








OxyTracer™

Determination of individual oxygenates from 0.1 ppm to 2000 ppm in light hydrocarbon streams according to ASTM D7754 and ASTM D7423

-  Fast Analysis of Oxygenates Traces in 25-30 Minutes
-  Full Range of AC OxyTracer solutions meet broad range of analysis needs
-  AC proprietary Deans technology ensures stable retention times and accurate results
-  Excellent performance with LDL of 0.1 ppm and linear response from 0.1 up to 2000 pm (method dependent)
-  Complies to ASTM D7754, ASTM D7423 and adds AC OxyTracer and Methanol in E85 methods

FAST OXYGENATE TRACE ANALYSIS

Hydrotreating and hydroprocessing are similar processes, which remove impurities such as oxygen that may deactivate process catalysts. Even at ppm levels the presence of oxygen in hydrocarbon feedstocks causes catalyst degradation and reduces the catalyst lifetime. As environmental regulations regulate the addition of oxygenates to fuels, it becomes more and more important to analyze the oxygenate impurities, even at impurity levels.

Several analysis methods such as ASTM D4815, D5599, DIN 51413-7, EN 1601 and EN 13132, determine the oxygenate content of petroleum samples, but lack the sensitivity to detect levels of oxygenates at ppm level. AC Analytical Controls by PAC developed a range of OxyTracer solutions to check for the presence of oxygenate impurities in naphtha and in other hydrocarbon streams with final boiling points below 250°C. The AC OxyTracer solutions report oxygenates impurity data in only 25-30 minutes.



FAST ANALYSIS IN 25-30 MINUTES COVERS BROAD SCOPE

Full Range of AC OxyTracer solutions meet broad range of analysis needs

CRUDE OIL CHALLENGES

The AC proprietary Deans switching technology maximizes system throughput by venting bulk matrix to vent (or optional 2nd FID channel) without compromise to separation or data quality. Analysis time is 25-30 minutes depending on configuration.

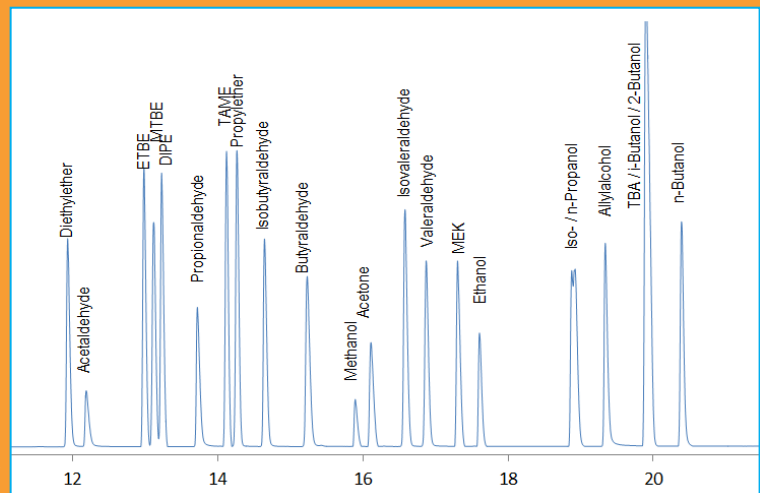


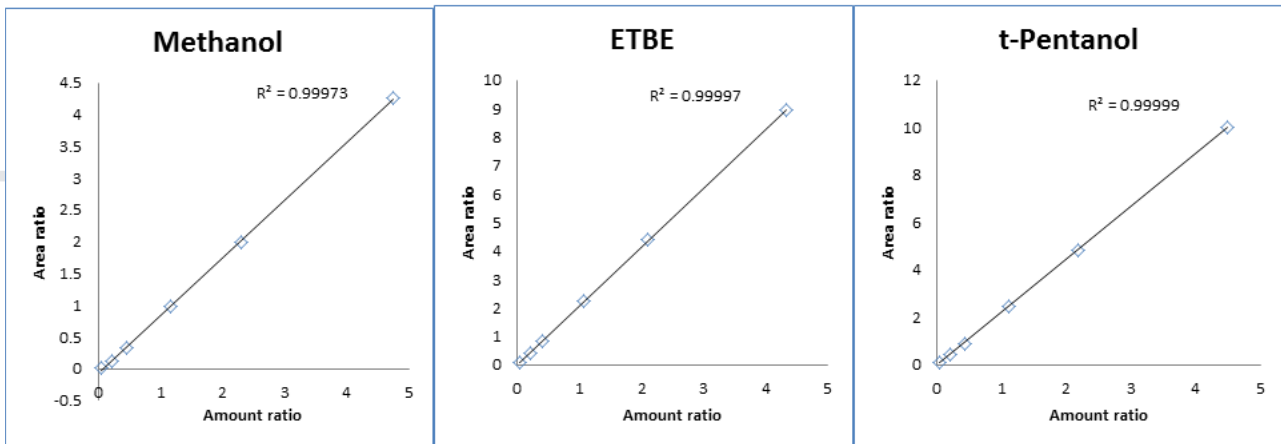
Figure 1.
Chromatogram of an OxyTracer Analysis according to
ASTM D7423 in 25 Minutes



