



Columnas SkillPak™ 1 mL y 5 mL preempaquetadas

Kits y Columnas
para la Evaluación Rápida de Biomoléculas
Anticuerpos monoclonales, Proteínas
y Oligonucleótidos



Desarrollo Rápido de Métodos

Selección de Resinas

Concentración de Muestras

Purificación y separación de biomoléculas

Desde plataformas de diseño a planta piloto

Utilizables con cromatógrafos LPLC o MPLC

Exclusión Molecular

Intercambio Iónico

Interacción Hidrofóbica

Afinidad

Hidroxiapatito

Modo Mixto

TOSOH BIOSCIENCE

Selección Skillpack 1mL

Part # Description

Cromatografía de Afinidad

TH-45200 SkillPak TOYOPEARL AF-rProtein L-650F 1 mL column
 TH-45221 SkillPak TOYOPEARL AF-rProtein L-650F 1 mL columns (qty. 5)
 TH-45201 SkillPak TOYOPEARL AF-rProtein A HC-650F 1 mL column
 TH-45222 SkillPak TOYOPEARL AF-rProtein A HC-650F 1 mL columns (qty. 5)
 TH-45202 SkillPak TOYOPEARL AF-Chelate-650M 1 mL column

Cromatografía de Intercambio Iónico

TH-45203 SkillPak TOYOPEARL GigaCap Q-650M 1 mL columns (qty. 5)
 TH-45204 SkillPak TOYOPEARL GigaCap S-650S 1 mL columns (qty. 5)
 TH-45205 SkillPak TOYOPEARL Sulfate-650F 1 mL columns (qty. 5)
 TH-45206 SkillPak TOYOPEARL SuperQ-650S 1 mL columns (qty. 5)
 TH-45207 SkillPak TSKgel SP-5PW (20) 1 mL columns (qty. 5)
 TH-45208 SkillPak TSKgel SuperQ-5PW (20) 1 mL columns (qty. 5)
 TH-45209 SkillPak TOYOPEARL NH2-750F 1 mL columns (qty. 5)
 TH-45210 SkillPak TOYOPEARL GigaCap DEAE-650M 1 mL columns (qty. 5)
 TH-45211 SkillPak TOYOPEARL GigaCap CM-650M 1 mL columns (qty. 5)
 TH-45212 SkillPak TOYOPEARL QAE-550C 1 mL columns (qty. 5)
 TH-45213 SkillPak TOYOPEARL SP-550C 1 mL columns (qty. 5)

Cromatografía de Interacción Hidrofóbica

TH-45214 SkillPak TOYOPEARL Butyl-600M 1 mL columns (qty. 5)
 TH-45215 SkillPak TOYOPEARL Butyl-650M 1 mL columns (qty. 5)
 TH-45216 SkillPak TOYOPEARL Phenyl-600M 1 mL columns (qty. 5)
 TH-45217 SkillPak TOYOPEARL Phenyl-650M 1 mL columns (qty. 5)
 TH-45218 SkillPak TOYOPEARL PPG-600M 1 mL columns (qty. 5)
 TH-45219 SkillPak TOYOPEARL Hexyl-650C 1 mL columns (qty. 5)
 TH-45220 SkillPak TOYOPEARL Ether-650M 1 mL columns (qty. 5)

Cromatografía de Modo Mixto

TH-45224 SkillPak TOYOPEARL MX-Trp-650M 1 mL columns (qty. 5)

Cromatografía de Exclusión por Tamaño

TH-45223 SkillPak TOYOPEARL HW-40F 1 mL columns (qty. 5)

Cromatografía de Hidroxiapatito

TH-45225 SkillPak Ca++Pure-HA 1 mL column

Librerías de Columnas

TH-45226 SkillPak Anion Exchange 1 mL column library, 1 mL × 2 each
 (TOYOPEARL GigaCap Q-650M, GigaCap DEAE-650M, NH2-750F)

TH-45227 SkillPak Cation Exchange 1 mL column library, 1 mL × 2 each
 (TOYOPEARL GigaCap S-650S, GigaCap CM-650M, Sulfate-650F)

TH-45228 SkillPak Antibody 1 mL column library, 1 mL × 1 each
 (TOYOPEARL AF-rProtein A HC-650F, AF-rProtein L-650F, NH2-750F, Sulfate-650F, GigaCap Q-650M, GigaCap S-650S)

TH-45229 SkillPak mAb Platform 1 mL column library, 1 mL × 2 each
 (TOYOPEARL AF-rProtein A HC-650F, Sulfate-650F, NH2-750F)

