

Many HPLC purchase regrets show up only after the system arrives — a detector that can't hit the sensitivity you need, software that doesn't meet your compliance requirements, or a supplier whose spare parts take weeks to arrive. This checklist walks through the same questions in the order a real purchase decision unfolds: what you need to analyze, what hardware that requires, what software/compliance it must support, and what it will actually cost to own. Work through it yourself, or send it to 2–3 suppliers and compare their answers side by side.

STAGE 1 Define Your Analytical Needs

- ☐ **1. Sample matrix and detection goal are clearly defined**
Small-molecule drugs, proteins, and complex food/environmental matrices place very different demands on separation and detection. This is the starting point for every other decision on this list.
- ☐ **2. Detector type matches the analyte's properties**
UV/DAD suits most routine compounds with UV absorbance; fluorescence suits trace/high-sensitivity work; ELSD suits compounds with no UV absorbance (sugars, lipids); MS coupling may be needed for unknown compound confirmation or complex matrices. A mismatched detector is the most common cause of insufficient sensitivity after purchase.
- ☐ **3. Daily throughput and automation needs are estimated**
Sample volume per day determines autosampler capacity (e.g., small tray vs. 216-position) and whether a faster UHPLC method is worth the investment.

STAGE 2 Confirm the Hardware Configuration

- ☐ **4. System pressure rating matches your actual method requirements**
This isn't simply "higher is better." Standard HPLC columns (3.5-5 micron) typically need only a few hundred to a few thousand psi. Method transfer to UHPLC columns, or sub-3-micron / sub-2-micron particle sizes, requires a higher-pressure system (e.g., 70 MPa or 150 MPa class) — otherwise you'll see pressure alarms and failed injections. Narrower, longer columns also require more pressure. Confirm the column types you use or plan to use, then work backward to the pressure rating you need.
- ☐ **5. Pump type matches your gradient precision requirements**
Quaternary pumps are lower-cost and fine for most routine isocratic or simple gradient work; binary pumps offer higher gradient precision for method development or demanding trace analysis.
- ☐ **6. Column oven temperature range and stability are adequate**
Temperature fluctuation directly affects retention time reproducibility. Confirm the oven's control precision (e.g., $\pm 0.1^{\circ}\text{C}$ class) is tight enough for temperature-sensitive methods.
- ☐ **7. Expansion options are available for future needs**
E.g., 2D-LC compatibility or a path to future MS coupling. If an upgrade is likely within 2–3 years, confirming interface compatibility now avoids buying twice.

HPLC Purchase Checklist

10 things to confirm before you buy an HPLC system

LSRPTR
www.lsrptr.com

STAGE 3 Confirm Software & Compliance

- ☐ **8. Software supports the compliance requirements of your industry**
E.g., FDA 21 CFR Part 11 electronic signatures, audit trails, and tiered user permission management. This is the item most often glossed over by sales reps in regulated industries (pharma, clinical testing) — and the first thing auditors check.

STAGE 4 Confirm the Total Cost of Ownership

- ☐ **9. Warranty scope, spare parts lead time, and training are clarified**
Is the warranty full-system or core-components-only? How long do local spare parts take to arrive (this directly affects downtime after a failure)? Are installation and operator training included in the quote, or billed separately? These items are often hidden behind a low headline price but drive long-term cost significantly.
- ☐ **10. Supplier's technical support response time is confirmed**
How quickly can you reach an engineer after a failure, and is remote diagnosis available? Ask suppliers directly for their average response time and service coverage area before you buy — this shapes your day-to-day experience far more than the purchase price does.

Notes / Supplier Comparison

Want a second opinion on your answers?

Send us this checklist and we'll review it with you — free of charge — and recommend a configuration that fits your needs and budget.

Contact us: www.lsrptr.com/contact-us