EXCELLENT ANALYSIS PERFORMANCE

Great technology for simplified, fast and precise analysis

- AC proprietary deans technology provides excellent separation of oxygenate traces at sub-ppm level from bulk matrix
- Various configurations with Liquid Sampling Valves (LSV) or Gas Sampling Valves (GSV) accommodate a wide range of samples; pressurized or non pressurized, liquid or gas state
- Lower detection level of 0.1 ppm, Linear response from 0.1 up to 2000 ppm assures performance (both method dependent)
- System can be completely automated from the data handling software, with Automated Liquid Sampler (ALS), LSV and/or GSV inlets. Calibration and reporting is also automated from the software
- A Standard Backpressure Regulator in configurations using LSV systems maintains sample integrity on injection of pressurized sample streams, delivering the best accuracy data

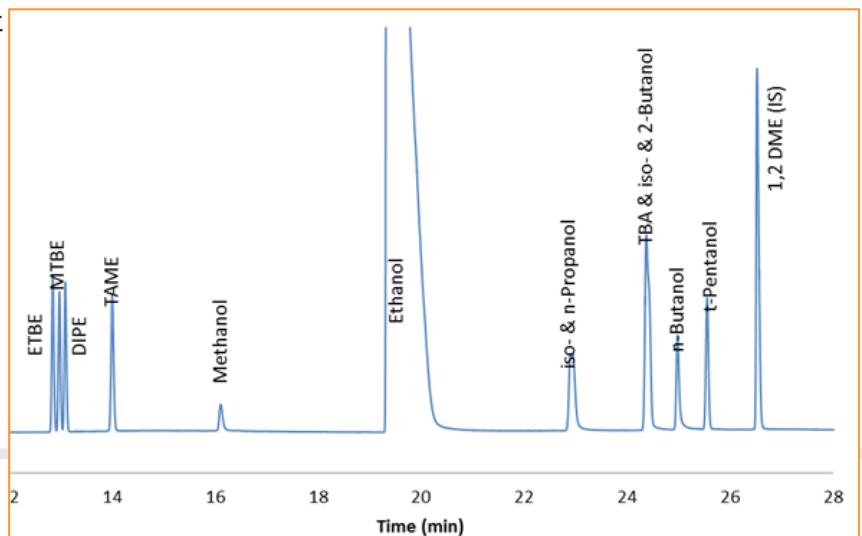


Linearity plot Carbon Methanol, ETBE and t-Pentanol with OxyTracer according ASTM D7754

VERSATILE AC OXYTRACER SOLUTIONS

Flexible configuration options can meet broad range of analysis need and offer the widest possible scope:

- Complies to standard methods: ASTM D7754, D7423, Methanol in E85, AC OxyTracer
- A long list of oxygenated compounds (14 components in AC OxyTracer and D7754, 24 components measured in ASTM D7423)
- A wide sample scope: covers all light streams from C2-C5 streams, LPG, Naphta and gasoline samples, including Gasolines with up to 15% Ethanol
- (Optional) second FID for easiest system tuning
- Additional channel may be added for maximizing use of the analyzer. OxyTracer instrument configuration can be customized for specific analysis requirements



Chromatogram of 30 ppm QC reference material on ASTM D7754 (1% ethanol)



