

7. Add 5 ml of the ammonium molybdate solution and mix well.
8. Add 0.5 ml of the dilute  $\text{SnCl}_2$  solution and mix.
9. Make to a volume of 50 ml with deionized water and mix. Let stand 10 minutes before reading the percent transmission in a colorimeter at 650  $m\mu$  wave length.

#### Preparation of the Standard Curve

1. Add 0, 1, 2, 4, 6, and 8 ml of a 5 ppm P standard solution to 50 ml volumetric flasks or tubes.
2. Add 5 ml  $\text{NH}_4\text{Ac}$ , pH 4.8 to each flask.
3. Proceed to develop color as described above in steps 6 through 9.

#### BRAY P<sub>1</sub> TEST<sup>a</sup>

##### Reagents

1. Ammonium fluoride stock solution (IN): Dilute 37 gm ammonium fluoride,  $\text{NH}_4\text{F}$ , to 1,000 ml with deionized water. Keep in polyethylene bottle.
2. Approximately 0.5 N HCl: Dilute 41 ml of concentrated HCl to 1,000 ml with deionized water.
3. P<sub>1</sub> extracting solution (0.03 N  $\text{NH}_4\text{F}$ , 0.025 N HCl): Dilute 540 ml of 1 N  $\text{NH}_4\text{F}$  and 900 ml of 0.5N HCl to 18 liters with deionized water.
4. Ammonium molybdate—HCl reagent, boric acid saturated: Add slowly with stirring a solution of 50 gms of ammonium molybdate in 425 ml of distilled water to a cold solution of 80 ml distilled water in 850 ml of concentrated HCl. Add 51 grams of boric acid to the mixture.
5. Amino-naphthol-sulfonic acid reagent:  
2.5 gm 1-amino-2-naphthol-4-sulfonic acid.  
5.0 gm sodium sulfite ( $\text{Na}_2\text{SO}_3$ ).  
146.25 gm sodium bisulfite (Meta,  $\text{Na}_2\text{S}_2\text{O}_5$ ).  
Mix these dry materials thoroughly and grind the mixture to a fine powder with a mortar and pestle. The dry powder will keep indefinitely.  
Dissolve 8.0 grams of the powder mixture in 50 ml of warm distilled water. If possible, allow this solution to stand over-

<sup>a</sup> Adapted from C. Y. Arnold and L. T. Kurtz, Photometer method for determining available phosphorus in soils, Ill. Agr. Exp. Sta., Dept. of Agronomy, Mimeo AG 1306, 1946 (4).