TH-45230 SkillPak Salt Tolerant 1 mL column library, 1 mL × 3 each
 (TOYOPEARL Sulfate-650F, NH2-750F)

TH-45231 SkillPak Mixed Mode 1 mL column library, 1 mL × 3 each
 (Ca++Pure-HA, TOYOPEARL MX-Trp-650M)

TH-45232 SkillPak Best-in-Class 1 mL column library, 1 mL × 1 each
 (Ca++Pure-HA, TOYOPEARL AF-rProtein A HC-650F, AF-rProtein L-650F, NH2-750F, Sulfate-650F)

TH-45233 SkillPak HIC 1 mL column library, 1 mL × 1 each
 (TOYOPEARL Butyl-650M, Phenyl-650M, PPG-600M, Hexyl-650C, Ether-650M)

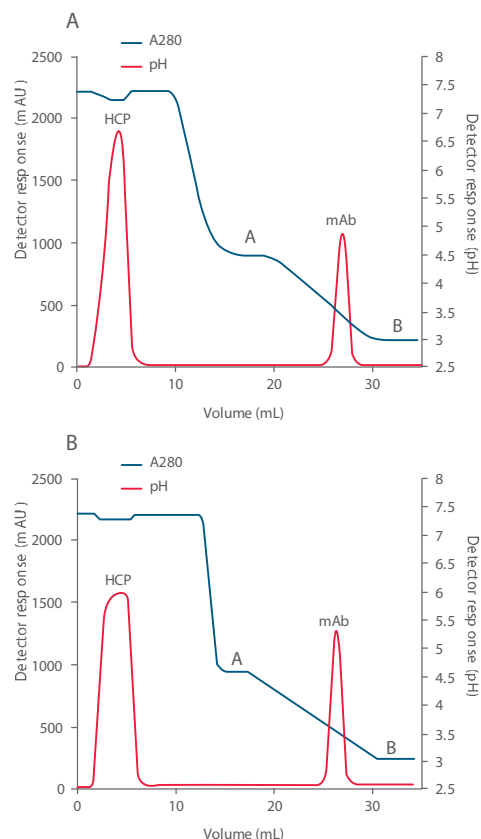
TH-45236 SkillPak HIC 1 mL column library, 1 mL × 2 each
 (TOYOPEARL Butyl-600M, Phenyl-600M, PPG-600M)



ESPECIFICACIONES DE LAS COLUMNAS SkillPak 1 mL

Dimensiones de Columna	7 mm ID × 2.5 cm altura de lecho
Volumen	1 mL
Flujo máximo	4 mL/min (600 cm/hr)
Presión de Trabajo Máxima	0.3 MPa
Conexiones con roscas estándar	(10-32 para 1/16" Capilar)
Tampón de Envío	20% etanol para TOYOPEARL y TSKgel [con la excepción de 0.5 mol/L de citrato sódico con 20% etanol para TSKgel SP-5PW (20) y SuperQ-5PW (20)], 20 mmol/L fosfato sódico con 20% etanol para Ca++Pure-HA

ELUCIÓN POR CAMBIO DE pH de mAb usando la columna SkillPak 1 mL TOYOPEARL AF-rProtein A HC-650F (PANEL A);
 Columna SkillPak 5 mL TOYOPEARL AF-rProtein A HC-650F (PANEL B)



Selección Skillpack 5mL

Part # Description

Cromatografía de Afinidad

TH-45257 SkillPak TOYOPEARL AF-rProtein L-650F 5 mL column
TH-45258 SkillPak TOYOPEARL AF-rProtein A HC-650F 5 mL column
TH-45259 SkillPak TOYOPEARL AF-Chelate-650M 5 mL column

Cromatografía de Intercambio Iónico

TH-45239 SkillPak TOYOPEARL GigaCap Q-650M 5 mL column
TH-45240 SkillPak TOYOPEARL GigaCap S-650S 5 mL column
TH-45241 SkillPak TOYOPEARL Sulfate-650F 5 mL column
TH-45242 SkillPak TOYOPEARL SuperQ-650S 5 mL column
TH-45243 SkillPak TSKgel SP-5PW (20) 5 mL column
TH-45244 SkillPak TSKgel SuperQ-5PW (20) 5 mL column
TH-45245 SkillPak TOYOPEARL NH2-750F 5 mL column
TH-45246 SkillPak TOYOPEARL GigaCap DEAE-650M 5 mL column
TH-45247 SkillPak TOYOPEARL GigaCap CM-650M 5 mL column
TH-45248 SkillPak TOYOPEARL QAE-550C 5 mL column
TH-45249 SkillPak TOYOPEARL SP-550C 5 mL column

