

Low Range Phenol Analysis

0.05 to 5.0 mg/L Phenol using TNT868 (Utilizing 5-cm sample cuvette) USEPA 4-Aminoantipyrine Method (USEPA method 420.1 for wastewater)

Note: Procedure for DR3900 and DR6000; this procedure can't be run on the DR1900

General:

The standard concentration ranges for the TNT868 phenol reagent is 5 to 40 mg/L and 20 to 150 mg/L. For some applications and sample types, lower phenol concentration ranges are needed. By following this application note, the analyst can get down to 50 µg/L (part per billion). If the samples need to be distilled, follow this [application note](#) (LIT2224). For more information on this application, see [Method 10266](#) (DOC316.53.01496).

Before Starting:

Collect the following:

- 1) TNT868 phenol vial reagent set
- 2) Pipets, 0.2 – 1.0 mL and 1.0 – 5 mL, with corresponding pipet tips
- 3) 5-cm semi micro cuvette (PN LZP341)
- 4) Adjust the sample to approximately a pH of 4

Procedure:

- 1) Select Program (see Instrument Setup at the end of the note for programming instructions)
- 2) Pipet **2.0 mL** of **Sample** into the test vial
- 3) Tighten the cap on the vial and invert the vial 2-3 times
- 4) Pipet **0.4 mL** of **Solution A** to the test vial
- 5) Put the orange **DosiCap B** on the vial
- 6) Tighten the cap on the vial and invert the vial 2-3 times
- 7) Allow the sample to react for 1 minute with the reagents
- 8) Pour the contents of the test vial into the 5-cm micro cuvette
- 9) In another 5-cm micro cuvette, pour the un-reacted sample into the cuvette, and place the cuvette into the photometer and press 'zero' to blank the sample
- 10) Place the reacted sample cuvette into the photometer and press 'read'
- 11) Results will show in mg/L Phenol

Instrument Setup:**Program Setup for TNT868 Method for the Analysis for LR Phenol**

Follow the Display prompts and Enter commands for the LR Phenol method (0.05 to 5.0 mg/L):

Step	Display Shows	Enter	Select
1	Main menu	User Programs	
2	User Programs	Program Options	
3	Program Options	New	
4	Program Number	Select a Program Number	OK
5	Program Name?	Phenol	Next
6	Program Type	Single Wavelength	Next
7	Units	mg/L	Next
8	Wavelength (nm)	510	Next
9	Concentration Resolution	0.01	Next
10	Chemical Form?	Phenol	Next
11	Calibration	Enter Formula	Next
12	Enter Formula	a = - 0.158, b = 4.0195	OK>Done

Exit and select the Program number assigned for LR Phenol from the User Programs Menu to run the test.

Summary of Method:

When an oxidizing agent is in the sample, ortho- and meta-substituted phenols form colored complexes with 4-aminoantipyrine (AAP). The measurement wavelength is 510 nm.

Quality Assurance:**Precision Study**

Standard	Average	Standard Deviation	% RSD
2.0 mg/L	1.96 mg/L	0.008	0.42%

MDL Study

Standard	Average	Standard Deviation	% RSD
0.04 mg/L	0.039 mg/L	0.0074	0.023 mg/L

Removal of Interferences:

Filter the sample if it contains suspended particles or is turbid. For more information on interfering compounds see [Method 10266](#).

Sample and Reagent Conditions:

Sample pH = 2-10, Sample and reagent temperature = 20-25 °C.

Store reagents at 2-8°C.

HACH COMPANY World Headquarters: Loveland, Colorado USA

United States:

800-227-4224 tel

970-669-2932 fax

orders@hach.com

Outside United States:

970-669-3050 tel

970-461-3939 fax

int@hach.com

hach.com

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