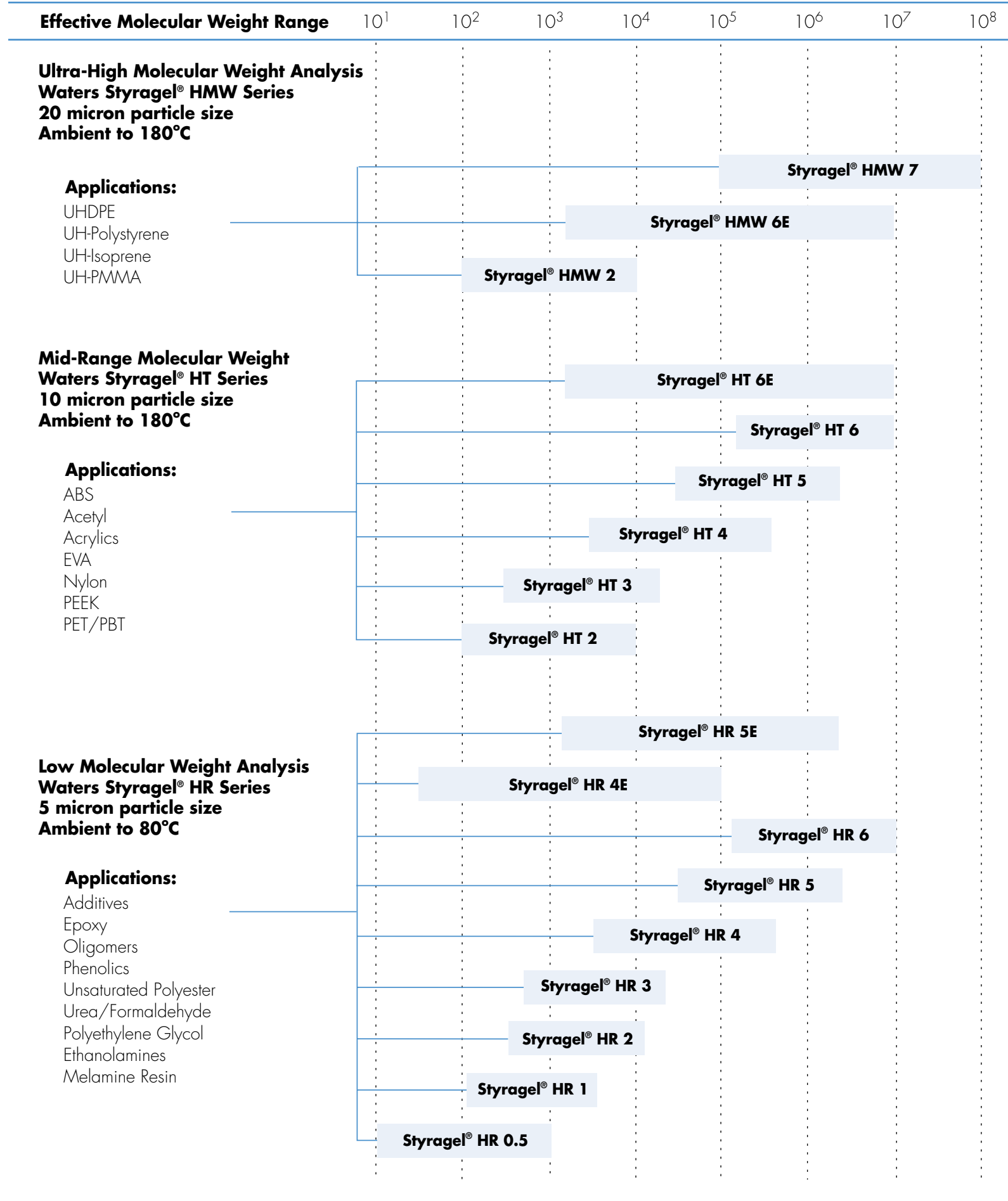


# Waters Styragel® GPC Column Selection Chart



All Styragel® columns are compatible with the new Alliance® GPC 2000 Series systems. HT and HMW columns are recommended for usage 80 - 180 °C.