Cromatografía de Interacción Hidrofóbica

TH-45250 SkillPak TOYOPEARL Butyl-600M 5 mL column
TH-45251 SkillPak TOYOPEARL Butyl-650M 5 mL column
TH-45252 SkillPak TOYOPEARL Phenyl-600M 5 mL column
TH-45253 SkillPak TOYOPEARL Phenyl-650M 5 mL column
TH-45254 SkillPak TOYOPEARL PPG-600M 5 mL column
TH-45255 SkillPak TOYOPEARL Hexyl-650C 5 mL column
TH-45256 SkillPak TOYOPEARL Ether-650M 5 mL column

Cromatografía de Modo Mixto

TH-45261 SkillPak TOYOPEARL MX-Trp-650M 5 mL column

Cromatografía de Exclusión por Tamaño

TH-45260 SkillPak TOYOPEARL HW-40F 5 mL column

Cromatografía de Hidroxiapatito

TH-45262 SkillPak Ca++ Pure-HA 5 mL column

Librerías de Columnas

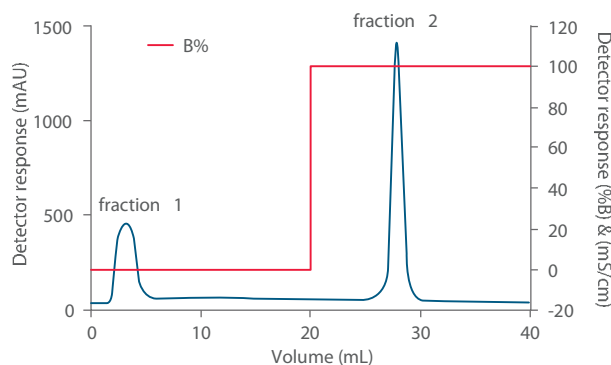
TH-45263 SkillPak mAb Platform 5 mL column library, 5 mL × 1 each (TOYOPEARL AF-rProtein A HC-650F, Sulfate-650F, NH2-750F)
TH-45264 SkillPak Salt Tolerant 5 mL column library, 5 mL × 1 each (TOYOPEARL Sulfate-650F, NH2-750F)
TH-45265 SkillPak Mixed Mode 5 mL column library, 5 mL × 1 each (Ca ++Pure-HA, TOYOPEARL MX-Trp-650M)
TH-45266 SkillPak Best-in-Class 5 mL column library, 5 mL x 1 each (Ca ++Pure-HA, TOYOPEARL AF-rProtein A HC-650F, AF-rProtein L-650F, NH 2-750F, Sulfate-650F)



ESPECIFICACIONES DE LAS COLUMNAS SkillPak 5 mL

Dimensiones de Columna	8 mm ID × 10 cm altura de lecho
Volumen	5 mL
Flujo estándar	1.3 mL/min (150 cm/hr)
Flujo Máximo	5 mL/min (600 cm/hr) para TOYOPEARL M Y resinas de grado C; 2.5 mL/min (300 cm/hr) para TSKgel, Ca++Pure-HA y TOYOPEARL S- y resinas de grado F, incluido TOYOPEARL AF-rProtein A HC-650F y TOYOPEARL AF-rProtein L-650F
Presión de Trabajo Máxima	0.3 MPa para resinas TOYOPEARL, ≤ 0.4 MPa Para resinas TSKgel y Ca++Pure-HA
Conexiones con roscas estándar	(10-32 para 1/16 " Capilar)
Tampón de Envío	20% etanol para TOYOPEARL y TSKgel 20 mmol/L fosfato sódico con 20% etanol para Ca++Pure-HA
Factor de Asimetría (As)	0.8-1.04 para TOYOPEARL y TSKgel, 0.8-2.6 para Ca++Pure-HA

CAPTURA DE Fab USANDO LA COLUMNA SkillPak 1 mL TOYOPEARL AF-rProtein L-650F



Column: SkillPak 1 mL TOYOPEARL AF-rProtein L-650F
Flow rate: 0.5 mL/min
Mobile phase: A: 0.1 mol/L citrate buffer, pH 6.5
B: 0.1 mol/L citrate buffer, pH 2.2
Detection: UV @ 280 nm
Sample: papain-digested human IgG1

PROCESS MEDIA - FIND YOUR BEST FIT!

