The quantitative measurement of water by GC using ionic liquid capillary columns

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Watercol™ Series

Watercol series of ionic liquid capillary GC columns are characterized by their ability to produce a sharp peak shape for water and other small polar analytes. The water peak shape is sharp enough so that:

Water can be integrated and quantified
Water does not interfere chromatographically with many other small polar analytes

Three different chemistries available:

Watercol 1460, Watercol 1900, and Watercol 1910
Watercol Series

Watercol 1460

Watercol 1900

Watercol 1910
Watercol Selectivity Comparison

Watercol 1460

Watercol 1900

Watercol 1910
Polarity Comparison - Water as the Injection Solvent

Watercol 1460

Watercol 1900

Watercol 1910
Column Durability - Repeat Water Injections on Watercol 1460

1\textsuperscript{st} Analysis

50\textsuperscript{th} Analysis

100\textsuperscript{th} Analysis
Water Calibration Curve (0.05-1%) on Watercol 1460

\[ y = 66.47x - 1.1565 \]
\[ R^2 = 0.9961 \]
Water Standard (0.25% in Ethanol) on Watercol 1460

FID

TCD
Water Calibration Curve (0.01-0.5%) on Watercol 1910

\[ y = 31.029x \]

\[ R^2 = 0.9923 \]
Water Standards on Watercol 1910

0.05% Standard

0.5% Standard
Unleaded Gasoline Spiked with Water – Watercol 1910

1. Ethanol
2. Water
60-Component Solvent Mix on Watercol 1910

FID

TCD
Tequila on Watercol 1910

1. Ethyl acetate
2. Ethanol
3. n-Propanol
4. Isobutanol
5. Active amyl alcohol
6. Isoamyl alcohol
7. Water
Summary

• Something totally new and completely different in the world of GC phases.

• Have the opportunity to impact current GC and GC-MS practices along several paths.

**Watercol 1460**  **Watercol 1900**  **Watercol 1910**

Ionic liquid GC phases based on new selective combinations of cations and anions have been tailored to produce capillary columns that can be used for the quantitative evaluation of water in various samples. Three new selectivities have been demonstrated, offering the ability to resolve water and other organic compounds in a wide variety of sample types. This makes GC a viable approach for the analysis of water; giving laboratories the option to avoid the use of techniques which produce chemical waste and/or are more expensive to perform.

Watercol is a trademark of Sigma-Aldrich Co LLC.
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Our customers worldwide
Thank You