

Biochemicals

Electrophoresis

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Specials

## SERVA IMAC and Glutathione Agarose Beads

Easy and fast purification of His- and GST-tagged fusion proteins

### I. His-Tag purification with SERVA IDA Agarose Resins

Immobilized Metal Affinity Chromatography (IMAC) is based on the interaction between histidines, cysteines and to a lesser extent tryptophans with transition metal cations, forming chelated complexes. IDA agarose beads carry covalently coupled Iminodiacetic acid (IDA) groups loaded with a divalent metal. In comparison to NTA agarose, IDA has three sites available for interaction with metal ions, instead of four with NTA. This allows for easier regeneration and elution of bound proteins with lower concentrations of imidazole.

- Ni<sup>2+</sup>-, Co<sup>2+</sup>-, Zn<sup>2+</sup>-, Cu<sup>2+</sup>- chelates or metal-free agarose resins
- Two activation grades (LD/HD)
- Broad range of test kits
- Ready-to-use pre-packed gravity flow columns
- Cost-effective bulk resins for batch and column purification

#### Choose between two activation grades

SERVA IDA LD agarose resins have a lower density of coupled transition metals compared to SERVA IDA HD agarose resins. A lower activation grade allows more selective and specific protein purification, whereas the use of SERVA IDA HD agarose beads gives the highest yield due to high binding capacity.

#### Metal-charged and metal-free resins available

Depending of the type of protein to purify, separation efficiency and yield will vary with different types of metal chelates. The most common used IMAC resins are Nickel chelates like the SERVA Ni-IDA agarose resin. They recognize two exposed histidine tags and are recommended for proteins easy to separate. SERVA Co-IDA agarose resin provides a better selectivity than a Ni-IDA resin and is as well suited for

proteins simple to separate. Cobalt chelates bind to two exposed histidine tags in vicinal position. SERVA Zn-IDA and SERVA Cu-IDA agarose resins are recommended for proteins difficult to purify. Zinc chelates recognize as well two exposed histidine tags in vicinal position and copper chelates bind to one single exposed histidine tag. SERVA IDA metal-free agarose resins can be loaded with a divalent metal ion of your choice to find the best solution for your specific application.

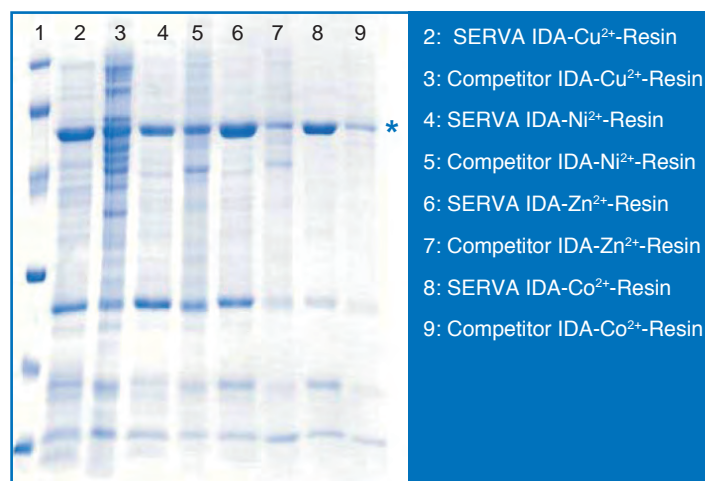


Fig. 1: Unpurified protein extract containing Glutaryl acylase-6x His was tested under same conditions with different metal charged chelating beads. (\* Glu-6x His)

#### SERVA IMAC Test Kits

For optimizing your purification system SERVA offers IMAC test kits. They contain different resin types for screening for the best option in regard to binding capacity/selectivity and protein type.

Once you have optimized your recovery system, you can choose between ready-to-use pre-packed gravity flow columns for fast and simple purifications or cost-effective bulk resins for batch or column purifications. SERVA offers empty columns for small and large volumes for easy column purification with our bulk resins.

### II. Glutathione Agarose Resin for easy one-step GST-Tag purification

Fusion proteins expressed from pGEX vectors contain a Glutathione S-Transferase (GST) moiety and can therefore be purified to near homogeneity by affinity chromatography of glutathione as a substrate to inactivate toxic small molecules via formation of mercapturic acid. Because the affinity of GST for its substrate is in the submillimolar range, immobilization of glutathione on an agarose matrix makes a highly efficient affinity chromatography resin.

