

# CaptureSelect™ Antibody Affinity Resins

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**WARNING!** Read the Safety Data Sheets (SDSs) and follow the handling instructions. Wear appropriate protective eyewear, clothing, and gloves. Safety Data Sheets (SDSs) are available from [thermofisher.com/support](http://thermofisher.com/support).

## Product information

CaptureSelect™ affinity resins can be used for the purification and isolation of proteins and/or antibodies and antibody subtypes from complex sources such as plasma, serum, and cell culture supernatants.

## Storage

Store all resins and columns at 2–8°C. Do not freeze.

## Characteristics

All agarose-based resins can handle a max operating pressure of 2 bar (0.2 MPa), and a max pressure during column packing of 3 bar (0.3 MPa). POROS-based resins have a max operating pressure of 100 bar (10 MPa).

CaptureSelect™ affinity resin	Binding characteristics	Resin and particle size	Dynamic binding capacity (g/L)
IgA-XL	Human IgA (including dimeric and secretory IgA) binding to Fc domain	Epoxide-activated agarose, 65 ± 10 µM	>15
IgA-CH1	Human IgA (including dimeric and secretory IgA) binding to CH1 domain (also bind IgA-Fab fragments)	Aldehyde-activated, 65 ± 10 µM	>6
IgA (bovine)	Bovine IgA (monomeric, dimeric and secretory IgA)	Aldehyde-activated, 65 ± 10 µM	>10
IgE	Human IgE (all subgroups; binds to CH4 domain)	Epoxide-activated agarose, 65 ± 10 µM	>15 [1]
IgG1 (human)	Human IgG1 (no crossbinding to other subgroups)	Aldehyde-activated, 35 ± 10 µM	>8
IgG3 (human)	Human IgG3 (no crossbinding to other subgroups)	Aldehyde-activated, 35 ± 10 µM	>6
IgG4 (human)	Human IgG4 (no crossbinding to other subgroups)	Epoxide-activated agarose, 65 ± 10 µM	>10
CH1-XL	Human IgG (binds to CH1 domain, appropriate for Fab/Fab2 purification)	Epoxide-activated agarose, 65 ± 10 µM	>25 <sup>[1]</sup>
IgG-Fc (multispecies)	Bind to the IgG Fc domain of several species (human, primate, rat, mouse, guinea pig, bovine, horse, sheep and goat)	Epoxide-activated agarose, 65 ± 10 µM	> 20 (human IgG)

CaptureSelect™ affinity resin	Binding characteristics	Resin and particle size	Dynamic binding capacity (g/L)
IgG-Fc (rabbit)	Rabbit IgG-Fc (binds to the Fc domain; no binding to other species)	Epoxide-activated agarose, 65 ± 10 µM	>15
FcXL	Human IgG (all subgroups binds to the CH3 domain)	Aldehyde-activated, 65 ± 10 µM	> 20 <sup>[1]</sup>
FcXP	Human IgG (all subgroups binds to the CH3 domain); next generation of FcXL, improved binding capacity and stability	Epoxide-activated agarose, 65 ± 10 µM	>35 <sup>[1]</sup>
POROS FcXP	Human IgG (all subgroups binds to the CH3 domain); immobilized on POROS resin allowing high flow rates and 1 minute contact time (high productivity)	POROS EP450, 50 ± 10 µM	>20 <sup>[1]</sup>
POROS IgM-XL	Binds to the IgM Fc domain of several species (human, rat and mouse)	POROS EP150, 50 ± 10 µM	>6
KappaXP (human)	Human Ig (continuous domain of kappa light chain; binds all human kappa Ig)	Epoxide-activated agarose, 65 ± 10 µM	>35 (IgG) <sup>[1]</sup>
LambdaXP (human)	Human Ig (continuous domain of lambda light chain; binds all human lambda Ig)	Epoxide-activated agarose, 65 ± 10 µM	>30 (IgG) <sup>[1]</sup>
LC-kappa (murine)	Murine Ig (continuous domain of kappa light chain; binds mouse, rat and guinea pig kappa Ig)	Aldehyde-activated, 35 ± 10 µM	>15
LC-lambda (mouse)	Mouse Ig (continuous domain of lambda light chain; binds mouse lambda Ig)	Aldehyde-activated, 65 ± 10 µM	>10

<sup>[1]</sup> Available in volumes suitable for cGMP, see Table 3.

