O·I·Analytical

# Method Abstract

**Summary:**

Phenol is distilled on-line from an acidic solution at 160°C. Phenol reacts with 4-aminoantipyrine (4-AAP) and alkaline ferricyanide (FeCN) to form a red complex. The absorbance is measured at 505 nm.

**Interferences:**

Eliminate interferences from sulfur compounds by acidifying the sample to a pH less than 4 with phosphoric acid, aerating briefly by stirring, and adding copper sulfate. Remove oxidizing agents such as chlorine immediately after sampling by adding an excess of ferrous ammonium sulfate. Oxidizing agents can be detected by the liberation of iodine upon acidification in the presence of potassium iodide. If chlorine is not removed, the phenolic compounds may be partially oxidized, and the results may be low. Use glass tubes or acid-washed plastic cups for the samples and calibrants to eliminate background contamination from plastic tubes and sample containers.

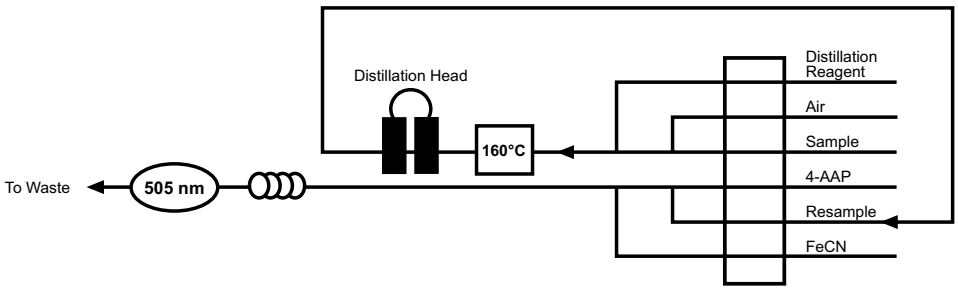
**Performance Specifications:**

| | |
|---|---|
| Range: | 5.0–500 µg/L |
| Throughput: | 33 samples/hour |
| Precision: | |
| 20 µg/L | <4% RSD |
| 100 µg/L | <2% RSD |
| 400 µg/L | <3% RSD |
| Method Detection Limit (MDL): | 1.0 µg/L |

**Chemicals:**

4-Aminoantipyrine, $C_{11}H_{13}N_3O$
Boric Acid, $H_3BO_4$
Brij®-35, 30% w/v
(OI Analytical Part #A21-0110-33)
Ferrous Ammonium Sulfate,
$(NH_4)_2SO_4FeSO_4 \cdot 6H_2O$
Phenol, $C_6H_5OH$
Phosphoric Acid, concentrated, 85%, $H_3PO_4$
Potassium Chloride, KCl
Potassium Ferricyanide, $K_3Fe(CN)_6$
Sodium Hydroxide, NaOH
Sulfuric Acid, concentrated, $H_2SO_4$

**Basic Flow Diagram:**




**Selected References:**

*Methods for Chemical Analysis of Water and Wastewater;* EPA-600/4-79-020; U.S. Environmental Protection Agency, Office of Research and Development, Environmental Monitoring and Support Laboratory: Cincinnati, OH, 1984; Method 420.2.





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