



# Simplify Your MCC Process Development



- Dedicated pre-packed columns designed for multi-column chromatography.
- Optimal performance on all MCC systems.
- Convenient for process development and scale-up of MCC processes.
- Available in 1, 5, 10, 25, and 100 mL columns of comprehensive TOYOPEARL resins for MCC applications.
- Provided in kits containing single resin lot with minimal column-to-column variability.

## SkillPak BIO Pre-packed Columns

TOSOH BIOSCIENCE

SkillPak BIO pre-packed columns are part of Tosoh Bioscience’s holistic solution for the development of multi-column chromatography (MCC) processes. SkillPak BIO pre-packed columns are the perfect complement to the Octave BIO MCC system and TOYOPEARL resins, offering a unique and comprehensive solution for developing MCC processes. Designed with dedicated dimensions and comprehensive TOYOPEARL resins for MCC applications, SkillPak BIO is designed to unlock the best MCC performance.

SkillPak BIO column design and packing procedures are based on Tosoh Bioscience’s decades of expertise in packing chromatography media. We employ tightly controlled methods to pack the TOYOPEARL resins into the MCC-dedicated columns, which take into account the varying compressibility of each resin. This ensures that each column is consistently packed to the same level of performance, providing reproducible results for the batch process development work of biopharma experts. Available in kits that cover different MCC use cases, each kit contains a single resin lot with low column-to-column variability, ensuring optimal MCC performance. Additionally, customers benefit from short lead times thanks to Tosoh Bioscience’s complete control of the media and hardware supply chain.

In **Tables 1-4**, we will explore the specifications, benefits, and features of SkillPak BIO pre-packed columns and how they can enhance the productivity and efficiency of your MCC process development work.

➤ **Table 2.** Dedicated dimensions for MCC applications

Step	Dimensions	Volume	Flow rate at 0.5 min residence time
Screening / Method development	0.8 cm ID x 2.0 cm	1 mL	2 mL/min
	1.6 cm ID x 2.5 cm	5 mL	10 mL/min
	1.6 cm ID x 5.1 cm	10 mL	20 mL/min
Technique adaptation/ Scale-up	2.5 cm ID x 5.1 cm	25 mL	50 mL/min
	5.0 cm ID x 5.1 cm	100 mL	200 mL/min

➤ **Table 1.** Specifications of SkillPak BIO columns

	SkillPak 1 BIO	SkillPak 5 BIO	SkillPak 10 BIO	SkillPak 25 BIO	SkillPak 100 BIO
Approx. volume	1 mL	5 mL	10 mL	25 mL	100 mL
Maximum recommended flow rate in 1 mol/L NaCl (mL/min)	2	10	20	50	200
Storage temperature	see labels and Certificate of Analysis				
Frit porosity	10 µm				
Connections	10-32 Standard fitting			1/4-28 Standard fittings with flat-bottom geometry for 1/8" OD or 1/16" OD capillary	
Shipping buffer	20% ethanol for TOYOPEARL and TSKgel resins				
Asymmetry factor (As)	0.8 - 1.4 for TOYOPEARL and TSKgel resins				
Plate count	See resin-related specifications on the Certificate of Analysis				
Estimated shelf life	12 months				
Hardware pressure stability	10 bar				
Resin pressure stability	see resin documentation				

➤ **Table 3.** Comprehensive resins for MCC applications

Resin name	Application mode	Recommended for purifying...
TOYOPEARL AF-rProtein A HC-650F	Capture with Protein A	Monoclonal Antibodies
TOYOPEARL AF-rProtein L-650F	Capture with Protein L	Antibody Fragments
TOYOPEARL NH <sub>2</sub> -750F	Polish with Anion exchange	Antibodies, antibody fragments, and other biomolecules
TOYOPEARL Sulfate-650F	Polish with Anion exchange	Antibodies, antibody fragments, and other biomolecules
TOYOPEARL GigaCap S-650S	Polish with (strong) Anion exchange	Viruses, vaccines, and other biomolecules
TOYOPEARL SuperQ-650S	high throughput capture, intermediate purification, and polishing	Therapeutic nucleic acids

➤ **Table 4.** Kits with single resin lot and low column-to-column variability for optimal MCC performance