**Table 1 Pre-packed CaptureSelect™ resin and Minichrom column specifications for CH1-XL, FcXP, and KappaXP**

Specification	Pre-packed resin	MiniChrom
Column volume	1 mL and 5 mL	1 mL and 5 mL
Column dimension	<ul style="list-style-type: none"> <li>7 × 25 mm (1 mL)</li> <li>14 × 32.5 mm (5 mL)</li> </ul>	<ul style="list-style-type: none"> <li>8 × 20 mm (1 mL)</li> <li>8 × 100 mm (5 mL)</li> </ul>
Operating pressure	< 2 bar (0.2 MPa)	<2 bar (0.2 MPa)
Maximum pressure	3 bar (0.3 MPa)	3 bar (0.3 MPa)
Flow rates	<ul style="list-style-type: none"> <li>0.5–1.0 mL/minute (1 mL)</li> <li>2.5–5.0 mL/minute (5 mL)</li> </ul>	0.5–2.5 mL/minute
Storage solution	20% (v/v) ethanol	20% (v/v) ethanol

**Note:** Lower flow rates, especially during sample loading, can increase the dynamic binding capacity of the of the columns due to prolonged contact time of the sample with the affinity resin.

**Note:** Only 5 mL CaptureSelect™ MiniChrom columns are suitable for process validation.

## Conditions for use

Use a contact time of at least 4 minutes to obtain good binding capacities for all agarose-based resins.

Use buffers at physiological pH and ionic strength like PBS and TBS at pH 7.0 to 7.5 for equilibration and binding.

CaptureSelect™ affinity resin	Elutionbuffer
IgA-XL	20 mM sodium citrate, pH 4.0
IgA-CH1	100 mM glycine, pH 3.0
IgA (bovine)	100 mM glycine, pH 3.0
IgE	50 mM citric acid, 150 mM NaCl, pH 3.5
IgG1 (human)	100 mM glycine, pH 3.0
IgG3 (human)	100 mM glycine, pH 3.0
IgG4 (human)	100 mM glycine, pH 3.0
CH1-XL	50 mM sodium acetate, pH 4.5
IgG-Fc (multispecies)	100 mM glycine, pH 3.0
IgG-Fc (rabbit)	100 mM glycine, pH 3.0
FcXL	Low pH: 20 mM acetic acid, pH 4.0 Neutral pH: 50 mM sodium acetate 1.0 MgCl <sub>2</sub> , 40% propylene glycol, pH 5.0-6.0
FcXP	Low pH: 20 mM acetic acid, pH 3.0-4.0 Neutral pH: 100 mM Tris 2.0 MgCl <sub>2</sub> , 40% propylene glycol, pH 7.0
POROS™ FcXP	Low pH: 20 mM acetic acid, pH 3.0-4.0 Neutral pH: 100 mM Tris 2.0 MgCl <sub>2</sub> , 40% propylene glycol, pH 7.0
POROS™ IgM-XL	100 mM glycine, pH 3.0
KappaXP (human)	Low pH: 20 mM acetic or citric acid Neutral pH: 100 mM Tris, 1.1% M MgC <sub>2</sub> , pH 6.0
LambdaXP (human)	25 mM acetic acid, pH 3.5
LC-kappa (murine)	100 mM glycine, pH 3.0
LC-lambda (mouse)	100 mM glycine, pH 3.0

## Instructions for use

1. Pack the column.
2. Equilibrate with 5 to 10 column volumes (CV) of the equilibration/wash buffer recommended in “Conditions for use” on page 2.
3. Prepare and load the sample.
 

The sample loading volume depends on the concentration of the target molecule and the dynamic binding capacity of the resin. See “Characteristics” on page 1.

  - Dissolve, dilute, or exchange samples into the equilibration buffer. This is particularly important for large samples (greater than 25% of the column volume).

