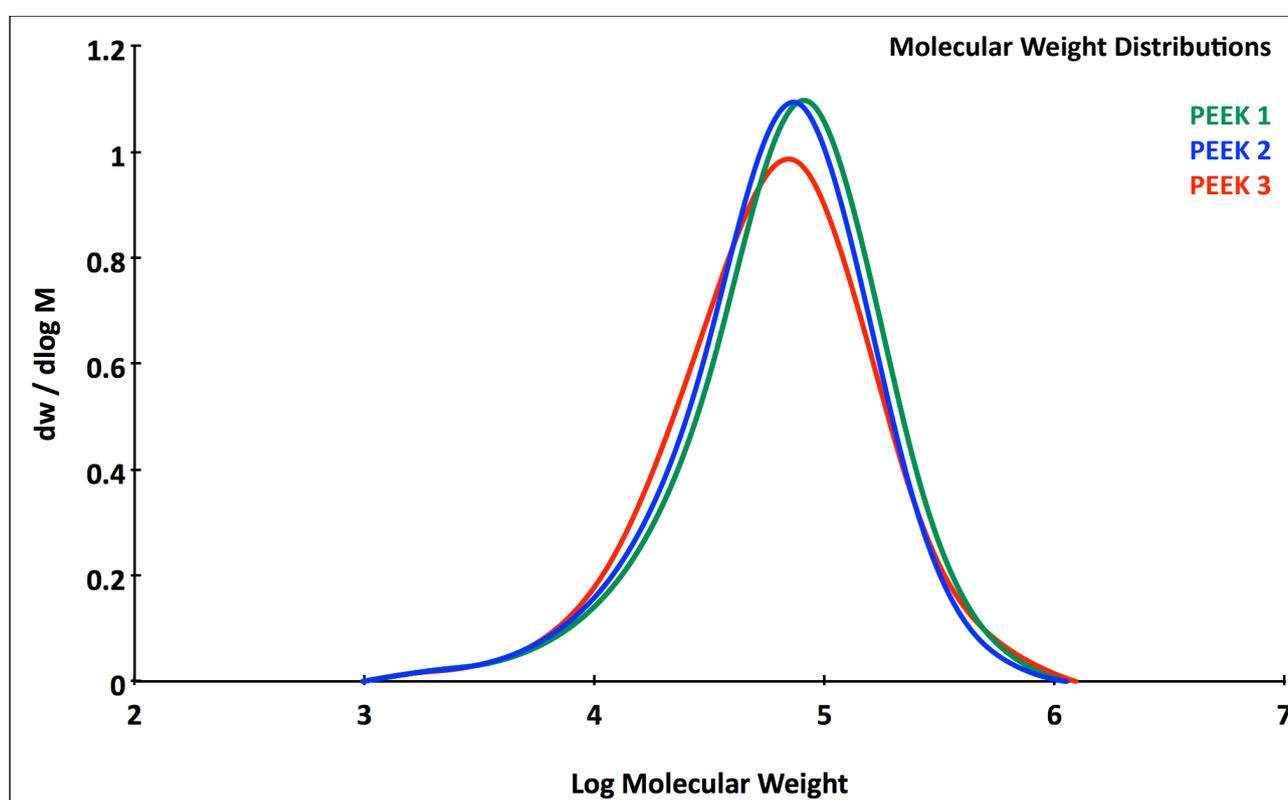


Molecular Weight Distribution Of PEEK Using Conventional High Temperature Gel Permeation Chromatography

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Columns: Agilent PLgel guard plus 2 x PLgel Mixed-B 300 x 7.5 mm, 10 μ m
Eluent: 50:50 (w/w) 1,2,4-trichlorobenzene : phenol with antioxidant
Flow-rate: 0.8 mL / minute (nominal)
Temperature: 115°C (nominal)
Detector: Differential refractive index



Plots for duplicate runs of three samples - results expressed as 'polystyrene equivalent' molecular weights.

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Discussion

Poly(oxy-1,4-phenyleneoxy-1,4-phenylenecarbonyl-1,4-phenylene) (PEEK) is a semi-crystalline engineering thermoplastic polymer with excellent mechanical, thermal, and chemical resistance properties. This polymer type is used in medical, aerospace, automotive, electronics, and other industries where critical or specialist applications demand a high performance polymer. Many producers of PEEK make polymer available in different molecular weight ranges. Selection of the correct grade is likely to be important to meet performance requirements of specific applications.

It should be appreciated that PEEK and similar high performance polymers may present challenges during processing, especially for those that have not previously handled PEEK. Following the polymer manufacturers guidance is highly recommended, however, in situations where additional insight is required, molecular weight characterisation by GPC, comparing processed and raw polymer, can provide assistance in understanding the fundamental issues involved.

In a medical implant application or other ‘mission critical’ scenarios you will require confirmation of consistent product. Characterisation of polymer molecular weight is an important test to establish similarity in batch product.

In addition to PEEK, the Smithers Rapra GPC methodology will also characterise similar polyketones within the polyaryletherketone (PAEK) polymer family, including PEK, PEKK, PEKEKK and others. An additional step in sample preparation may be required for some polymers in this group.