

Certificate of Analysis



Agilent Technologies, Inc. acquired Polymer Standards Service GmbH (PSS) on August 01st, 2022.

The Quality Certificate / Certificate of Analysis generated by PSS attached to this Letter is valid for the Product stated in the Certificate sold to You by Agilent Technologies, Inc or its subsidiaries.

Patrick Kunzweiler

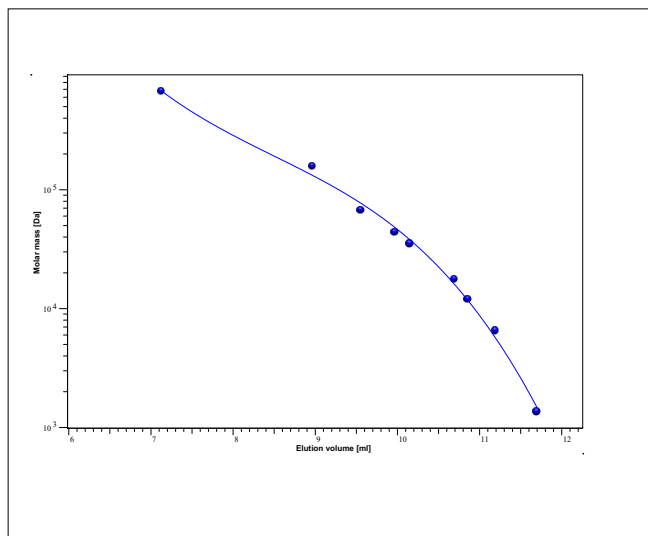
Quality Manager
Liquid Phase Separation Division

Certificate of Analysis

Product: ReadyCal-Kit Protein
 Part No: PSS-PROKITR1
 Lot No: PROKITR1-01

being used with PSS PROTEEMA 3µm 300Å

GPC/SEC - Calibration Curve



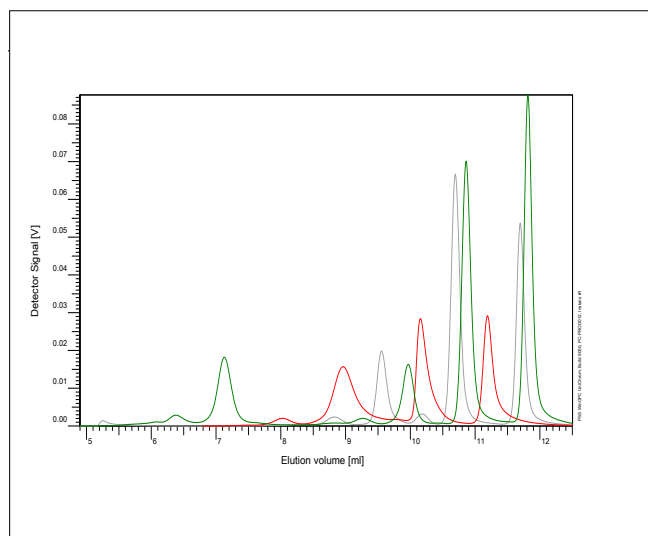
GPC/SEC - Calibration Table

Elution volume [ml]	M [Da]	Protein Lot No:	Protein type:
7,13	670000	PROTG170717	Thyroglobulin
8,96	158000	PROGG180717	γ-globulins
9,56	67000	PROAB031211n	Albumin (bovine)
9,97	44000	PROAC140717	Albumin (chicken)
10,15	35000	PROLG150717	β-lactoglobulin
10,69	17600	PROMG190717	Myoglobin
10,86	12000	PROCB200717	Cytochrome c
11,19	6500	PROAP130717	Aprotinin
11,70	1350	PROVI160717	Vitamin B12

Note:

M = Molar mass

GPC/SEC - Polymer Overlay




GPC/SEC - Calibration Conditions

Solvent	Phosphate buffer pH6.6 34mmol/l, 0.5M NaCl
Flow rate	1,00ml/min
Precolumn [8 x 50 mm]	PSS PROTEEMA 3µm
Columns [8 x 300 mm]	PSS PROTEEMA 3µm 300Å
Temperature	23°C
Inject volume	20µl
Internal standard	none
Data Acquisition Software	PSS WinGPC
Calibration by	J.Preis
Fit quality	
Fit-type	Polynomial 3
R	0.998070

Storage: Store the tightly recapped protein standards in a dry, dark, cool area; e.g. (-20 °C).
 Date of expiry: 2028/02/29 (See also product label.)
 Date of approval: 2023/02/13

