

# Peptide-Builder™ Frequently Asked Questions

## How many peptides can I synthesize unattended?



The Peptide-Builder™ can automatically synthesize up to 16 peptides sequentially, enabling true walk-away operation. Upon completion of each synthesis, the resin cartridge is automatically transferred to the carousel, allowing downstream processing to begin immediately while the system continues synthesizing the remaining peptides.

## Does the Peptide-Builder™ support open-access operation?

Yes. The Peptide-Builder™ supports open-access operation, allowing users to create and add new peptide sequences to the synthesis queue while a run is already in progress. New sequences can be added at any time, enabling continuous operation, maximising instrument utilisation and eliminating unnecessary downtime between syntheses.

## Why isn't routine capping required after each coupling cycle?

In Vapourtec's Fast-Flow peptide synthesis, routine capping is generally not required. The single-pass flow approach delivers significantly higher coupling efficiencies than conventional batch SPPS through improved mass transfer and precise control of reagent exposure. As a result, the proportion of unreacted amino groups remaining after each coupling step is greatly reduced.

For many peptide syntheses this eliminates the need for routine capping, reducing cycle times and solvent consumption. However, capping remains fully available within the method and can be incorporated whenever the chemistry or the peptide sequence requires it.

## Why doesn't the Peptide-Builder require base reaction suppressants during Fmoc deprotection?

For most peptide syntheses, 20% piperidine in DMF is used without additional additives. In Vapourtec's Fast-Flow peptide synthesis, the deprotection solution passes through the reactor only once, continuously removing dibenzofulvene and other by-products while minimising exposure to base. As a result, deprotection additives are generally unnecessary. For more challenging sequences, or where longer deprotection times are required, additives such as Oxyma can be included to further suppress base-induced side reactions and improve robustness.

## What concentration are your amino acid solutions in DMF?

We typically use 0.3 M amino acid and 0.45 M Oxyma in DMF to minimise racemisation and unwanted Fmoc loss.

## What is unique about the Peptide-Builder™?

Unlike conventional batch peptide synthesizers, the Peptide-Builder™ combines automated Fast-Flow SPPS with intelligent workflow design to increase productivity, improve peptide quality, enable longer and more challenging peptide syntheses, and reduce solvent and reagent consumption.

- ✓ Higher crude peptide purity through optimized flow chemistry, reducing the burden of downstream purification.
- ✓ Real-time monitoring and data capture, providing valuable insight into the progress of each synthesis and helping users identify aggregation events or other synthesis issues as they occur.
- ✓ Sequential synthesis of up to 16 peptides without manual intervention, maximizing instrument utilization and enabling true walk-away and open-access operation.
- ✓ User-friendly operation with minimal training requirements, making it ideal for shared facilities, open-access laboratories, and high-throughput environments.
- ✓ Consistent and reproducible performance through precise control of reaction conditions using advanced flow chemistry.

## Does single-pass flow chemistry compromise coupling efficiency?

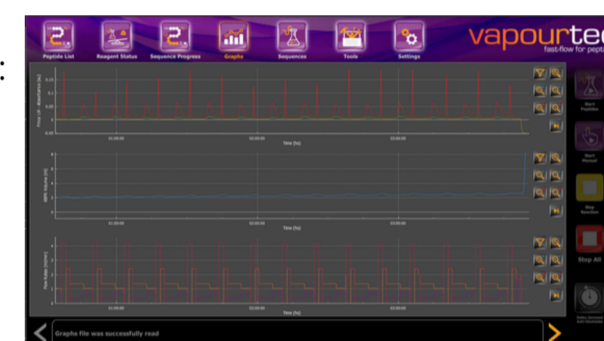
With Vapourtec's single-pass flow-through and VBFR technology, coupling efficiencies are very high and incomplete couplings are uncommon. Efficient mass transfer and precisely controlled residence time ensure effective coupling in a single pass. Even challenging residues, such as N-methylated amino acids, can be incorporated by extending the single-pass residence time rather than repeating coupling cycles, minimising deletion sequences and reagent consumption.

## What process data are available during synthesis?

The Peptide-Builder™ provides real-time synthesis data, with Fmoc deprotection profiles and resin volume being two of the most valuable process parameters.

These measurements help users identify:

- ✓ Successful deprotection steps
- ✓ Changes in coupling performance
- ✓ Potential aggregation events
- ✓ Incomplete reactions or synthesis anomalies
- ✓ Changes in resin volume during peptide chain growth



By monitoring these parameters in real time, users can assess synthesis performance as it happens, enabling rapid troubleshooting, improved reproducibility and greater confidence when synthesising long or challenging peptide sequences.

## Will I have to keep buying expensive cartridges?

No. The resin cartridge is reusable and can typically be used up to 10 times. The only single-use consumable are the frits, which is replaced after each synthesis to minimise the risk of blockages and maintain consistent performance.

## How do I remove the resin and frit from the cartridge?

A simple resin transfer tool, supplied with every Peptide-Builder™, allows resin to be transferred directly into a 50 mL centrifuge tube, 20 mL scintillation vial or other suitable container. The disposable frits are then removed using tweezers, allowing the cartridge to be cleaned and reused.



## What waste container does the Peptide-Builder™ use and where is it located?

The Peptide-Builder™ uses a small 500 mL intermediate waste reservoir located close to the instrument. A float-controlled pump automatically transfers waste up to 5 metres to a larger external waste container or directly into a centralised waste system, minimising the amount of waste solvent held near the instrument.