SPECIFICATIONS

Ordering Information			
SYSTEM	GCG4000A/C GCG4020A/C GCG4030A/C GCG4031A/C GCG4032A/C	AC OXYTRACER SYSTEM ON 8890 GC ASTM D7754 OXYTRACER SYSTEM ON 8890 GC ASTM D7423 + D7754 OXYTRACER SYSTEM ON 8890 GC + GSV ASTM D7423 + D7754 OXYTRACER SYSTEM ON 8890 GC + LSV ASTM D7423 + D7754 OXYTRACER SYSTEM ON 8890 GC + GSV + LSV	
KITS	GCG4000.100 GCG4000.200 GCG4020.100 GCG4020.200 GCG4030.100 GCG4031.100 GCG4032.100 GCG4030.200 GCG4031.200 GCG4032.200	KIT, SPARES OXYTRACER ANALYZER ON 8890 KIT, CONSUMABLES OXYTRACER ANALYZER ON 8890 KIT, SPARES ASTM D7754 OXYTRACER ANALYZER ON 8890 KIT, CONSUMABLES ASTM D7754 OXYTRACER ANALYZER ON 8890 KIT, SPARES ASTM D7423 + D7754 OXYTRACER ANALYZER + GSV ON 8890 KIT, SPARES ASTM D7423 + D7754 OXYTRACER ANALYZER + LSV ON 8890 KIT, SPARES ASTM D7423 + D7754 OXYTRACER ANALYZER + GSV + LSV ON 8890 KIT, CONSUMABLES ASTM D7423 + D7754 OXYTRACER ANALYZER + GSV ON 8890 KIT, CONSUMABLES ASTM D7423 + D7754 OXYTRACER ANALYZER + LSV ON 8890 KIT, CONSUMABLES ASTM D7423 + D7754 OXYTRACER ANALYZER + GSV + LSV ON 8890	
QC SAMPLES	20001.409 20001.640 20001.641 20001.642 20001.648 20001.520 20002.031 20002.072 20002.073	Sample Box QC Naphtha (5pcs) Sample Box ASTM D7423-09, Calibration Std. 8 Oxygenates (5pcs) Sample Box ASTM D7754-11 Reference QC, oxygenate free naphtha at -30 ppm (5pcs) Sample Box ASTM D7754-11 Reference QC, oxygenate free naphtha at -600 ppm (5pcs) Sample Box ASTM D7423-09, Calibration Std. 2 Oxygenates (5pcs) Sample Box Cal. 14 Oxygenates (5pcs) Mix sample box ac OxyTracer Mix Sample Box D7754 Mix Sample Box ASTM D7423 + D7754	
Analysis Range			
Sample Scope	<ul style="list-style-type: none"> C2, C3, C4 and C5 gases LPG Naphtha Gasolines 	Components	<ul style="list-style-type: none"> Alcohols: Methanol, Ethanol, n-Propanol, i-Propanol, n-Butanol, 2-Butanol, i-Butanol, t-Butanol, Allyl Alcohol Ethers, MTBE, ETBE, TAME, DIPE, Dimethyl Ether, Diethyl Ether, Propyl Ether Ketones: Acetone, MEK Aldehydes: Acetaldehyde, Propion Aldehyde, Isobutyl Aldehyde, Butylaldehyde, Isovaleraldehyde, Valeraldehyde
Standard Methods			
ASTM D7754, D7423			
	AC OxyTracer	OxyTracer-ASTM D7423-09	OxyTracer-ASTM D7754-11
Scope	LPG, Naphtha and Gasolines (without EtOH) 14 components	LPG's GSV + LSV. 24 components	6 point calibration. 14 components
Matrix	LPG / Gas / Naphtha's / Gasoline (without EtOH)	C2, C3, C4 and C5 hydrocarbon streams	Gasoline / E15
Linear Dynamic Range	0.10 mg/kg to 500 mg/kg	0.50 mg/kg to 100 mg/kg	1 mg/kg to 2000 mg/kg
Repeatability	<1% MTBE, <2% other Oxygenates	According to method	According to method
Final BP	250° C	< 200 °C	< 200 °C
Inlet	TPI	S/SL	S/SL
Valves	Switching valve in GC oven (Deans)	Switching valve in GC oven (Deans) LSV / Heated GSV	Switching valve in GC oven (Deans)
Calibration	External standard	External standard. Average of three injections suggested	Internal standard, 6 point calibration

Continuing research and development may result in specifications or appearance changes at any time

ABOUT PAC

PAC develops advanced instrumentation for lab and process applications based on strong **Analytical Expertise** that ensures **Optimal Performance** for our clients. Our analyzers help our clients meet complex industry challenges by providing a low cost of ownership, safe operation, high performance with fast, accurate, and actionable results, high uptime through reliable instrumentation, and compliance with standard methods.

Our solutions are from industry-leading brands: AC Analytical Controls, Advanced Sensors, Alcor, Antek, Herzog, ISL, Cambridge Viscosity, PSPI, and PetroSpec. We are committed to delivering superior and local customer service worldwide with 16 office locations and a network of over 50 distributors. PAC operates as a unit of Roper Technologies, Inc., a diversified technology company and a constituent of S&P 500, Fortune 1000, and Russell 1000 indices.

HEADQUARTERS

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