	Screening/ Method development (1, 5, 10 mL)	Technique adaptation / Scale-up (25, 100 mL)
<b>AFC</b>	<ul style="list-style-type: none"> <li>• 6 columns for standard processes</li> <li>• 10 columns for high-titer processes</li> </ul>	<ul style="list-style-type: none"> <li>• 1, 6, and 10 columns to adapt to any process setup</li> </ul>
<b>IEC</b>	<ul style="list-style-type: none"> <li>• 4 columns to cover all IEC MCC processes</li> </ul>	<ul style="list-style-type: none"> <li>• 1 and 4 columns to adapt to any process setup</li> </ul>

### Short lead times

Tosoh recognizes the importance of prompt delivery for process development products and has implemented a vertically integrated supply chain to ensure quick turnaround times for our SkillPak BIO pre-packed columns. With most screening/method development dimensions available off the shelf, customers can initiate their process development work in a matter of days. For SkillPak BIO pre-packed columns not available off the shelf, we have a lead time of 4-6 weeks, as we established a stock of resin at our production facility. By utilizing our vertically integrated supply chain, customers can focus on their process development without delay or concern over the availability and consistency of SkillPak BIO pre-packed columns.



## Ordering Information:

Part #	Description	Resin volume (ea.)	Column dimensions
<b>TOYOPEARL AF-rProtein A HC-650F</b>			
0045346	SkillPak 1 BIO AF-rProtein A HC-650F, x6	1 mL	0.8 cm ID × 2.0 cm
0045347	SkillPak 1 BIO AF-rProtein A HC-650F, x10	1 mL	0.8 cm ID × 2.0 cm
0045348	SkillPak 5 BIO AF-rProtein A HC-650F, x6	5 mL	1.6 cm ID × 2.5 cm
0045349	SkillPak 5 BIO AF-rProtein A HC-650F, x10	5 mL	1.6 cm ID × 2.5 cm
0045350	SkillPak 10 BIO AF-rProtein A HC-650F, x6	10 mL	1.6 cm ID × 5.1 cm
0045351	SkillPak 10 BIO AF-rProtein A HC-650F, x10	10 mL	1.6 cm ID × 5.1 cm
0045352	SkillPak 25 BIO AF-rProtein A HC-650F, x1	25 mL	2.5 cm ID × 5.1 cm
0045353	SkillPak 25 BIO AF-rProtein A HC-650F, x6	25 mL	2.5 cm ID × 5.1 cm
0045354	SkillPak 25 BIO AF-rProtein A HC-650F, x10	25 mL	2.5 cm ID × 5.1 cm
0045355	SkillPak 100 BIO AF-rProtein A HC-650F, x1	100 mL	5.0 cm ID × 5.1 cm
0045356	SkillPak 100 BIO AF-rProtein A HC-650F, x6	100 mL	5.0 cm ID × 5.1 cm
0045357	SkillPak 100 BIO AF-rProtein A HC-650F, x10	100 mL	5.0 cm ID × 5.1 cm
<b>TOYOPEARL AF-rProtein L-650F</b>			
0045358	SkillPak 1 BIO AF-rProtein L-650F, x6	1 mL	0.8 cm ID × 2.0 cm
0045359	SkillPak 1 BIO AF-rProtein L-650F, x10	1 mL	0.8 cm ID × 2.0 cm
0045360	SkillPak 5 BIO AF-rProtein L-650F, x6	5 mL	1.6 cm ID × 2.5 cm
0045361	SkillPak 5 BIO AF-rProtein L-650F, x10	5 mL	1.6 cm ID × 2.5 cm
0045362	SkillPak 10 BIO AF-rProtein L-650F, x6	10 mL	1.6 cm ID × 5.1 cm
0045363	SkillPak 10 BIO AF-rProtein L-650F, x10	10 mL	1.6 cm ID × 5.1 cm
0045364	SkillPak 25 BIO AF-rProtein L-650F, x1	25 mL	2.5 cm ID × 5.1 cm
0045365	SkillPak 25 BIO AF-rProtein L-650F, x6	25 mL	2.5 cm ID × 5.1 cm
0045366	SkillPak 25 BIO AF-rProtein L-650F, x10	25 mL	2.5 cm ID × 5.1 cm
0045367	SkillPak 100 BIO AF-rProtein L-650F, x1	100 mL	5.0 cm ID × 5.1 cm
0045368	SkillPak 100 BIO AF-rProtein L-650F, x6	100 mL	5.0 cm ID × 5.1 cm
0045369	SkillPak 100 BIO AF-rProtein L-650F, x10	100 mL	5.0 cm ID × 5.1 cm
<b>TOYOPEARL Sulfate-650F</b>			
0045370	SkillPak 1 BIO Sulfate-650F, x4	1 mL	0.8 cm ID × 2.0 cm
0045371	SkillPak 5 BIO Sulfate-650F, x4	5 mL	1.6 cm ID × 2.5 cm
0045372	SkillPak 10 BIO Sulfate-650F, x4	10 mL	1.6 cm ID × 5.1 cm
0045373	SkillPak 25 BIO Sulfate-650F, x1	25 mL	2.5 cm ID × 5.1 cm
0045374	SkillPak 25 BIO Sulfate-650F, x4	25 mL	2.5 cm ID × 5.1 cm
0045375	SkillPak 100 BIO Sulfate-650F, x1	100 mL	5.0 cm ID × 5.1 cm
0045376	SkillPak 100 BIO Sulfate-650F, x4	100 mL	5.0 cm ID × 5.1 cm

