

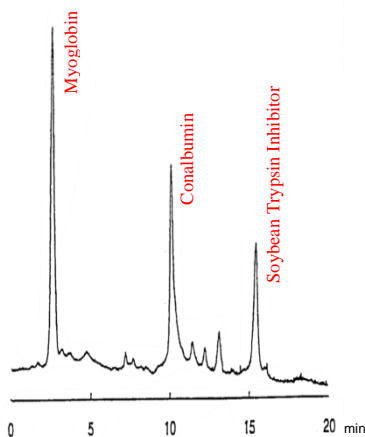
## APPLICATION NOTE

### Polymeric Gigaporous Anion Exchanger : Performance at Low Flow Rates.

Fully pervious, mechanically stable hard gel stationary phases such as **STYROS™** can also be operated at low flow rates, in the same way soft gel, high performing stationary phases can. This could be used as a test to evaluate throughpores and assess their uniformity towards the flow.

The need for an increase in pressure or flow rate for the porous stationary phase to perform is usually an indication that the pores are not uniform in size or, they have been partially obstructed by either collapsing during the packing or the release of fines.

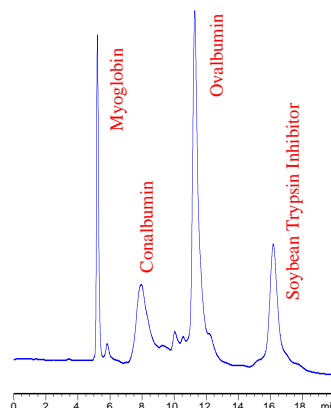
As a standard performance, one can consider the separation of 3 proteins on a commercial soft gel anion exchanger at low flow rate.



**Chromatogram 1.**  
**Commercial soft gel anion exchanger.**

High resolutions can be achieved however, as a soft gel, the stationary phase is mechanically weak: it collapses under pressures exceeding 50 bar and therefore can not be run at flow rates exceeding 2 ml/min in the present format. The low degree of cross-linking results in high leaching of the media, long equilibration times and short column life.

The same separation performed on a fully pervious hard gel **STYROS™** HQ strong anion exchanger under similar conditions provides comparable results.



**Chromatogram 2.**  
**STYROS™ HQ/XH gigaporous hard gel.**

In contrast to the soft gel, **STYROS™** can withstand up to 300 bar making it possible to also run at high flow rates and therefore minimize the equilibration times. The high degree of cross-linking provides an exceptionally stable media with extended column life.

The chromatographic conditions are summarized in the following table.

<b>HPLC System.</b>	HP 1100
<b>Columns</b>	4.6 x 50 mm
<b>Mobile Phase</b>	A: 20 mM Tris-HCl, pH = 8.2 B: A + 0.5 M NaCl
<b>Flow rate</b>	0.5 ml/ min (180 cm/hr).
<b>Gradient</b>	0 to 100 % B in 12 column volume.
<b>Temperature</b>	30°C
<b>Detection</b>	280 nm
<b>Samples</b>	Myoglobin, Conalbumin, Ovalbumin, Soybean Trypsin Inhibitor.

**Porous stationary phases with convective throughpores can also provide high resolution at low flow rates.** In such mode they can be used with low pressure FPLC system or any other system similar to it