Chromatography Adsorbents

- Aluminas
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Introduction

ICN Biomedicals GmbH was established in 1984 as the German subsidiary of ICN Biomedicals, Inc. Shortly thereafter, ICN acquired the adsorbent division of the Woelm Pharma GmbH, Eschwege. The adsorbents are based on the adsorbent program of the Woelm company. Today, those high quality products are available as "ICN Adsorbents."

To meet the considerable demand for adsorbents in the pharmaceutical, cosmetic and chemical industries, ICN's extensive, modern plant in Eschwege is furnished with "state-of-the-art" equipment for all phases of development and production.

The ICN-Woelm Company relationship yields many years of experience for the development and marketing of high quality products whose origin began with Woelm Laboratories. The broad selection of adsorbents includes Silica Gels with bonded organic ligands (Reverse Phase Silica), Alumina for HPLC, MPLC and isotopic applications, and Silica Active for various protocols.

The information presented in this section of the catalog serves as a guideline for the selection and application of ICN Adsorbents. Additionally, ICN welcomes inquiries regarding the use of any product or custom preparation. ALL written or oral responses on the use and performance of said products are advisory in nature. They are given to the best of ICN's knowledge and should be pretested by the user. ICN shall in no event be liable for consequential damages. The user is solely responsible for observing pertinent laws and regulations, especially regarding existing patents and related issues.

ICN Alumina Activity I and Activity Super I for Column Chromatography

Alumina Oxides are stationary phase materials which have been employed from the beginning of column chromatography. The introduction of standardization of sorbent properties meant that reproducible results could be achieved with chromatography using these materials. Woelm was one of the first companies to produce standardized Alumina. Our Alumina products, which are outstanding because of their defined initial activities and sorption properties, are produced in accordance with the strictest production procedures.

ICN Alumina Activity Super I are products unique to ICN. Their capacity is approximately double that of ICN Alumina Activity I in a non-polar environment. Their initial activity is controlled within an extremely narrow range. A special feature is the absolutely constant deactivation behavior which is valid of the deactivation process and for contact with all other chromatography solvents. These facts contribute to extreme reproducibility of chromatographic results. The reliability of ICN Alumina Activity Super I is unparalleled. They constitute the basic material for ICN's fine product line of Aluminas of different surface modifications and sieve cuts. Therefore, it is easy to switch among the various modes of chromatography.

ICN Alumina Activity I Applicational Characteristics

(approximate values)

Water Soluble Matter:	0.1%
Weight (g/ml):	0.8
Particle Size (µm):	50-200
Specific Surface (m^2/g):	150
Color:	white to light pink
Loss on Ignition (1000°C/12h):	1.7%

ICN Alumina Activity Super I Applicational Characteristics

(approximate values)

Water Soluble Matter:	0.1%
Weight (g/ml):	0.8
Particle Size (µm):	50-200
Specific Surface (m^2/g):	200
Color:	white to light pink
Loss on Ignition (1000°C/12h):	1.0-1.3%

Adjustment of Activity

Alumina Activity can be adjusted by the addition of polar media, especially water. Thus, everyone can adjust the sorption system to his/her own specific needs by combining a sorbent of a defined activity with an appropriate eluent.

Directions: Weigh the desired amount of Alumina in a stoppered vial. Add the appropriate amount of water. Shake the mixture well and cool to ambient temperature for maintaining equilibrium conditions. The corresponding quantities for the adjustment of the activity can be taken from the following tables.

Deactivation Behavior of ICN Alumina Activity I

Activity	I	II	III	IV	V
Alumina A	0	3	6	10	add 15% water
Alumina B	0	3	6	10	add 15% water
Alumina N	0	3	6	10	add 15% water

Deactivation Behavior of ICN Alumina Activity Super I

Activity	Super I	I	II	III	IV	V
Alumina A	0	1	4	7	10	add 19% water
Alumina B	0	1	4	7	10	add 19% water
Alumina N	0	1	4	7	10	add 19% water

According to Brockman the activity of adsorbents can be determined via the elution of dyestuff mixtures.