- Centrifuge and filter samples (0.22 or 0.45 µm) before injection.

4. Wash with 5 to 10 CV of the equilibration/wash buffer recommended in “Conditions for use” on page 2, or until you see a stable baseline.
5. Elute with 5 to 10 CV of the elution buffer recommended in “Conditions for use” on page 2, or until you see a stable baseline.
6. Re-equilibrate with 5 to 10 CV of the equilibration/wash buffer recommended in “Conditions for use” on page 2, or until you see a stable baseline.
7. Re-equilibrate in equilibration/wash buffer.
 

If the column will not be used immediately, store the resin in 20% ethanol at 4°C (39°F), stable for up to 1 year.

## Example application: CaptureSelect™ FcXP IgG purification from human plasma

Figures 1 and 2 are examples of an application run with the following conditions:

Column: 4 mL (0.5 cm X 20 cm) CaptureSelect™ FcXP

Load: 15 mL undiluted human plasma

Flow rate: 150 cm/h, 8 minutes contact time

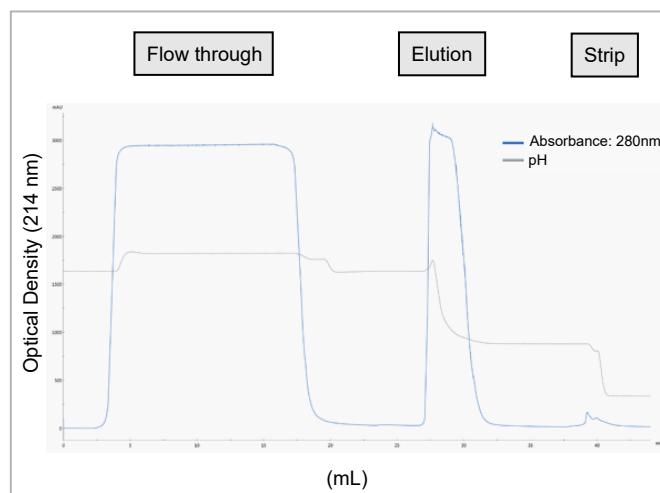
Equilibration/ binding buffer: 10 mM citric acid, 150mM NaCl, pH 7.4

Elution buffer: 20 mM citric acid, pH 3.5

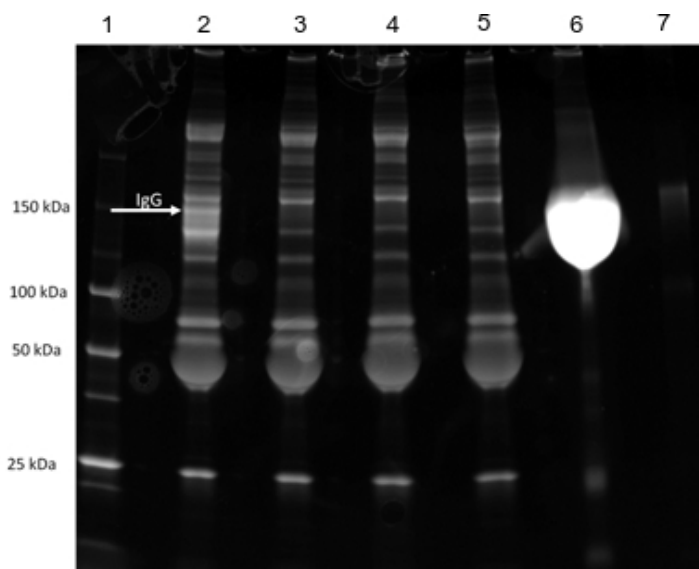
Strip buffer: 500 mM citric acid, pH 3.0

CIP buffer: 100 mM acetic acid plus 2-3% (v/v) benzyl alcohol

Go to [www.thermofisher.com/captureselect](http://www.thermofisher.com/captureselect) for additional examples.