TOYOPEARL[®], TSKgel[®], and CA⁺⁺PURE-HA[®] Chromatography Resins

Biomolecules are purified by a succession of chromatography steps. Each step uses a different mode of separation, based on specific interactions between the biomolecules and the packing material.

The various modes are based on specific physical, chemical, or biological features of the target or sample, like size, charge, hydrophobicity, function or specific content of the molecule.

TOSOH BIOSCIENCE offers a comprehensive line of media and pre-packed columns for all modes of liquid chromatography - affinity, ion-exchange, mixed-mode, hydrophobic, hydroxyapatite, and size exclusion.

AFC Affinity Chromatography

AF-rProtein A HC-650F binds to the Fc part of antibodies. It allows for increased productivity and reduced production costs. IgG DBCs over 100 g/L can even be observed at higher titers. This prevents DSP bottlenecks even at short residence times.

AF-rProtein L-650F binds to the Kappa-light chain of antibodies and antibody derivatives. It excels all other commercially available protein L media with regards to binding capacity and robustness. It is especially suited for the purification of new antibody formats such as antibody fragments, single chain variable fragments, domain antibodies and immunoglobulin types that cannot be purified with Protein A media.

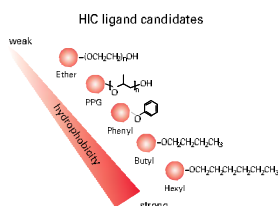
Antibody AFC resins	Min. static capacity (mAb)	Special feature
PROTEIN A		
AF-rProtein A HC-650F	68 g/L	Highest binding capacity
AF-rProtein A-650F	45 g/L	Fast flow rates
PROTEIN L		
AF-rProtein L-650F	64 g/L	Highest binding for non-standard mAb formats
Other AFC resins		
GROUP SPECIFIC	ACTIVATED RESINS*	REACTIVE RESINS*
AF-Chelate-650M	AF-Tresyl-650M	AF-Formyl-650M
AF-Red-650M	AF-Epoxy-650M	AF-Amino-650M
AF-Heparin HC-650M		AF-Carboxy-650M

* Activated and reactive resins are used to couple your ligand of choice.

HIC Hydrophobic Interaction Chromatography

The large choice of pore and particle sizes for TOYOPEARL and TSKgel HIC resins gives the possibility to screen for the resin offering at the same time the highest binding capacity, the highest recovery, and the highest selectivity.

PPG-600M is specially well suited for the purification of antibodies and antibody-drug conjugates.



HIC resins	Typical capacity (g/L) Lysozyme (L) or mAb (A)	Special feature Target molecules
Ether-650 (S, M)	20 (L)	Very hydrophobic proteins
PPG-600M	30 (A)	Antibodies and ADCs
Phenyl-600M	50 (A)	Antibodies
Phenyl-650 (S, M, C)	30 (A)	Recombinant proteins
SuperButyl-550C	40 (L)	Recombinant proteins
Butyl-600M	50 (A)	Antibodies
Butyl-650 (S, M, C)	40 (L)	Recombinant proteins
Hexyl-650C	40 (L)	Hydrophilic proteins
Ether-5PW (20, 30)	20 (L)	Very hydrophobic proteins
Phenyl-5PW (20, 30)	20 (L)	Highest resolution

MXC Mixed Mode Chromatography

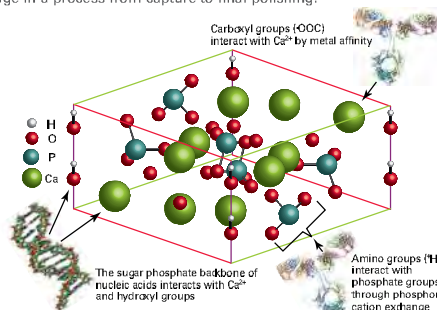
MX-Trp-650M is a multimodal resin with unique selectivity and high recovery. Its ligands have both ionic and hydrophobic groups. This unique ligand allows the separation of acidic, basic, and neutral proteins by one resin. It provides high binding capacity and outstanding selectivity for mAbs and mAb aggregates.

MXC resins	Typical capacity (mAb)	Recovery (mAb)
MX-Trp-650M	95 g/L	97 %



HA Hydroxyapatite

Ca⁺⁺Pure-HA provides exceptional separation properties and unequalled selectivity and resolution for multiple classes of biomolecules. The robust nature of Ca⁺⁺Pure-HA offers the flexibility to use this resin at any stage in a process from capture to final polishing.



