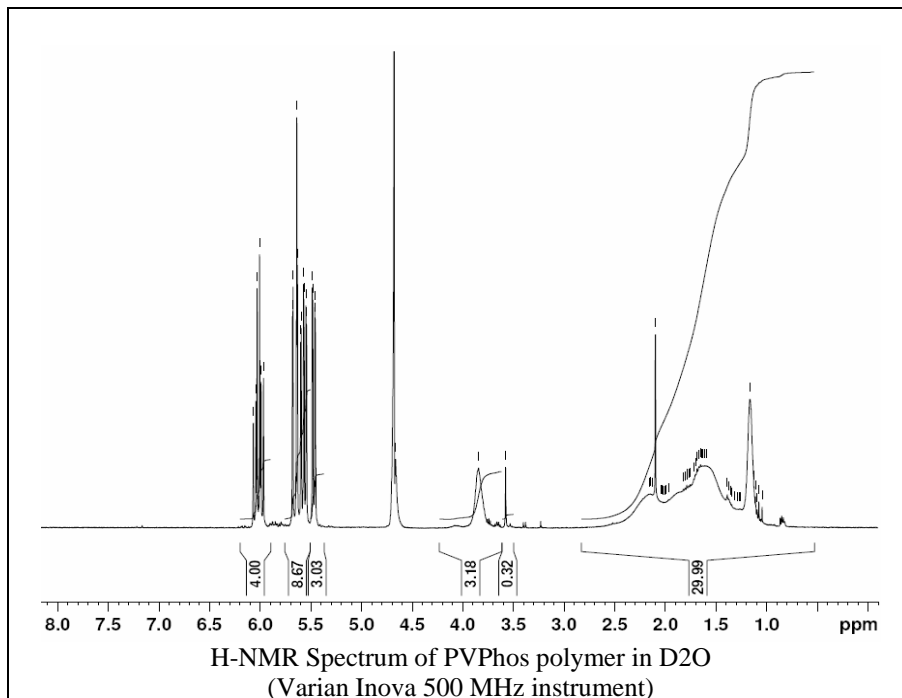


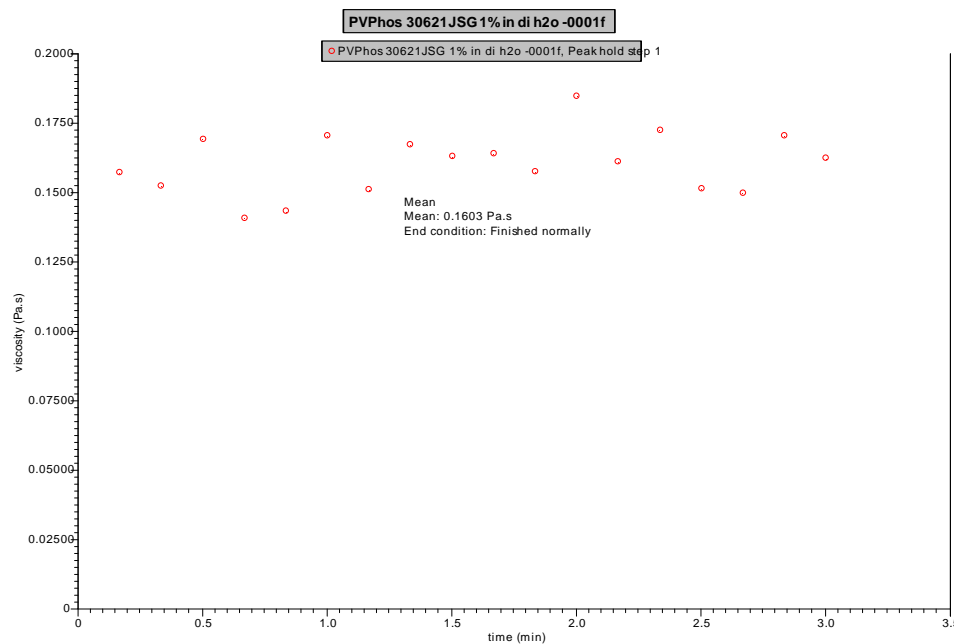
No. A003 Certificate of Analysis

Product Name: Poly(vinyl phosphonate) sodium salt (Viscosity 50-250 cP 1% in water at 60RPM) (Lot#: 30621JSG)REV:A

- H-NMR analysis of PVPhos polymer



- Viscosity analysis of PVPhos polymer



Viscosity 1% w/v solution at 25C	160.3 cP
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Analysis Method: 1% solution in distilled water placed in AR550 rheometer with 2° 60mm plate temperature held at 25C rotated at 60RPM 6 measurements made every 10 seconds over the course of 3 minutes. Listed value is average ± standard deviation.

- Structure of PVPhos polymer

