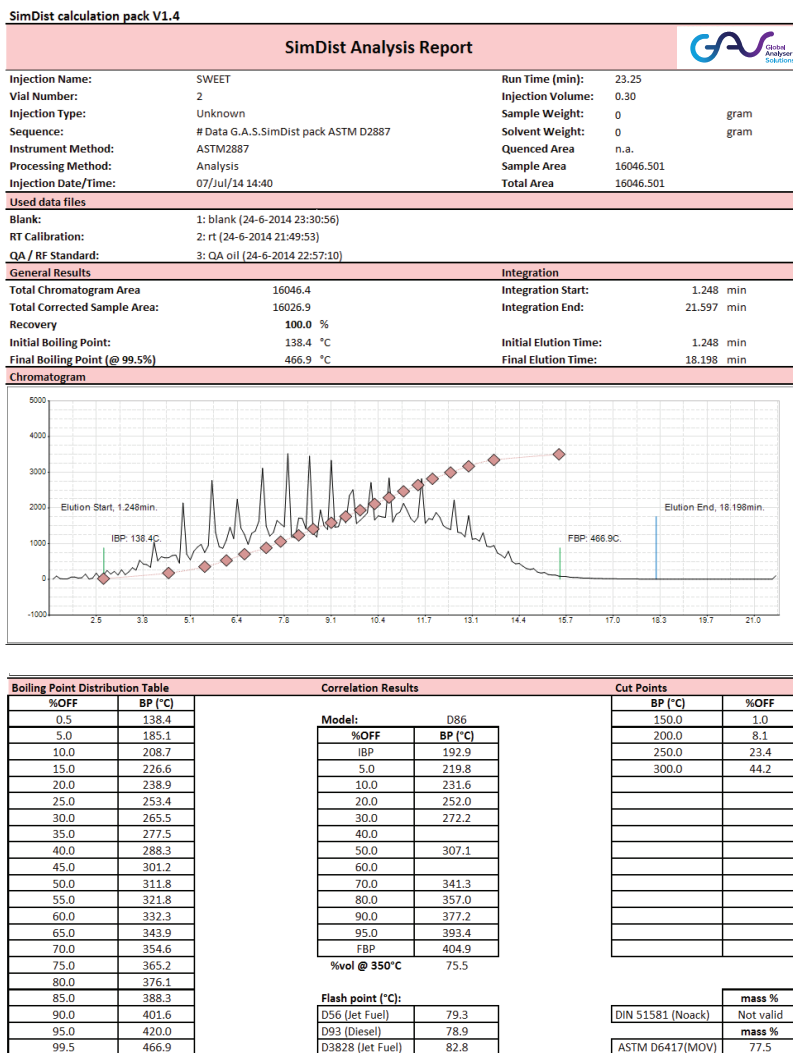


Figure 4. Sample report

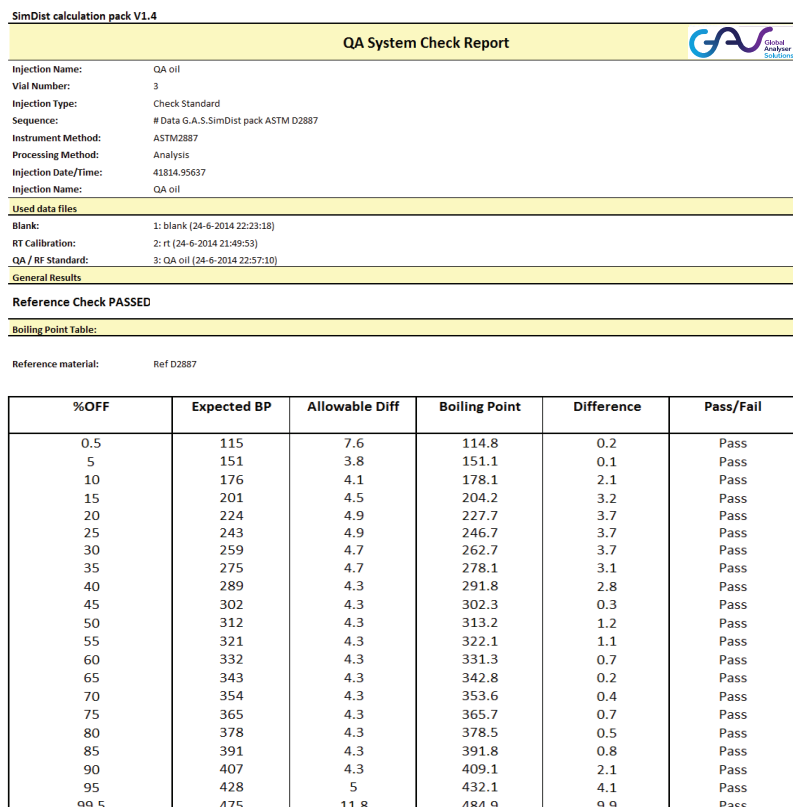


Figure 5. Quality control report

Specifications

Configuration:

1 or 2 channel instrument based on Thermo GC Trace 1600, with InstantConnect SSL, PTV or Cold-On-Column injector module and InstantConnect FID detector module,

Triplus RSH or AS/AI-1610 liquid autosamplers

Optional:

Cryogenic oven cooling (liquid N₂ or liquid CO₂)

Application:

Custom configured analyser for light hydrocarbon products up to crude oil, lube oil and residual samples

SIMDIST analyser tuned for applications according to the standardised methods

Sample requirements:

Neat or dissolved in CS₂ (safety issue: CS₂ is extremely flammable and toxic)

Analysis time:

Depending on method

Software

GAS SIMDIST Calculator for Chromeleon. See page 3 for specification

SIMDIST/DHA MERGE of ASTM D7169/ IP545 data according to ASTM D7900 (application note available)

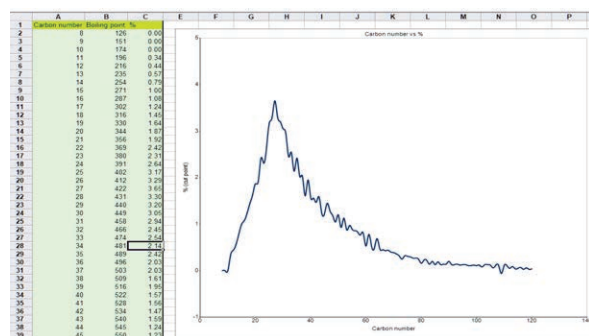


Figure 7. Optional carbon number report

Boiling point	-200	-100	0	100	200	300	400	500	600	700	800
ASTM D3710			gasoline								
ASTM D7096			gasoline + ethanol								
ASTM D5399			solvents								
ASTM D2887			petroleum fractions								
ASTM D5442						petroleum wax					
ASTM D7213				medium petroleum distillates							
ASTM D6417				medium petroleum distillates							
ASTM D6352				medium and heavy petroleum distillates							
ASTM D5307			crude petroleum								
ASTM D7500				medium and heavy petroleum distillates							
ASTM D7169			crude oil and residues								
DIN 51581-2				medium petroleum distillates							
DIN 51435				medium and heavy petroleum distillates							
IP 406			petroleum products								
IP 480				middle distillates and lubricating base oils							
IP 507				vacuum distillates and residues							
IP 545			crude oil								
EN 15199-1				middle distillates and lub base oils							
EN 15199-2				vacuum distillates and residues							
EN 15199-3			crude oil								
ISO 3924			petroleum fractions								

Figure 8. Available standardised methods with boiling point and application range



GAS is an
Interscience company