Certificate of Compliance

This document certifies that the device mentioned conforms to the standards and practices of Activated Research Company.

Device: Polyarc™ reactor v2.0
Configuration: 40V Capillary
Polyarc™ enclosure serial number: xxxxxxxx
Polyarc™ reactor serial number: xxxxxxxxx
Heater assembly serial number: xxxx xx xx xx

Date: July 10, 2018
Technician Initials: JV

Analysis: Final QC
Sample: Polar Iso Test Mixture
Column: HP-5 (30m x 0.32mm x 0.25 µm)
Carrier Gas: He-constant flow 2.6 sccm (11.3 psi at 40°C)
Temp. Program: 40°C (hold 5 min.) to 125°C at 10°C/min to 250°C at 25°C/min (hold 2 min.)
Injector: Split/splitless; 250°C; 1 µL injection with 10:1 split
Detector: FID; 315°C; 1.5 sccm H_2, 350 sccm air, 20 sccm He
Aux Heat: 293°C setpoint

Certified Values:

Average Measurement Error: 1.6% (specification: < 3.0%)
Estimated Standard Deviation of Measurement Error: 0.55%

Table:

Compound	Peak	Retention (min)	Area (pA·s)	Gravimetric Conc. (µg/mL)	Polyarc™ Conc. (µg/mL)
Aniline	1	9.306	279.2	252	247
2-Chlorophenol	2	9.523	202.2	251	247
1-Octanol	3	11.133	267.5	250	249
2-Nonanone	4	11.497	275.4	250	248
2-Dodecanol	5	15.355	282.8	251	251
Methyl Laurate	6	16.172	270.6	251	255
n-Heptadecane	7	17.098	319.6	251	258
n-Nonadecane	8	17.976	318.2	251	257

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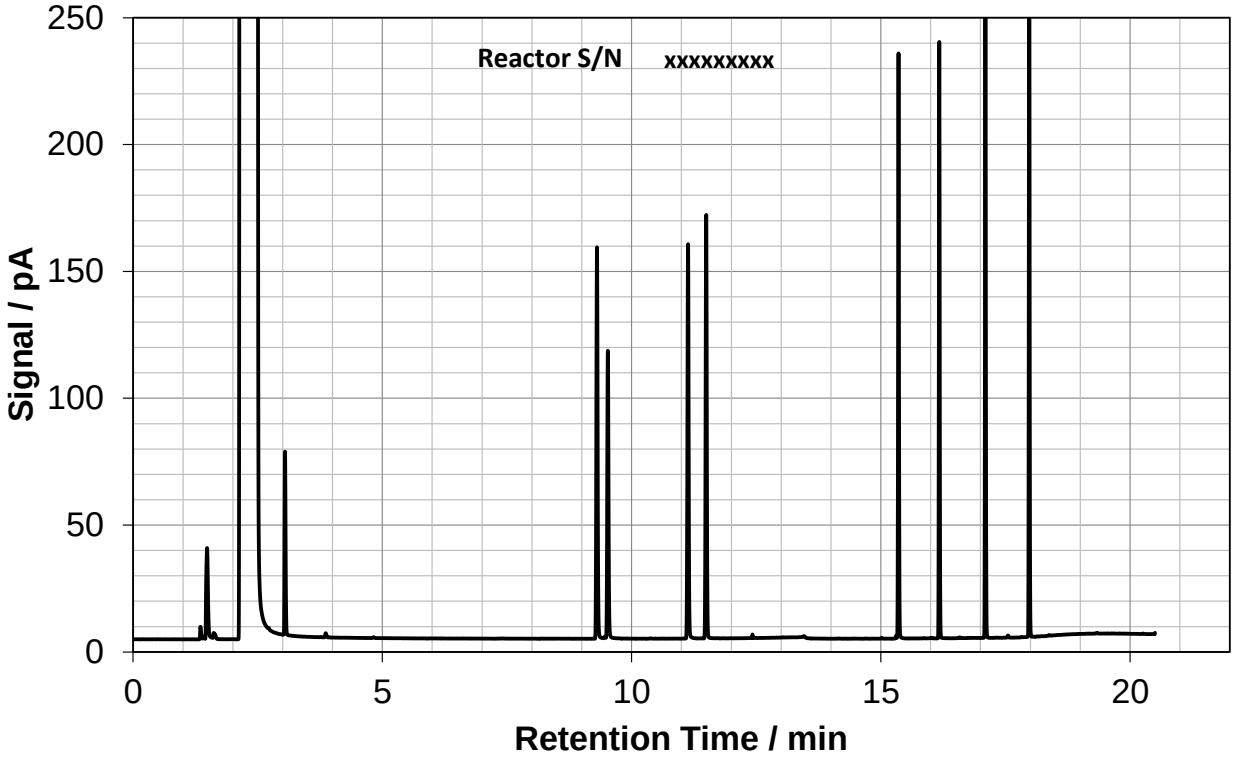
Chromatogram:



For optimal results in your lab, please adjust conditions for your specific setup, instrument, column, and hardware. For new setups, treat the catalyst and GC per the installation manual.

Calculations:

Since every compound is converted to methane, the response of the FID is the same for all molecules on a per carbon basis. Thus, the response factors are equivalent to unity,

$$RF = 1 = \frac{area / carbon\ concentration}{area_{IS} / carbon\ concentration_{IS}}$$

where area is the integrated peak area (detector response), carbon concentration is, for example, moles of carbon injected, and 'IS' denotes the internal standard. The concentration of an analyte can then be calculated as,

$$carbon\ concentration = \frac{area}{area_{IS} / carbon\ concentration_{IS}}$$

Please see our website for more information and tools.

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