| Polymer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | GPC Solvent                                                                                    | Shipping Solvent                                   |                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|----------------------------------------------------|------------------------------------------------|
| Polyisobutylene                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Toluene                                                                                        | Waters Styragel® Columns shipped in <b>Toluene</b> |                                                |
| Polybutylene<br>Chlorinated Rubber<br>Polybutadiene<br>Polyisoprene<br>Polydimethylsiloxane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Toluene/75%                                                                                    |                                                    |                                                |
| Chlorinated Polyethylene<br>Polyethylene - Ethylacrylate<br>Polyethylene - Vinylacetone<br>Polyethylene - Methacrylic acid<br>Polyphenyleneoxide<br>Poly-4-methylpentene(1)<br>Polyethylene                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | TCB/135 - 160 °C                                                                               |                                                    |                                                |
| Ultra-high Molecular Weight<br>Polyethylene<br>Polypropylene                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | TCB/135 - 160 °C                                                                               |                                                    |                                                |
| Polyetheretherketone<br>Polyetherketone                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Phenol/TCB 1:1/145 °C                                                                          |                                                    |                                                |
| Polycarbonate                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Methyl Chloride                                                                                |                                                    |                                                |
| Polyglycolic acid                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | gamma-Butyl Lactone                                                                            |                                                    |                                                |
| Acrylonitrile - Methylmethacrylate<br>Cellulose Acetate<br>Cellulose Acetate - Butyrate<br>Cellulose Acetate - Propionate<br>Cellulose Nitrate<br>Cellulose Propionate<br>Cellulose Triacetate<br>Diallyl Phthalate<br>Ethyl Cellulose<br>Epoxy<br>Polyester Alkyd<br>Polybutene(1)<br>Polybutadiene - Styrene<br>Phenol - Formaldehyde<br>Phenol - Furfural<br>Polymethylmethacrylate<br>Polypropylene glycol<br>Polystyrene<br>Polysulfone<br>Polyvinylacetate<br>Polyvinylbutyral<br>Polyvinylchloride<br>Polyvinylchloride - Acetate<br>Polyvinylidenechloride<br>Polyvinylformal<br>Polystyrene Acrylonitrile<br>Polystyrene - Alkylmethylstyrene<br>Polyester Thermoset<br>Phenolics<br>Rosin Acids<br>Polyglycolic Acid | THF/40 °C                                                                                      |                                                    | Waters Styragel® Columns shipped in <b>THF</b> |
| Melamine - Formaldehyde<br>Nylon (All types)<br>Polybutylene - Terphthalate<br>Polyethylene - Terphthalate                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Hexafluoroisopropanol + 0.075 M Sodium Trifluoroacetate/55 °C or m-Cresol + 0.05 m LiBr/100 °C |                                                    |                                                |
| Poly Acrylonitrile<br>ABS (Acrylonitrile - Butadiene - Styrene)<br>ASA (Acrylic - Styrene - Acrylonitrile)<br>ABA (Acrylonitrile - Butadiene - Acrylate)<br>Carboxymethyl Cellulose<br>ABS/Polycarbonate<br>Polybutadiene - Acrylonitrile<br>Polyurethane                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | DMF + 0.05 m LiBr/85 °C                                                                        |                                                    |                                                |
| Polyacetal<br>Polyoxymethylene                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | DMF + 0.05 m LiBr/145 °C                                                                       |                                                    |                                                |
| Polyimide<br>Polyamide - imide<br>Polyetherimide<br>Polyethersulfone<br>Polyvinylidene fluoride                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | N-Methyl Pyrrolidone + 0.05 m LiBr/100 °C                                                      |                                                    |                                                |
| Polyfuran - Formaldehyde                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Dimethylacetamide/60 °C                                                                        |                                                    |                                                |



Styragel® Columns (7.8 mm I.D. x 300 mm)