**Fig. 1 CaptureSelect™ FcXP IgG purification from human plasma**



**Fig. 2 Non-reduced TGX stain-free protein gel**

- ① Molecular weight marker
- ② Human plasma
- ③ Flow through (early)
- ④ Flow through (middle)
- ⑤ Flow through (late)
- ⑥ Elution
- ⑦ Strip

## Ordering information

**Table 2 CaptureSelect™ affinity resin options**

CaptureSelect™ affinity resin and binding specificity	Amount	Cat. No.
IgA-XL	50 mL	<a href="#">2943972050</a>
	10 mL	<a href="#">2943972010</a>
	5 mL	<a href="#">2943972005</a>
IgA-CH1	50 mL	<a href="#">194311050</a>
	10 mL	<a href="#">194311010</a>
	5 mL	<a href="#">194311005</a>
IgA (bovine)	50 mL	<a href="#">2943511050</a>
	10 mL	<a href="#">2943511010</a>
	5 mL	<a href="#">2943511005</a>
IgE	50 mL	<a href="#">2943542050</a>
	10 mL	<a href="#">2943542010</a>
	5 mL	<a href="#">2943542005</a>
IgG1 (human)	50 mL	<a href="#">191303050</a>
	10 mL	<a href="#">191303010</a>
	5 mL	<a href="#">191303005</a>
IgG3 (human)	50 mL	<a href="#">191304050</a>
	10 mL	<a href="#">191304010</a>
	5 mL	<a href="#">191304005</a>
IgG4 (human)	50 mL	<a href="#">2942902050</a>
	10 mL	<a href="#">2942902010</a>
	5 mL	<a href="#">2942902005</a>
CH1-XL	50 mL	<a href="#">1943462050</a>
	10 mL	<a href="#">1943462010</a>
	5 mL	<a href="#">1943462005</a>
IgG-Fc (multispecies)	50 mL	<a href="#">2942852050</a>
	10 mL	<a href="#">2942852010</a>
	5 mL	<a href="#">2942852005</a>
IgG-Fc (rabbit)	50 mL	<a href="#">2943642050</a>
	10 mL	<a href="#">2943642010</a>
	5 mL	<a href="#">2943642005</a>
FcXL	50 mL	<a href="#">194328050</a>
	10 mL	<a href="#">194328010</a>

CaptureSelect™ affinity resin and binding specificity	Amount	Cat. No.
	5 mL	<a href="#">194328005</a>
FcXP	50 mL	<a href="#">1943712050</a>
	10 mL	<a href="#">1943712010</a>
	5 mL	<a href="#">1943712005</a>
POROS FcXP	50 mL	<a href="#">A56249</a>
POROS IgM-XL	500mL	<a href="#">2812892500</a>
	50 mL	<a href="#">2812892050</a>
	10 mL	<a href="#">2812892010</a>
	5 mL	<a href="#">2812892005</a>
KappaXP (human)	50 mL	<a href="#">2943212050</a>
	10 mL	<a href="#">2943212010</a>
	5 mL	<a href="#">2943212005</a>
LambdaXP (human)	50 mL	<a href="#">2943752050</a>
	10 mL	<a href="#">2943752010</a>
	5 mL	<a href="#">2943752005</a>
LC-kappa (murine)	50 mL	<a href="#">191315050</a>
	10 mL	<a href="#">191315010</a>
	5 mL	<a href="#">191315005</a>
LC-lambda (mouse)	50 mL	<a href="#">194323050</a>
	10 mL	<a href="#">194323010</a>
	5 mL	<a href="#">194323005</a>