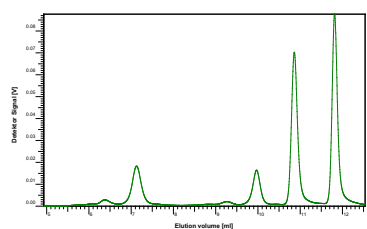
Manufacture and control according to PSS method of analysis


 Dr. J. Preis
 production manager

Product: ReadyCal-Kit Protein
 Part No: PSS-PROKITR1
 Lot No: PROKITR1-01

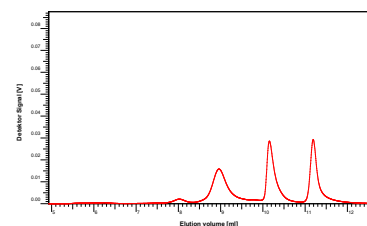
being used with PSS PROTEEMA 3µm 300Å

Colour code: Cap – green



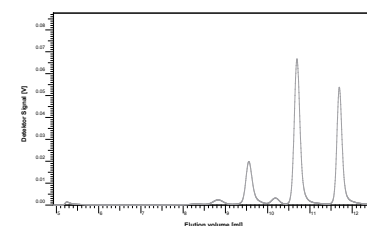
M [Da]	Radius [nm]	Mass [mg]	Lot No, Protein
670 000	9.1	0.750	PROTG170717, Thyroglobulin (bovine thyroid)
44 000	3.5	0.750	PROAC140717, Albumin (chicken egg white)
12 000	1.5	0.750	PROCB200717, Cytochrome c (bovine heart)
243	-	0.050**	PROCY140314n, Cytidine

Colour code: Cap – red



M [Da]	Radius [nm]	Mass [mg]	Lot No, Protein
158 000	5.8	0.750	PROGG180717, γ-globulins (bovine blood)
35 000	2.8	0.750	PROLG150717, β-lactoglobulin (bovine milk)
6 500	-	0.750	PROAP130717, Aprotinin

Colour code: Cap – white



M [Da]	Radius [nm]	Mass [mg]	Lot No, Protein
67 000	4.4	0.750	PROAB031211n, Albumin (bovine)
17 600	1.8	0.750	PROMG190717, Myoglobin (equine muscle)
1 350	-	0.075*	PROVI160717, Vitamin B12

Proteins are stabilized with 2% sodium azide.

For exact determination of sample concentration, we recommend to add the solvent volume precisely.

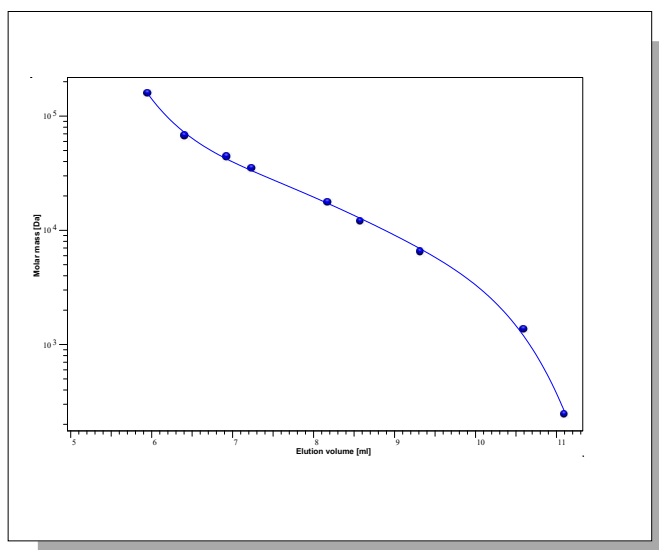
Level of eluent	full	half
Volume of eluent	1.5 ml	0.75 ml
Concentration	0.5 g/l resp. 0.05 g/l*, 0.03 g/l**	1 g/l resp. 0.1 g/l*, 0.06 g/l**

Please note concentrations are adjusted according to UV detection at 280nm.

