

## PRP-C18 Oligonucleotide Purification HPLC Columns



### Hamilton's PRP-C18 is the First Choice for Oligonucleotide Purifications

Synthetic oligonucleotide (oligo) purifications are demanding applications that are typically performed at elevated ( $> 60^{\circ}\text{C}$ ) temperatures in order to facilitate resolution between the target oligo and closely-related failure sequences. Traditional silica-based C18 (ODS) columns have diminished lifetime at elevated temperatures, however, polymeric polystyrene-divinylbenzene (PS-DVB) columns are routinely used to purify synthetic oligonucleotides due to their superior temperature ( $> 100^{\circ}\text{C}$ ) and pH (1–14) stability.

The Hamilton PRP-C18 is a next generation polymeric column based on porous C18-functionalized PS-DVB that exhibits excellent chemical and thermal stability. Unlike other polymer columns, the octadecylated surface modification imparts superior mass transfer kinetics for high efficiency separations and excellent mechanical stability.

### Rugged Design Ensures More Oligo Manufacturing

The flexibility to employ elevated temperatures (up to  $100^{\circ}\text{C}$ ) and alkaline pH are important tools in oligonucleotide purifications. Traditional silica-based supports break down at elevated temperatures, leading to stationary phase bleeding and diminished column lifetimes. The PRP-C18 does not dissolve, phase-strip, or bleed even under the most extreme operating conditions, unlocking the power of superior resolution between long oligos and their failure sequences. Because the PRP-C18 stationary phase is devoid of silanols found in silica-C18 columns, peak tailing, poor recovery, and carry-over problems are completely eliminated, offering significant value.

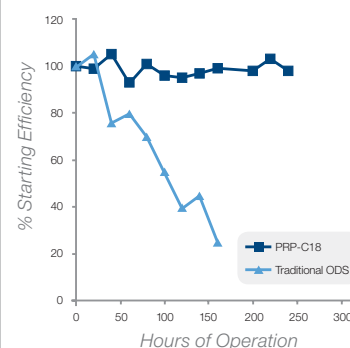
### Benefits

- Superior resolution for purer oligos
- Extended column lifetime for increased productivity
- High loading capacity for time and cost savings

### Full pH Range Compatibility

Unlike traditional silica-based C18 columns, the PRP-C18 is stable over a pH range of 1–14. The flexibility to employ alkaline mobile phase (pH 12) is useful for separating problematic oligos that form secondary structures or aggregates.

### High pH Column Lifetime Comparison

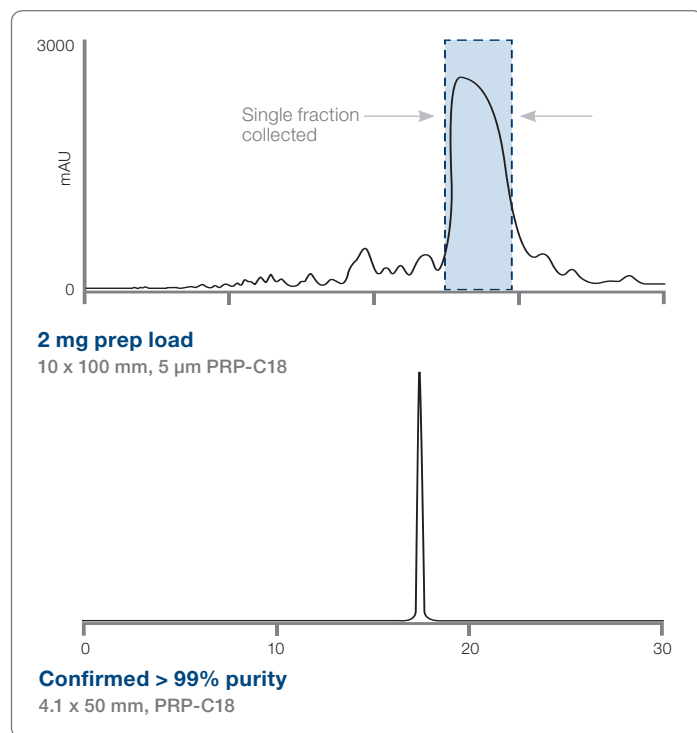


Forced degradation study comparing longevity of traditional ODS and Hamilton PRP-C18 columns under elevated temperature ( $60^{\circ}\text{C}$ ) and alkaline pH (50 mM phosphate, pH 12) conditions.



## Higher Oligo Yield with Extended Loading Capacity

The high loading capacity and greater resolving power of the PRP-C18 makes it possible to achieve baseline resolution between failure sequences and the target 21mer, which is collected in a single fraction. Subsequent analytical chromatography of the purified fraction indicate oligo purification to > 99% (UV).



## High Purity Oligos with High-Resolution Separations

The performance of the PRP-C18 and two leading oligo columns at various temperatures is shown in Figure (1). The PRP-C18 shows the best resolution of poly(dC) 12–18 ladder at all temperatures.

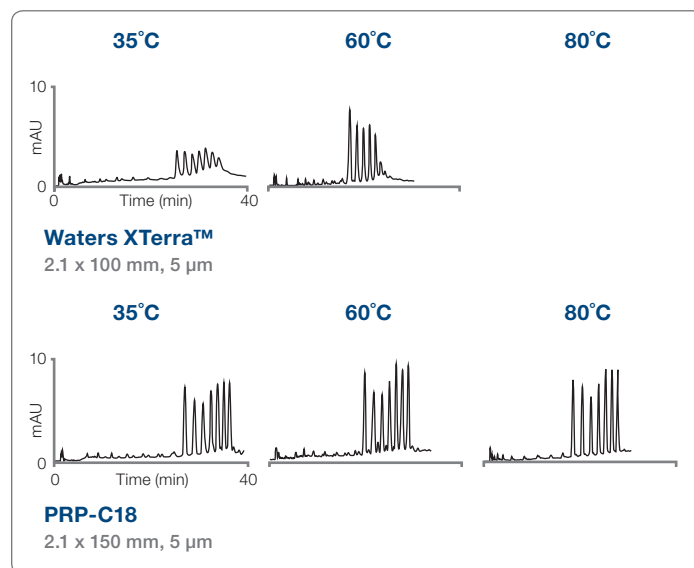


Figure 1: Separation of oligos at increasing temperatures.

## PRP-C18 Oligonucleotide Purification HPLC Columns Ordering Information

Dimensions	Stainless Steel	PEEK	Stainless Steel
Particle Size	5 µm	5 µm	12–20 µm
2.1 x 50 mm	79672	79679	—
2.1 x 150 mm	79673	79680	—
2.1 x 250 mm	79674	79681	—
4.6 x 50 mm	79675	79682	—
4.6 x 150 mm	79676	79683	—
4.6 x 250 mm	79677	79684	—
21.2 x 250 mm	—	—	79678

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