HA resin	Typical capacity (human IgG)
Ca ⁺⁺ Pure-HA	> 30 g/L (2 min residence time)

IEC Ion Exchange Chromatography

Sulfate-650F is a highly selective, salt tolerant and high capacity cation exchange resin for the capture and intermediate polishing of biomolecules. It offers the ability to use mobile phases at physiological conditions without any loss of capacity or selectivity.

NH2-750F is a salt-tolerant anion-exchange resin, working both in flow-through and bind/elute mode. It is ideal for removing impurities from target proteins without dilution, or for intermediate or final purification of monoclonal antibodies. One of its major benefits is the possibility to remove aggregates as well as endotoxins, HCPs, viruses and DNA in a single step.

SuperQ-5PW (20) is the industry standard for the purification of oligonucleotides.

IEC resins	Typical capacity (g/L resin) BSA Lysozyme mAb Insulin	Special feature Target molecules
STRONG ANION EXCHANGERS		
NH2-750F	70	Salt-tolerant
GigaCap Q-650 (S, M)	150	Highest capacity
SuperQ-650 (S, M, C)	145	Proteins <50 kDa
Q-600C AR	110	Alkaline stability
QAE-550C	50	Capturing of small proteins
SuperQ-5PW (20, 30)		Oligonucleotides
WEAK ANION EXCHANGERS		
GigaCap DEAE-650M		Blood products and nucleic acids.
DEAE-650 (S, M, C)	25	GigaCap - highest capacity
DEAE-5PW (20, 30)		

STRONG CATION EXCHANGERS				
Sulfate-650F		115		Salt-tolerant
GigaCap S-650 (S, M)	200	150	140	Highest capacity
SP-650 (S, M, C)	40	10	50	Cost efficient
SP-550C	100	15	80	Capturing of small proteins
MegaCap II SP-550EC	70		90	Insulin capturing
SP-3PW (30)			65	Insulin polishing
SP-5PW (20, 30)			30	Highest resolution
WEAK CATION EXCHANGERS				
GigaCap CM-650M	35	100		Highest capacity
CM-650 (S, M, C)	35			Cost efficient

SEC Size Exclusion Chromatography

All TOYOPEARL resins are based on the polymeric HW-type beads. Their rigid polymeric backbone has better pressure-flow properties than most other commercially made materials. The base resins are stable over the pH 2-12 range for operating conditions and pH 1-13 for cleaning conditions.

SEC resins	Pore size	Target molecules
HW-40 (S, F, C)	5 nm	Separation of low MW compounds / buffer exchange
HW-50 (S, F)	12.5 nm	Peptide fragments
HW-55 (S, F)	50 nm	Proteins and antibodies
HW-65 (S, F, C)	100 nm	
HW-75 (F)	> 100 nm	Large nucleic acids, viruses and plasmid DNA

WHAT'S IN A NAME?

1. Resin types

Tosoh Bioscience offers three base beads: TOYOPEARL, TSKgel, and Ca⁺⁺Pure-HA.

TOYOPEARL and TSKgel products are hydroxylated methacrylic polymer resins and are offered in many different pore sizes and particle diameters. The key differences between the two types are particle size availability, degree of crosslinking, dynamic binding capacity, and operating pressures.

Since similarly functionalized TOYOPEARL and TSKgel resins have the same backbone polymer chemistry, the selectivity remains the same when scaling up or down.

Unlike all other TOYOPEARL and TSKgel products, Ca⁺⁺Pure-HA is a hydroxyapatite resin. Ca⁺⁺Pure-HA is a spherical, macroporous form of the hexagonal crystalline structure of Ca₁₀(PO₄)₆(OH)₂.

2. Particle sizes

Grade	TOYOPEARL	GigaCap	TSKgel	Ca ⁺⁺ Pure-HA
EC	200 µm			
C	100 µm (SEC are 75 µm)			
M	65 µm (MX-Trp is 75 µm)	75 µm		
F	45 µm			
S	35 µm (SEC are 30 µm)	35 µm		
(30)			30 µm	
(20)			20 µm	
HA				39 µm

3. Pore sizes of base media for AFC, MXC, IEC, and HIC

TOYOPEARL 550 resins	HW-55 base resin	50 nm
TOYOPEARL 600 resins	HW-60 base resin	75 nm
TOYOPEARL 650 resins	HW-65 base resin	100 nm
TOYOPEARL 750 resins	HW-75 base resin	> 100 nm
TSKgel 3PW resin	PW-3000 base resin	25 nm
TSKgel 5PW resin	PW-5000 base resin	100 nm