Product: ReadyCal-Kit Protein
 Part No: PSS-PROKITR1
 Lot No: PROKITR1-01

being used with PSS PROTEEMA 3µm 100Å

GPC/SEC - Calibration Curve



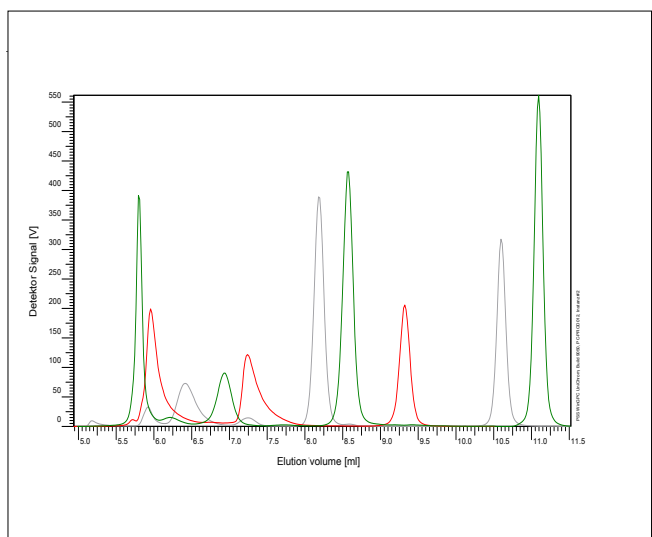
GPC/SEC - Calibration Table

Elution volume [ml]	M [Da]	Protein Lot No:	Protein type:
5,96	158000	PROGG180717	γ-globulins
6,41	67000	PROAB031211N	Albumin (bovine)
6,93	44000	PROAC140717	Albumin (chicken)
7,24	35000	PROLG150717	β-lactoglobulin
8,18	17600	PROMG190717	Myoglobin
8,58	12000	PROCB200717	Cytochrome c
9,32	6500	PROAP130717	Aprotinin
10,60	1350	PROVI160717	Vitamin B12
11,10	243	PROCY140314N	Cytidine

Note:

M = Molar mass

GPC/SEC - Polymer Overlay



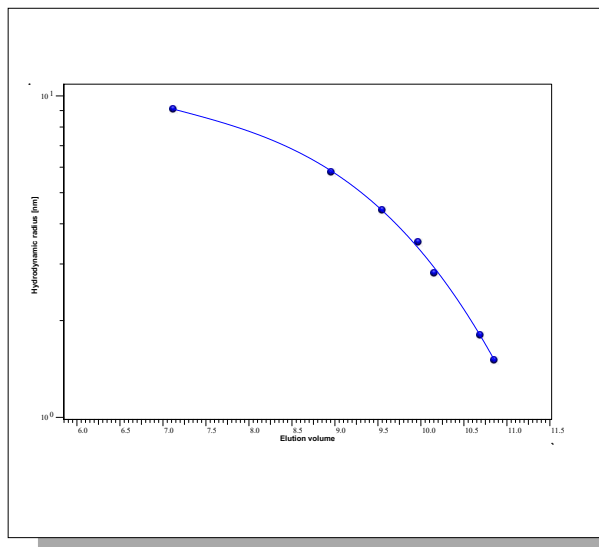
GPC/SEC - Calibration Conditions

Solvent: Phosphate buffer pH6.6 34mmol/L, 0.5M NaCl
 Flow rate: 1,00 ml/min
 Precolumn [8 x 50 mm]: PSS PROTEEMA 3µm
 Columns [8 x 300 mm]: PSS PROTEEMA 3µm 100Å
 Temperature: 23 °C
 Inject volume: 20 µl
 Internal standard: none
 Data Acquisition Software: PSS WinGPC
 Calibration by: J.Preis
 Fit quality: R
 Fit-type: PSS Poly 5
 R: 0,999415

Product: ReadyCal-Kit Protein
 Part No: PSS-PROKITR1
 Lot No: PROKITR1-01

being used with PSS PROTEEMA 3µm 300Å

GPC/SEC - Calibration Curve - Hydrodynamic Radii [nm]



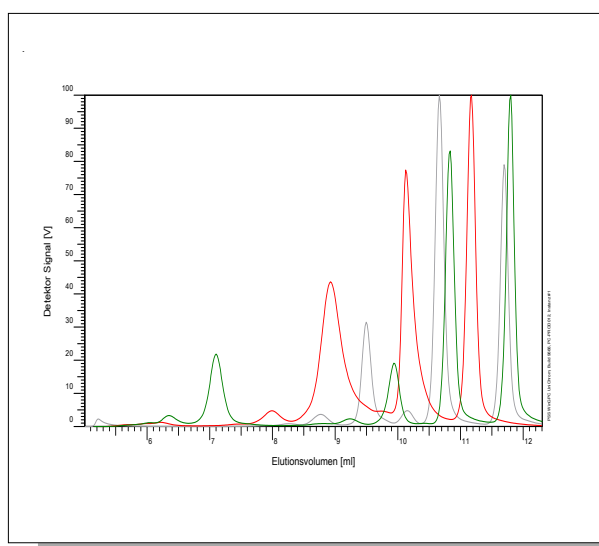
GPC/SEC - Calibration Table - Hydrodynamic Radii [nm]

