

Acid Number measurements of crude oil and petroleum products using ASTM D8045



Reproducible and accurate results in 60 seconds!

New method uses thermometric titration

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Acid Number (AN) is an important crude oil quality parameter used to determine a refining value for crude oil. Petroleum refining and transportation infrastructure is also impacted by the accuracy of AN measurements as these acidic compounds lead to corrosion. Until now AN has been measured by ASTM method D664. However, when analyzing crude oils and heavy refinery fractions, **method D664 presents the analyst with a number of challenges leading to poor reproducibility bet-**

ween laboratories and often disputes regarding the quality and the price per barrel of the crude.

Metrohm has partnered with industry leaders to develop an alternative to D664 for the measurement of crude oil and petroleum products. The resulting ASTM method D8045 describes the use of thermometric titration for this analysis.

Thermometric titration is ...

- more accurate and reproducible with an improved solvent mixture that better dissolves difficult samples containing high paraffinic content
- uses less solvent saving you substantial costs for waste disposal
- much faster because results are available in 60 seconds – without prior sensor conditioning and calibration required

See for yourself

	ASTM D664 (Potentiometric)	ASTM D8045 (Thermometric)
Titrant	0.1 mol/L KOH in IPA	0.1 mol/L KOH in IPA
Solvent	Toluene/IPA/water	Xylene/IPA
Solvent volume	125 mL	30–35 mL ✓
Titration time	~220 s	~60 s ✓
Conditioning of electrode	3–5 min	none ✓
Sensor maintenance	Solvent wash, rehydration, IPA dip, refill with electrolyte, store in LiCl in ethanol	Solvent wash is sufficient ✓
Sample size (expected AN of 0.05 – <1.0 mg KOH/g)	20 ± 2 g	~10 g ✓



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The 859 Titrotherm is available as a walk-up analyzer or an automated configuration.

859 Titrotherm – the best solution for ASTM D8045

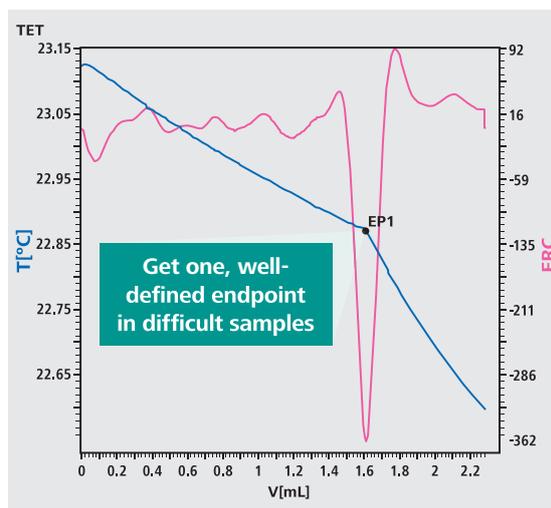
The Metrohm 859 Titrotherm and ASTM D8045 is the best solution for the measurement of AN in crude oil and petroleum products. The 859 Titrotherm is easy to use as it requires **no sensor maintenance aside from a solvent rinse**; this means **no hydration, no calibration and no filling solutions**. The entire system is operated by **tiamo**, the world's number one titration software where pre-defined methods make it easy to view and report results.

Our automated systems allow you to simply weigh your samples and make the measurement. These systems also reduce exposure to solvents and will safely operate in a fume hood.

For a complete video demonstration visit www.metrohm.com/ASTM-D8045

What is thermometric titration?

Thermometric titration uses a highly sensitive, fast responding sensor to detect an enthalpy change at a single endpoint. Because all of your sample is dissolved, a consistent, reproducible measurement with RSD values less than 2% is obtained. Whether you are using a walk-up analyzer or an automated systems the results are consistent between operators or locations.



Thermometric titration determines the endpoint (EP) via the reaction enthalpy, i.e. the temperature change in the measuring solution

Metrohm offers dedicated analyzer configurations for ASTM D8045. Please contact your local sales office for more information and ordering information.

www.metrohm.com