

## **Alternative Procedures for Method 8 when Ammonia is Present**

### **Sampling Procedures**

SO<sub>x</sub> must be determined using Method 8, utilizing the sampling procedures specified in Section 16.3.1 of Method 6, which are as follows:

“The probe shall be maintained at 275 °C (527 °F) and equipped with a high-efficiency in-stack filter (glass fiber) to remove particulate matter. The filter material shall be unreactive to SO<sub>2</sub>. Whatman 934AH (formerly Reeve Angel 934AH) filters treated as described in Reference 10 in Section 17.0 of Method 5 is an example of a filter that has been shown to work. Where alkaline particulate matter and condensed moisture are present in the gas stream, the filter shall be heated above the moisture dew point but below 225 °C (437 °F).”

### **Procedure for analysis of Container #1**

Since the recovery of the sample is unchanged, the volume of sample in Container #1 should be 250 ml.

**First titration:** Pipette a 20 ml aliquot of the Container #1 solution into a 250 ml Erlenmeyer flask, add 0.5 ml of 0.1N HCl, 80 ml of 80% IPA, and 2-4 drops of thorin indicator. Titrate to a pink endpoint using 0.0100 N barium perchlorate. Repeat and average the titration volumes that agree within 1% or 0.2 ml, whichever is larger. Use this volume for  $V_t$  and use 20 ml for  $V_a$  in equation 8-1 to calculate the sulfuric acid mist (including SO<sub>3</sub>) concentration.

**Second titration:** To determine the total sulfate (and SO<sub>2</sub> by difference), pipette a 20 ml aliquot from Container #1 into a 250 ml Erlenmeyer flask, add 0.5 ml of 0.1N HCl, 5 ml of 3% H<sub>2</sub>O<sub>2</sub>, 80 ml of 80% IPA, and 2-4 drops of thorin indicator. Titrate to a pink endpoint using 0.0100 N barium perchlorate. Repeat and average the titration volumes that agree within 1% or 0.2 ml, whichever is larger. Use this volume for  $V_t$  and use 20 ml for  $V_a$  in equation 8-1 to calculate the total sulfate concentration. Subtract the sulfuric acid mist concentration from the total sulfate concentration to determine the SO<sub>2</sub> concentration in Container #1.

### **Procedure for analysis of Container #2**

The SO<sub>2</sub> analysis of Container #2 is analyzed per Section 11.2.2 of Method 8 (including replicate titrations), except add 0.5 ml of 0.1N HCl prior to adding the indicator.

The SO<sub>2</sub> concentration determined from Container # 1 is summed with the SO<sub>2</sub> concentration from Container #2 to determine the total SO<sub>2</sub> concentration.