## Ordering Information:

Part #	Description	Resin volume (ea.)	Column dimensions
<b>TOYOPEARL GigaCap S-650M</b>			
0045377	SkillPak 1 BIO GigaCap S-650M, x6	1 mL	0.8 cm ID × 2.0 cm
0045378	SkillPak 1 BIO GigaCap S-650M, x10	1 mL	0.8 cm ID × 2.0 cm
0045379	SkillPak 5 BIO GigaCap S-650M, x6	5 mL	1.6 cm ID × 2.5 cm
0045380	SkillPak 5 BIO GigaCap S-650M, x10	5 mL	1.6 cm ID × 2.5 cm
0045381	SkillPak 10 BIO GigaCap S-650M, x6	10 mL	1.6 cm ID × 5.1 cm
0045382	SkillPak 10 BIO GigaCap S-650M, x10	10 mL	1.6 cm ID × 5.1 cm
0045383	SkillPak 25 BIO GigaCap S-650M, x1	25 mL	2.5 cm ID × 5.1 cm
<b>TOYOPEARL NH<sub>2</sub>-750F</b>			
0045384	SkillPak 1 BIO NH <sub>2</sub> -750F, x4	1 mL	0.8 cm ID × 2.0 cm
0045385	SkillPak 5 BIO NH <sub>2</sub> -750F, x4	5 mL	1.6 cm ID × 2.5 cm
0045386	SkillPak 10 BIO NH <sub>2</sub> -750F, x4	10 mL	1.6 cm ID × 5.1 cm
0045387	SkillPak 25 BIO NH <sub>2</sub> -750F, x1	25 mL	2.5 cm ID × 5.1 cm
0045388	SkillPak 25 BIO NH <sub>2</sub> -750F, x4	50 mL	2.5 cm ID × 10 cm
0045389	SkillPak 100 BIO NH <sub>2</sub> -750F, x1	100 mL	5.0 cm ID × 5.1 cm
0045390	SkillPak 100 BIO NH <sub>2</sub> -750F, x4	100 mL	5.0 cm ID × 5.1 cm
<b>TOYOPEARL SuperQ-650S</b>			
0045391	SkillPak 1 BIO SuperQ-650S, x4	1 mL	0.8 cm ID × 2.0 cm
0045392	SkillPak 5 BIO SuperQ-650S, x4	5 mL	1.6 cm ID × 2.5 cm
0045393	SkillPak 10 BIO SuperQ-650S, x4	10 mL	1.6 cm ID × 5.1 cm
0045394	SkillPak 25 BIO SuperQ-650S, x1	25 mL	2.5 cm ID × 5.1 cm
0045395	SkillPak 25 BIO SuperQ-650S, x4	50 mL	2.5 cm ID × 10 cm
0045396	SkillPak 100 BIO SuperQ-650S, x1	100 mL	5.0 cm ID × 5.1 cm
0045397	SkillPak 100 BIO SuperQ-650S, x4	100 mL	5.0 cm ID × 5.1 cm



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BR0076A-M\_BR12 0523