- High purity achieved with one purification step
- Suitable for small and large protein complexes
- No need for optimization or protocol change
- Broad range of test kits
- Cost-effective bulk resin for batch and column purification

SERVA's Glutathione Agarose Resin allows a rapid, mild and highly selective purification of GST fusion proteins in a one step procedure. It can be used in batch or column purifications. For column purification we offer empty columns for small volumes of 50 – 100  $\mu$ l and 200 – 250  $\mu$ l or larger volumes of 0.5 – 2 ml and 2 – 6 ml.

M: Marker  
L: *E. coli* lysate  
FT: Flow through  
E: Eluate

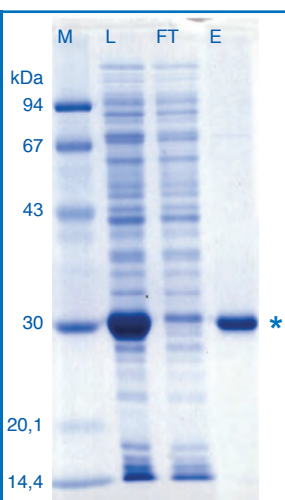


Fig. 2: Purification of recombinant Glutathione-S-Transferase from clarified *E. coli* lysate. (\* GST)

### Ordering Information

#### SERVA IDA Agarose Resin

Prepacked Columns	HD-Mini	HD-Midi	LD-Mini	LD-Midi
	8 x 1 ml	5 x 5 ml	8 x 1 ml	5 x 5 ml
Ni-IDA	42148.01	42149.01	42154.01	42155.01
Zn-IDA	42150.01	42151.01	42156.01	42157.01
Co-IDA	42152.01	42153.01	n.a.	n.a.
Cu-IDA	n.a.	n.a.	42158.01	42159.01
Bulk Resin	HD	HD	LD	LD
	25 ml	100 ml	25 ml	100 ml
Metal-Free-IDA	42140.01	42140.02	42144.01	42144.02
Ni-IDA	42141.01	42141.02	42145.01	42145.02
Zn-IDA	42142.01	42142.02	42146.01	42146.02
Co-IDA	42143.01	42143.02	n.a.	n.a.
Cu-IDA	n.a.	n.a.	42147.01	42147.02

#### SERVA IMAC Test Kits

Type	w/o columns		plus mini columns	
	Cat. no.	Qty.	Qty.	Cat. no.
HD <sup>1)</sup>	42160.01	40	40	42161.01
LD <sup>2)</sup>	42162.01	40	40	42163.01
Ni-IDA <sup>3)</sup>	42164.01	30	30	42165.01
Ni- and Co-IDA <sup>4)</sup>	42166.01	30	30	42167.01
Zn-IDA <sup>5)</sup>	42168.01	20	20	42169.01
Zn- and Cu-IDA <sup>6)</sup>	42170.01	30	30	42171.01

1) 4 x 2 ml HD agarose resin (metal-free, Ni, Zn, Co) / 2) 4 x 2 ml LD agarose resin (metal-free, Ni, Zn, Cu) / 3) 2 x 2 ml agarose resin (Ni-HD, Ni-LD) / 4) 3 x 2 ml agarose resin (Ni-HD, Ni-LD, Co-HD) / 5) 2 x 2 ml agarose resin (Zn-HD, Zn-LD) / 6) 3 x 2 ml agarose resin (Zn-HD, Zn-LD, Cu-LD)

#### SERVA Glutathione Agarose Resin

Product	Qty.	Cat. no.
Glutathione Agarose Resin	10 ml	42172.01
	100 ml	42172.02

#### Columns (empty, for bulk resin)

Product	Volume	Qty.	Cat. no.
Mini columns	100 – 250 $\mu$ l	25	42173.01
		100	42173.02
Mini spin columns	50 – 100 $\mu$ l	25	42176.01
Midi columns	0,5 – 2 ml	50	42174.01
Maxi columns	2 – 6 ml	50	42175.01

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