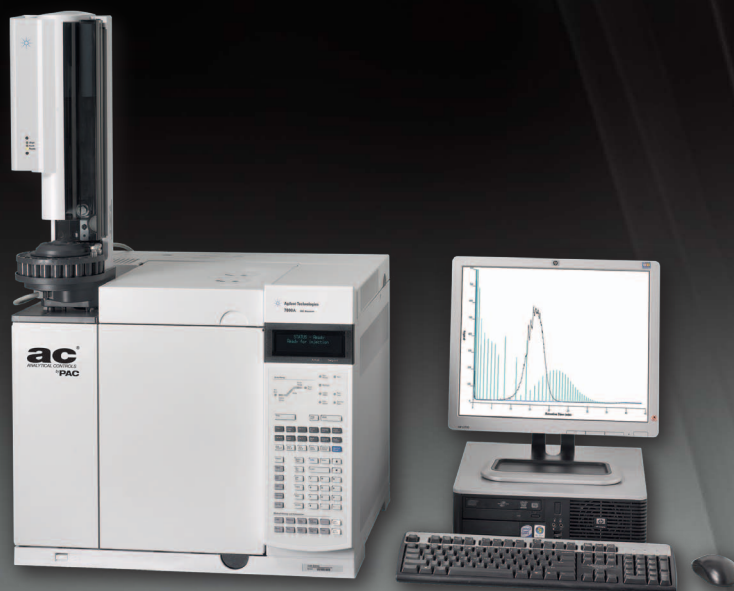


Fast and Accurate D86 data for Jet Fuel and Diesel Samples



# AC8634



## AC 8634

Traditionally, gasoil-related streams and jet fuel are analyzed with ASTM method D86 - physical distillation to determine boiling range. The boiling range is an important parameter in monitoring process performance and product quality.

To assist refiners in determining D86 boiling range data AC Analytical Controls® developed the AC 8634 application. Gas chromatography and thermodynamics are the basis of the 8634 analyzer. The system is developed for samples within ASTM D86 groups 3 and 4.

The application resides on an Agilent Technologies 7890 gas chromatograph, configured with a AC proprietary temperature programmable inlet (TPI) and flame ionization detector (FID). Optionally an Automatic Liquid Sampler unit can further improve productivity

### Fast D86 Analysis

The AC 8634 application uses a fast SIMDIS method to report volume% data conform D86 and true boiling point distribution of jet fuel and diesel in 6 – 8 minutes. With a productivity of 4 samples per hour it doubles output of most physical distillation set ups.

The AC 8634 software uses a correlation technique to convert SIMDIS data into D86 data. This correlation is ASTM D2887-06a proposed annex 6

### Pre-programmed Settings

The software contains pre-programmed settings that contribute to data precision. The calculation settings are stored in sample types that have a user-friendly name. Each sample type has a predefined report table to produce D86 boiling point data and/or D86 cutpoint data. The analyzer can report simulated distillation true boiling point (TBP) data as well.

#### ADVANTAGES

- Extremely accurate reporting - Exceeds reproducibility limits of the d86 method, allowing optimized cut point precision and less product giveaway
- High throughput/speed - Sample throughput is twice as high as traditional D86
- Fully automated - Saves up to 75% in labor compared to traditional d86 labor costs
- High level of safety: Eliminates potential fire hazards often associated with physical distillation.

#### APPLICATION RANGE

- Simulated Distillation
- Atmospheric Distillation

#### SAMPLE RANGE

- D86 groups 3 and 4

#### STANDARD METHODS

- ASTM D2887
- EN ISO 3924
- IP 406
- ISO 3924



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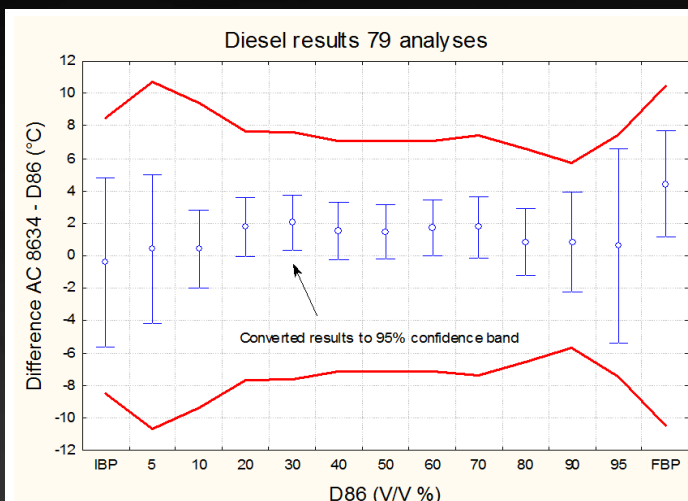
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**AC Analytical Controls® by PAC**

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.

**EXCELLENT REPRODUCIBILITY**

The D86 correlation was determined based on a Round Robin that included 38 laboratories and 92 samples (46 jet fuel samples and 46 diesel samples). The Round Robin demonstrated that the correlation is suitable for jet fuels and diesels. The test showed a difference between ASTM D86 and AC 8634 results that is smaller than the reproducibility of D86 itself. A field test demonstrated that AC 8634 application provides a fast, precise and automated determination of the boiling range data, which allows refiners to save labor costs and optimize cutpoints.



AC 8634 and D86 comparison

**AC8634 Demo AC8634**

Sample name : Sample 2  
Acquired on : 6/3/2003 6:41:34 PM Vial : 5  
Processed on : 6/11/2003 3:12:22 PM Injection : 4  
Data File : D030603A005F0704.D

**General Variables**

Used Blank : D030603A001F0102.D  
Used BP calibrant : D030603A002F0201.D  
Used Start elution (min) : 0.120  
Used End elution (min) : 5.933 set  
Total area : 9057967

**D86 correlation for JetFuel and Gasoil (AC feb 11, 2003) - distribution**

Recovered Val%	BP °C	Recovered Val%	BP °C	Recovered Val%	BP °C	Recovered Val%	BP °C
IBP	214.3	30.0	264.2	60.0	281.2	90.0	308.9
5.0	241.0	35.0	267.1	65.0	285.0	95.0	320.9
10.0	249.2	40.0	269.5	70.0	288.6	FBP	334.7
15.0	252.6	45.0	271.8	75.0	292.2		
20.0	256.6	50.0	274.5	80.0	296.0		
25.0	260.6	55.0	277.6	85.0	301.0		

**Correlation Distillation Report**

Correlation Type: D86 correlation for Jetfuel and Gasoil

Volume% points:  Use Val% increment: 5

Boiling points:  Use BP increment: 10

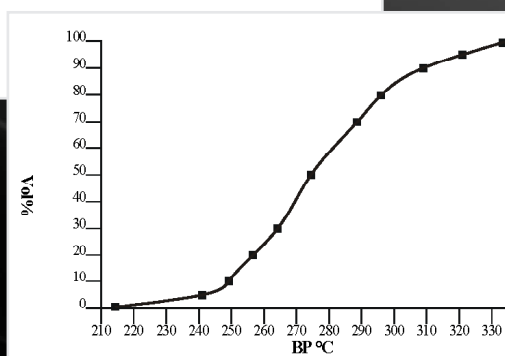
Nr	BP °C
1	200.0
2	210.0

Results Rounding: Boiling point: 0.2, Volume%: 0.1

AC 8634 correlation distillation menu

**D86 correlation for JetFuel and Gasoil (AC feb 11, 2003) - Cut points**

BP °C	Recovered Val%
250.0	11.4
310.0	90.5
320.0	94.7
330.0	98.3



AC 8634 analysis of a jet fuel