

Chromatography

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The choice of the optimal methodology for the assessment of the molecular weight distribution of polymethylene naphthalene sulfonates

Petrovich Olga Mikhailovna, Vovk A and Zamuruev O
Polyplast Novomoskovsk Ltd, Russia

The technical polymethylene naphthalene sulfonates (TPNS) are used in different industries. TPNS are thought to be mixture of polymethylene naphthalene sulfonates with wide molecular weight distribution (MWD) parameters and different span of the average molecular weights. MWD and average molecular weights determine the field of application of this product. For evaluation of TPNS MWD characteristics, two chromatographic methods are used gel permeation (GP) and thin layer (TL) chromatography as well as extraction-precipitation (EP) procedure. All these methods have drawbacks. For EP, the drawbacks are the duration of analysis; low reproducibility and low selectivity of fractionating and; for GP and TL chromatography, the drawbacks are the poor informativity because of the insufficient separation and complexity of the quantitative assessment of obtained data. We believe that reversed phase high performance liquid chromatography (RP-HPLC) with spectrophotometric detector is an interesting and advanced method. The systematic researches of TPNS MWD by means of this method are very rare. The objective of this research is to develop the methodology of HPLC and to compare it with known methods of the assessment of TPNS MWD. The capabilities and advantages of the methodology of HPLC are demonstrated on the TPNS samples for different industries. The high reproducibility and informativity of the method are revealed compared to exist methods. New method allows to separate, identify and quantify the full fraction makeup of TPNS. The characteristics of MWD are estimated reliably.

Biography

Petrovich Olga Mikhailovna is a Chemical Engineer at R & D Centre, Polyplast Novomoskovsk Ltd, Russia.

petrovich_om@polyplast-nm.ru

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