

## Filming Amine (aliphatic amine) – Rose Bengal Method

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### Applications and Industries

Boiler water

### References

K Stiller, T Wittig, M Urschey. "The Analysis of Film-Forming Amines - Methods, Possibilities, Limits and Recommendations" (2010)

### Chemistry

When samples are buffered under acidic conditions (pH 2.3 - 3.3), filming amines such as Octadecylamine (ODA) and Oleylamine (OLA) form a magenta-colored complex with rose bengal (4,5,6,7-tetrachloro-2',4',5',7'-tetraiodofluorescein disodium salt) in direct proportion to the concentration of filming amines in the sample. Results are expressed as ppm (mg/L) ODA or OLA.

### Available Analysis Systems

Visual colorimetric: CHEMets®

Instrumental colorimetric: Vacu-vials®

### Storage Requirements

Products should be stored in the dark and at room temperature.

### Shelf Life

When stored in the dark and at room temperature:

Visual colorimetric:

CHEMets refill, color comparator, Acidifier Solution:  
at least 1 year

Instrumental colorimetric:

Vacu-vials kit: at least 1 year

### Accuracy Statement

Statements of accuracy are based on laboratory tests performed under ideal testing conditions using standards of known concentration prepared in deionized water.

CHEMets kit:  $\pm 1$  color standard increment

Vacu-vials kit:

- $\leq 0.25$  ppm at 0 ppm
- $\pm 0.15$  ppm at 0.50 ppm
- $\pm 0.30$  ppm at 1.50 ppm
- $\pm 0.45$  ppm at 4.50 ppm

### Interference Information

- Erroneous results will be obtained with samples that exceed the buffering capacity of the reagent. High total alkalinity (above approximately 1500 ppm  $\text{CaCO}_3$ ) causes a positive interference.
- Quaternary ammonium compounds interfere positively.
- Neutralizing amines (e.g. morpholine, cyclohexylamine, 2-aminoethanol, dimethylamino-2-propanol) at up to approximately 25 ppm do not interfere significantly.
- Chloride up to approximately 2000 ppm can be tolerated. At higher concentrations, chloride causes a negative bias.
- Ferrous iron up to 30 ppm and ferric iron up to 3 ppm are tolerated. Higher concentrations may cause a low bias.
- Copper up to 2 ppm does not interfere, but interferes negatively at higher concentrations.
- EDTA up to at least 100 ppm does not interfere.
- Molybdate above 0.25 ppm may interfere negatively.
- Phosphate concentrations above approximately 100 ppm causes negative interference.
- Phosphonate above 1.5 ppm is a negative interference.
- Polyphosphate above 100 ppb is a negative interference.
- Polyacrylic acid polymer up to 1500 ppm is tolerated.
- Silica up to 10 ppm is tolerated but at higher concentrations causes a negative interference.
- Sulfate above 0.5 ppm interferes, causing a negative bias.
- Sulfite interferes negatively.
- Hardness up to 200 ppm as  $\text{CaCO}_3$  is tolerated.

### Sampling Information

Sampling technique is critical. Samples should be cooled to prevent flashing. Sample lines should be flushed thoroughly before sampling and sampling points should be representative of the system. Filming amines will attach to the surfaces of sample containers. Rinse the sample cup thoroughly with distilled water between uses. Washing the cup after every test is not essential; however, periodic cleaning with standard laboratory detergent or routine replacement of the sample cup is recommended. Sample directly into the clean sample cup. Sample dilutions, if necessary, should be performed in the sample cup to prevent loss of the amine during transfer from an alternate dilution vessel.

### Safety Information

Safety Data Sheets (SDS) are available upon request and at [www.chemetrics.com](http://www.chemetrics.com). Read SDS before using these products. Breaking the tip of an ampoule in air rather than water may cause the glass ampoule to shatter. Wear safety glasses and protective gloves.