| Styragel® HR Columns    | Effective Molecular Column  | Part No. Weight Range | Part No. THF | Part No. DMF | Part No. Toluene |
|-------------------------|-----------------------------|-----------------------|--------------|--------------|------------------|
| Styragel® HR 0.5        | 0-1,000                     | WAT044231             | WAT044232    | WAT044233    | WAT044230        |
| Styragel® HR 1          | 100-5,000                   | WAT044234             | WAT044235    | WAT044236    | WAT044233        |
| Styragel® HR 2          | 500-20,000                  | WAT044237             | WAT044238    | WAT044239    | WAT044236        |
| Styragel® HR 3          | 500-30,000                  | WAT044222             | WAT044223    | WAT044224    | WAT044221        |
| Styragel® HR 4          | 5,000-600,000               | WAT044225             | WAT044226    | WAT044227    | WAT044224        |
| Styragel® HR 4E         | 50-100,000                  | WAT054460             | WAT054461    | WAT054462    | WAT054463        |
| Styragel® HR 5          | 50,000-4 x 10 <sup>6</sup>  | WAT054464             | WAT054465    | WAT054466    | WAT054464        |
| Styragel® HR 5E         | 2,000-4 x 10 <sup>6</sup>   | WAT054468             | WAT054469    | WAT054470    | WAT054467        |
| Styragel® HR 6          | 200,000-1 x 10 <sup>7</sup> | WAT054472             | WAT054473    | WAT054474    | WAT054471        |
| Styragel® HT Columns    | Styragel® HT 2              | 100-10,000            | WAT054475    | WAT054476    | WAT054477        |
| Styragel® HT 3          | 500-30,000                  | WAT044207             | WAT044208    | WAT044209    | WAT044206        |
| Styragel® HT 4          | 5,000-600,000               | WAT044210             | WAT044211    | WAT044212    | WAT044209        |
| Styragel® HT 5          | 50,000-4 x 10 <sup>6</sup>  | WAT044213             | WAT044214    | WAT044215    | WAT044212        |
| Styragel® HT 6          | 200,000-1 x 10 <sup>7</sup> | WAT044216             | WAT044217    | WAT044218    | WAT044215        |
| Styragel® HT 6E         | 5,000 - 1 x 10 <sup>7</sup> | WAT044219             | WAT044220    | WAT044221    | WAT044218        |
| Styragel® HMW Columns   | Styragel® HMW 2             | 100-10,000            | WAT054488    | WAT054489    | WAT054490        |
| Styragel® HMW 7         | 500,000-1 x 10 <sup>7</sup> | WAT044201             | WAT044202    | WAT044203    | WAT044200        |
| Styragel® HMW 6E        | 5,000-1 x 10 <sup>7</sup>   | WAT044204             | WAT044205    | WAT044206    | WAT044203        |
| Styragel® Guard Columns | Styragel® Guard Column      | WAT054405             | WAT054415    | WAT054416    | WAT054410        |

## Solvent Efficient Styragel® Columns (4.6 mm I.D. x 300 mm)

The same high performance as our conventional Styragel® columns\* with the added advantage of reducing your solvent consumption by two-thirds.

| Styragel® HR Columns  | Column                      | Effective Molecular Weight Range | Part No. THF | Part No. DMF | Part No. Toluene |
|-----------------------|-----------------------------|----------------------------------|--------------|--------------|------------------|
| Styragel® HR 0.5      | 0-1,000                     | WAT045835                        | WAT045836    | WAT045837    | WAT045834        |
| Styragel® HR 1        | 100-5,000                   | WAT045850                        | WAT045851    | WAT045852    | WAT045849        |
| Styragel® HR 2        | 500-20,000                  | WAT045865                        | WAT045866    | WAT045867    | WAT045864        |
| Styragel® HR 3        | 500-30,000                  | WAT045880                        | WAT045881    | WAT045882    | WAT045879        |
| Styragel® HR 4        | 5,000-600,000               | WAT045895                        | WAT045896    | WAT045897    | WAT045894        |
| Styragel® HR 4E       | 50-100,000                  | WAT045805                        | WAT045806    | WAT045807    | WAT045804        |
| Styragel® HR 5E       | 2,000-4 x 10 <sup>6</sup>   | WAT045820                        | WAT045821    | WAT045822    | WAT045819        |
| Styragel® HT Columns  | Styragel® HT 3              | 500-30,000                       | WAT045920    | WAT045921    | WAT045918        |
| Styragel® HT 4        | 5,000-600,000               | WAT045935                        | WAT045936    | WAT045937    | WAT045934        |
| Styragel® HT 5        | 50,000-4 x 10 <sup>6</sup>  | WAT045950                        | WAT045951    | WAT045952    | WAT045949        |
| Styragel® HT 6        | 200,000-1 x 10 <sup>7</sup> | WAT045965                        | WAT045966    | WAT045967    | WAT045964        |
| Styragel® HT 6E       | 5,000-1 x 10 <sup>7</sup>   | WAT045980                        | WAT045981    | WAT045982    | WAT045979        |
| Styragel® HMW Columns | Styragel® HMW 7             | 500,000-1 x 10 <sup>7</sup>      | WAT046805    | WAT046806    | WAT046803        |
| Styragel® HMW 6E      | 5,000-1 x 10 <sup>7</sup>   | WAT046820                        | WAT046821    | WAT046822    | WAT046819        |

\* System dead volume must be minimized for maximum column performance.

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|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
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