Elution volume [ml]	Rh [nm]	Protein Lot No:	Protein type:
7,13	9,1	PROTG170717	Thyroglobulin
8,96	5,8	PROGG180717	γ-globulins
9,56	4,4	PROAB031211N	Albumin (bovine)
9,97	3,5	PROAC140717	Albumin (chicken)
10,15	2,8	PROLG150717	β-lactoglobulin
10,69	1,8	PROMG190717	Myoglobin
10,86	1,5	PROCB200717	Cytochrome c

Note:

Rh = Hydrodynamic radius (monomer)

GPC/SEC - Polymer Overlay



GPC/SEC - Calibration Conditions

Solvent Phosphate buffer pH6.6, 0.5M NaCl
 Flow rate 1,00 ml/min
 Precolumn [8 x 50 mm] PSS PROTEEMA 3µm
 Columns [8 x 300 mm] PSS PROTEEMA 3µm 300Å
 Temperature 23 °C
 Inject volume 20 µl
 Internal standard none
 Data Acquisition Software PSS WinGPC
 Calibration by J.Preis

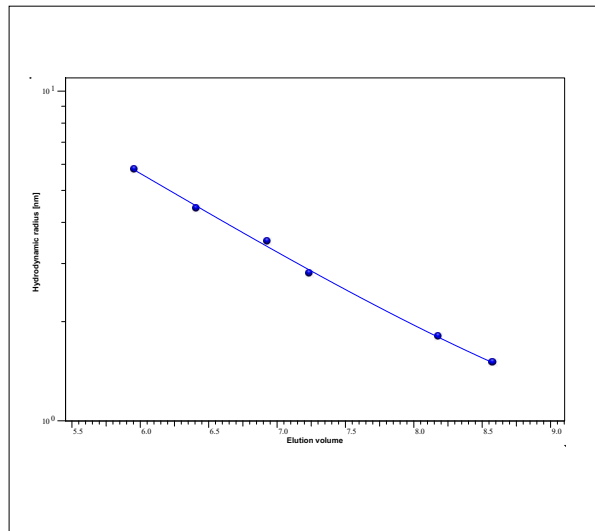
Fit quality

Fit-type Polynomial 3
 R 0,978965

Product: ReadyCal-Kit Protein
Part No: PSS-PROKITR1
Lot No: PROKITR1-01

being used with PSS PROTEEMA 3µm 100Å

GPC/SEC - Calibration Curve - Hydrodynamic Radii [nm]



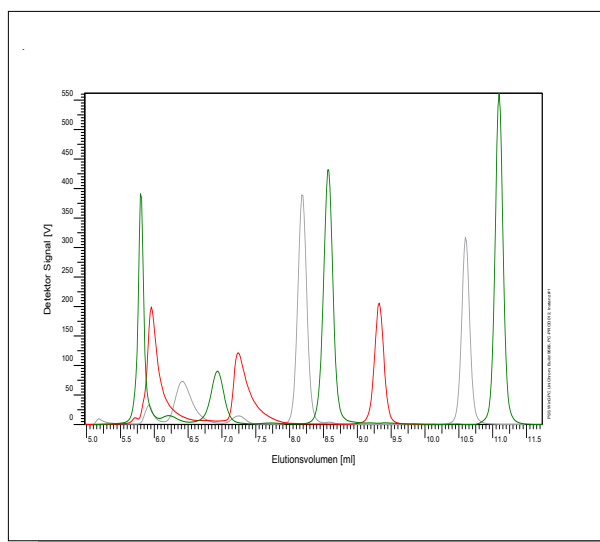
GPC/SEC - Calibration Table - Hydrodynamic Radii [nm]

Elution volume [ml]	Rh [nm]	Protein Lot No:	Protein type:
5,96	5,8	PROGG180717	γ-globulins
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7,24	2,8	PROLG150717	β-lactoglobulin
8,18	1,8	PROMG190717	Myoglobin
8,58	1,5	PROCB200717	Cytochrome c

Note:

Rh = Hydrodynamic radius (monomer)

GPC/SEC - Polymer Overlay



GPC/SEC - Calibration Conditions

Solvent Phosphate buffer pH6.6 34mmol/L, 0.5M NaCl
Flow rate 1,00 ml/min
Precolumn [8 x 50 mm] PSS PROTEEMA 3µm
Columns [8 x 300 mm] PSS PROTEEMA 3µm 100Å
Temperature 23 °C
Inject volume 20 µl
Internal standard none
Data Acquisition Software PSS WinGPC
Calibration by J.Preis

Fit quality

Fit-type Polynomial 3
R 0,987337