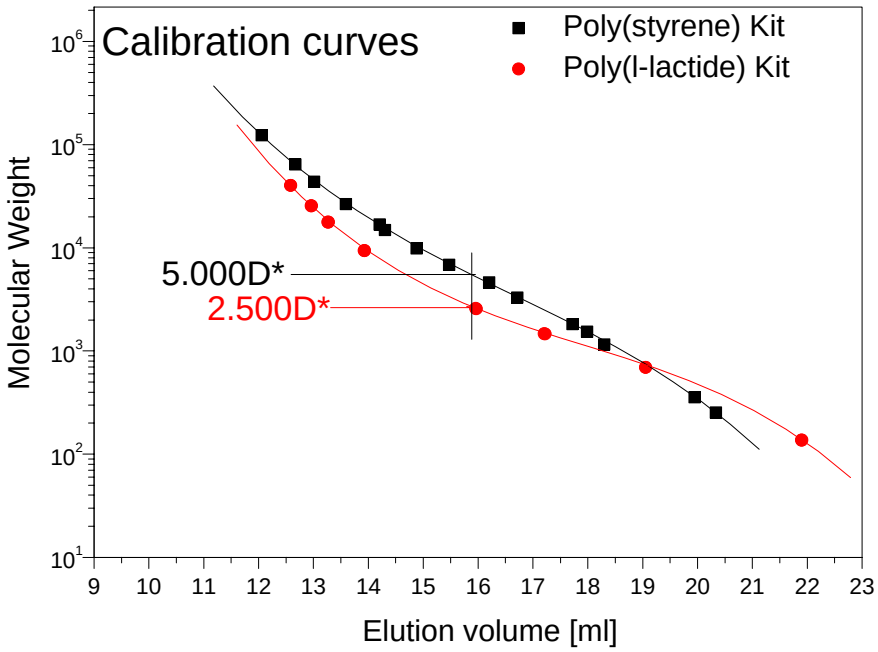
Poly(l-lactide) Standards



Comparison of a Poly(lactide) calibrated with Poly(styrene) black curve* and with Poly(l-lactide) red curve*. Up to 100% difference to the actual molar mass is possible

Application
Poly(lactides) recently became very popular as a biodegradable polymer. The major applications are in medical technology to develop absorbable implants or in packing technology to produce ecologically friendly packaging. Poly(lactides) are also used in drug delivery systems.

Up to now no special poly(lactide) standards have been available. To obtain exact molecular weights complex and time-consuming analyses using molar mass sensitive detectors must be accomplished. When using relative calibrations with chemically different narrow distributed standards, considerable differences to the true molecular weights can be observed.

Comparative calibration curves for poly(styrene) - black curve - and poly(l-lactide) - red curve - show differences to the actual molar masses up to 100%.

Calibration kit:
The new PSS Poly(l-lactid) kit with reference materials between 100 and 45.000 g/mol set the pattern for the molar mass determination for all types of poly(lactides).

Now it is possible to obtain true molar masses reliably with relatively small instrumental effort. The polydispersity of all standard is significantly less than 1,40.
According to DIN/EN GPC/SEC regulation the calibration kit contains eight standards, all carefully analyzed and delivered with individual certificates.
Additionally this kit is availabke with a broad high molecular weight poly(l-lactide) standard, which allows a calibration up to1 Million D.

Certified reference materials:
For the reliable determination of higher molar masses two certified reference materials are available verified through round robin tests. Both are broad standards with molar masses of 77.000 and 220.000 g/mol.

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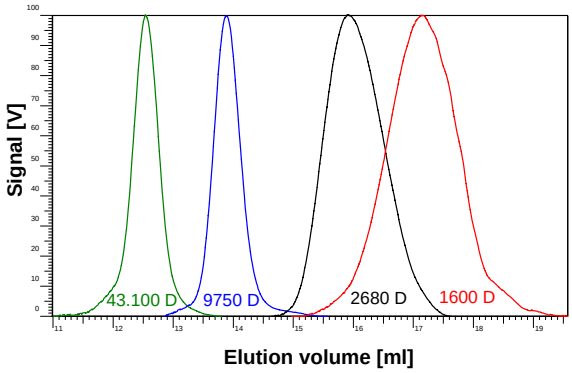
Example



Overlay of four Poly(l-lactid) standards:
Conditions: columns: PSS PFG, 7 µm, 8 x 300 mm, 100Å +1000Å; eluent: TFE with 10g/l TFAc-Ka; concentration: 1g/l; injection volume: 20-100µl; flow rate: 1 ml/min; detection: RI, UV (230nm)

Measurements

Molar mass determination of polylactides can be achieved with PSS PFG columns. Typical eluents are trifluoroethanol, but also chloroform and tetrahydrofurane can be used. When using THF or chlorofrom a much higher sample concentration is required due to the low optical contrast between sample and solvent. The standard detector for this application is the refractive index detector.

Order information

Standards:

Calibration kit:

PSS-plakitl	Poly(l-lactide)-Kit : 8 x 0,200 g, PDI < 1,40 Molar masses: 150D ±10%, 700D±10%, 1.500D±10%, 2.500D±10%, 10.000D±10%, 20.000D ±10%, 28.000D ±10%, 40.000D ±10%
PSS-plakith	Poly(l-lactide)-Kit : 8 x 0,200 g, PDI < 1,40 + 1 x 0,500g (PDI > 1,50) Molar masses: 150D ±10%, 700D±10%, 1.500D±10%, 2.500D±10%, 10.000D±10%, 20.000D ±10%, 28.000D ±10%, 40.000D ±10%; 200.000D±10%

Certified Reference Material:

PSS-cpl80k	Poly(d,l-lactide) broad, Mw 77.450 g/Mol, PDI = 1,68, certified reference material
PSS-cpl200k	Poly(d,l-lactide) broad, Mw 225.200 g/Mol, PDI = 1,98, certified reference material

Columns for Poly(lactide) determination:

pfa0830071e2	PFG, 7 µm, analytical GPC column, 8 x 300 mm, Porosity: 100Å
pfa0830071e3	PFG, 7 µm, analytical GPC column, 8 x 300 mm, Porosity: 1000Å
pfa080705	PFG, 7µm, analytical guard column, 8 x 50mm

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