**Table 3 cGMP suitable volumes of CaptureSelect™ affinity resins**

CaptureSelect™ affinity resin and binding specificity	Amount	Cat. No.
IgE	250 mL	<a href="#">1943542250</a>
	1 L	<a href="#">194354201L</a>
	5 L	<a href="#">194354205L</a>
CH1-XL	250 mL	<a href="#">1943462250</a>
	1 L	<a href="#">194346201L</a>
	5 L	<a href="#">194346205L</a>
FcXL	250 mL	<a href="#">1943280250</a>
	1 L	<a href="#">19432801L</a>
	5 L	<a href="#">19432805L</a>
FcXP	250 mL	<a href="#">1943712250</a>
	1 L	<a href="#">194371201L</a>
	5 L	<a href="#">194371205L</a>
POROS FcXP	250 mL	<a href="#">A56251</a>
	1 L	<a href="#">A56252</a>
	5 L	<a href="#">A56253</a>
KappaXP (human)	250 mL	<a href="#">1943212250</a>
	1 L	<a href="#">194321201L</a>
	5 L	<a href="#">194321205L</a>
LambdaXP (human)	250 mL	<a href="#">1943752250</a>
	1 L	<a href="#">194375201L</a>
	5 L	<a href="#">194375205L</a>

**Table 4 CaptureSelect™ Pre-packed column options**

CaptureSelect™ Pre-packed column and binding specificity	Amount	Cat. No.
FcXP	1 × 5 mL (prepacked column)	<a href="#">494371205</a>
	5 × 1 mL (prepacked column)	<a href="#">494371201</a>
CH1-XL	1 × 5 mL (prepacked column)	<a href="#">494346205</a>
	5 × 1 mL (prepacked column)	<a href="#">494346201</a>
KappaXP	1 × 5 mL (prepacked column)	<a href="#">494321205</a>
	5 × 1 mL (prepacked column)	<a href="#">494321201</a>

**Table 5 CaptureSelect™ Robocolumn options**

CaptureSelect™ Robocolumn and binding specificity	Amount	Cat. No.
FcXP	200 µl	<a href="#">5943712200</a>
CH1-XL	600 µl	<a href="#">5943462600</a>
	200 µl	<a href="#">5943462200</a>
KappaXP	200 µl	<a href="#">5943212200</a>
LambdaXP	200 µl	<a href="#">5943752200</a>

**Table 6 CaptureSelect™ Minichrom options**

CaptureSelect™ Minichrom and binding specificity	Amount	Cat. No.
FcXP	5 mL	<a href="#">5943712005</a>
	1 mL	<a href="#">5943712001</a>
CH1-XL	5 mL	<a href="#">5943462005</a>
	1 mL	<a href="#">5943462001</a>
KappaXP	5 mL	<a href="#">5943212005</a>
LambdaXP	5 mL	<a href="#">5943752005</a>
	1 mL	<a href="#">5943752001</a>

## Customer and technical support

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  - User guides, manuals, and protocols
  - Certificates of Analysis
  - Safety Data Sheets (SDSs; also known as MSDSs)

**Note:** For SDSs for reagents and chemicals from other manufacturers, contact the manufacturer.

## For more information

For more information on CaptureSelect™ and POROS™ products, go to [www.thermofisher.com/captureselect](http://www.thermofisher.com/captureselect).

## Limited product warranty

Life Technologies Corporation and/or its affiliate(s) warrant their products as set forth in the Life Technologies' General Terms and Conditions of Sale at [www.thermofisher.com/us/en/home/global/terms-and-conditions.html](http://www.thermofisher.com/us/en/home/global/terms-and-conditions.html). If you have any questions, please contact Life Technologies at [www.thermofisher.com/support](http://www.thermofisher.com/support).



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For descriptions of symbols on product labels or product documents, go to [thermofisher.com/symbols-definition](http://thermofisher.com/symbols-definition).

Revision history: Pub. No. MAN0017191D.0

Revision	Date	Description
D.0	12 December 2023	Updates to the following sections: <ul style="list-style-type: none"> <li>• “Characteristics” on page 1</li> <li>• “Conditions for use” on page 2</li> <li>• “Example application: CaptureSelect™ FcXP IgG purification from human plasma” on page 2</li> <li>• “Ordering information” on page 3</li> </ul>
C.0	15 September 2021	Updates to the following sections: <ul style="list-style-type: none"> <li>• “Characteristics” on page 1</li> <li>• “Conditions for use” on page 2</li> <li>• “Example application: CaptureSelect™ FcXP IgG purification from human plasma” on page 2</li> <li>• “Ordering information” on page 3</li> </ul>
B.0	25 September 2018	Update to product listings.

The information in this guide is subject to change without notice.

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