

## 342 PVM PHOSPHOROUS (H)

2 - 50 ppm \ 120 Tests

*Phosphovanadomolybdic Acid*

- Fill 16mmØ tube with a fully extended syringe (3.2m<sup>l</sup>) of sample
- Add 3 drops of **PVM-1** and mix
- Add 3 drops of **PVM-2** and mix
- Set aside for 3'
- Switch on the Photometer 660
- Enter  and press  for 342 PVM
- Set filter as indicated to 436nm and press
- Insert tube with plain water and press
- Insert tube with prepared sample and press
- Record as Phosphorous ppm (mg/l)    1 ppm P ≡ 3.1ppm PO<sub>4</sub>

The determination as yellow vanadomolybdate represents a robust method for the determination of phosphorous in sewage. Concordant with the large concentration-range of interest, three tests are available on the basis of different colour reactions for phosphorous at high (**342**), medium (**340**) and low (**341**) levels. *Misson* originally introduced this reaction, that dispenses with the second processing stage of the other two for the analysis of steel in 1908. The yellow reaction colours are due to a substitution of Mo<sup>6+</sup> by V<sup>5+</sup> in which the extinction maximum of the visually very weakly coloured phosphomolybdic acid is shifted from the UV into the visible range of the spectrum. The existence of mono-, di- und tri-substituted PVM-acids from H<sub>4</sub>[P(VMo<sub>11</sub>O<sub>40</sub>)] to H<sub>6</sub>[P(V<sub>3</sub>Mo<sub>9</sub>O<sub>40</sub>)] has been reported, of which the mono-form is likely to be present here. To avoid the the formation and precipitation of yellow phosphorous-free deposits typical of the combined "VM-Reagent" on standing, V- and Mo-components have been separated as reagents PVM-1 and PVM-2. Only orthophosphate PO<sub>4</sub><sup>3-</sup> is reactive, this being the predomin-ant form in water. Polyphosphates are largely decomposed before reaching the sewage plant, in so far as they are still used in detergent preparations. Reagent sets **460** N-P-Dissolution and **462** Total-P Dissolution serve to mineralise condensed and organic phosphates to othophosphate. In most cases a 120°/30' treatment in a thermoreactor with **460** will be sufficient, although the N-determination will then require a tube test.

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