

Size fractionated PARTICULATE PHOSPHATE (Part-P)

*Serial filtration followed by persulfate mineralization followed by manual spectrophotometric
DIP measurements*

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Particulate phosphate (Part-P) was measured by standard DIP using the S&P procedure, following high temperature persulfate wet-oxidation at 120 °C and 1 bar (Pujo-Pay & Raimbault 1994). 1.2-liter samples were filtrated through polycarbonate filters (0.2, 0.6, and 2 µm; 47 mm) using Sartorius systems (see photo below) and very low depression (drop by drop). The 0.2 and 0.6 µm filters in the lower Sartorius system were separated by a nylon separator (NY8H04700, Millipore). Immediately after filtration, the filters (and the separator for the 0.2 µm filter) were put in 20 mL Teflon bottles. 2.5 mL of reagent (see below) was added and the mineralization processed (autoclave 30 mn, 1 bar). After cooling down to ambient temperature, DIP was measured in the same bottles as for mineralization using the S&P procedure.

. Mineralization reagent (500 mL): 140 mL of NaOH 1.5M was added to 30g of K₂S₂O₈ and 15g of H₃BO₃ in a low volume distribution (0-5 mL) bottle through constant agitation and warming (temperature < 50°). When the reagents were dissolved, 360 mL DW was added.

Remark: All reagents were prepared with pro analysis Merck™ Reagent Grade chemicals and with Milli-Q™ high purity demineralised water (DW). All utensils were washed with 10% hydrochloric acid and rinsed three times with DW. Separators were previously treated as samples (persulfate mineralization) to lower blank values.

References:

Pujo-Pay M, Raimbault P (1994) Improvement of the wet-oxidation procedure for simultaneous determination of particulate organic nitrogen and phosphorus collected on filters. *Mar Ecol Prog Ser* 105: 203-207.



System for size fractionated particulate phosphate measurements