Cat. No.	Product	Qty.	Price
02099	ICN Alumina A	500 g	62.20
02102	Activity I	1 kg	96.40
02105	pH 4.5 (acid)	5 kg	330.00
02159		50 kg	2270.85
02069	ICN Alumina B	500 g	62.20
02072	Activity I	1 kg	96.40
02075	pH 10 (basic)	5 kg	330.00
02078		50 kg	2270.85
02084	ICN Alumina N	500 g	62.20
02087	Activity I	1 kg	96.40
02090	pH 7.5 (neutral)	5 kg	330.00
02135		50 kg	2270.85
04592	ICN Alumina A	500 g	65.10
04595	Activity Super I	1 kg	102.00
04598	pH 4.5 (acid)	5 kg	353.15
04601		50 kg	2556.05
04568	ICN Alumina B	500 g	65.10
04571	Activity Super I	1 kg	102.00
04574	pH 10 (basic)	5 kg	353.15
04577		50 kg	2556.05
04580	ICN Alumina N	500 g	65.10
04583	Activity Super I	1 kg	102.00
04586	pH 7.5 (neutral)	5 kg	353.15
04589		50 kg	2556.05
09670	Test Dye Kit for the determination of activity	1 kit	22.65

ICN Alumina Activity II-III for Column Chromatography (according to Brockman)

ICN Alumina Activity II-III for Column Chromatography according to Brockman constitutes an economical adsorbent of medium activity. It is especially useful where activated carbon, due to its organic nature, cannot be used or in cases where the cation exchange properties of basic Alumina are very favorable.

Applicational Characteristics

(approximate values)

Activity:	II-III
pH Value:	10.0
Weight (g/ml):	0.8
Particle Size:	50-200 µm
Color:	white to light pink

Cat. No.	Product	Qty.	Price
04692	ICN Alumina Activity II-III	500 g	50.10
04691		5 kg	179.55
04694		50 kg	839.25

ICN Alumina R for the Technique of Isotopes

ICN Alumina R is an acid Alumina specially prepared for isotope chemistry. Alumina R is used to produce technetium generators, so-called "technetium cows." These are small columns filled with Alumina R, on which the mother nuclide ^{99}Mo (t = 66h) is retained as the Molybdate, MoO_4, while the daughter nuclide ^{99m}Tc (t = 6h) may be easily removed (milked) as the pertechnetate, TcO_4, by elution with physiological salt solution.

ICN Alumina R may also be used whenever an Alumina with an extremely low pH value and/or high ion-exchange capacity is required, for example the determination of catecholamines according to Anton and Sayre.

Applicational Characteristics

(approximate values)

pH Value:	4.3
Weight (g/ml):	0.8
Loss on Ignition % (1000°C/12h):	< 5
Particle Size:	50-200 µm
Color:	white to light pink

Cat. No.	Product	Qty.	Price
06034	ICN Alumina R	500 g	67.35
06031		50 kg	2906.45

ICN Alumina B - Super I for Dioxin Analysis

Separating pollutants from the matrix is the most important step in pollution analysis. In fact, no method exists for measuring the extraction efficiency. Even if added standards or markers are recovered at a 100% level, no statement can be made about the extraction efficiency of the pollutants from the matrix. Because of this uncertainty, the subsequent "clean-up" steps must be as reliable as possible. Otherwise, any unknown error of the extraction will be multiplied, negating the analysis.

Usually, matrix extracts are processed by chromatography. Therefore, the adsorbent quality is essential. The highly standardized ICN Alumina Activity Super I is best suited for the processing of these pollutant extracts. It meets the high recovery level required for the analysis of polychlorinated dibenzodioxins and dibenzofurans, according to VDI-Regulation 3499, part 1. Thus, it serves as a powerful tool for improved environmental analysis.

Additionally, this Alumina can be used for all chromatographic processes requiring the highest activity and reproducibility levels.

Ref.: Hagemaier, H., et al., Fresenius Z. Anal. Chem., **323**, 24-28 (1986).

Applicational Characteristics

(approximate values)

pH Value:	10
Weight (g/ml):	0.8
Loss on Ignition % (1000°C/12h):	0.7
Particle Size:	50-200 µm
Color:	white to light pink
Water Soluble Matter %:	0.1

Cat. No.	Product	Qty.	Price
04569	ICN Alumina B - Super I for Dioxin Analysis	500 g	71.80

ICN Aluminum Oxides for Industrial Applications- Technical Grade

Every year, the pharmaceutical industry demands greater purity. This paves the way for large-scale chromatography. ICN produces Aluminum Oxides suitable for this purpose. (Formerly known as Woelm Ideal products.)

Cat. No.	Product	Qty.	Price
02025	ICN Aluminum Oxide	50 kg	Enquire
02027	Basic Technical A	100 kg	Enquire
06025	ICN Aluminum Oxide Basic Technical A -H 32001-	50 kg	Enquire
06023	ICN Aluminum Oxide Basic -H 15095-	100 kg	Enquire
04655	ICN Aluminum Oxide	50 kg	Enquire
04654	Neutral -H 15152-	100 kg	Enquire
07895	ICN Aluminum Oxide	50 kg	1890.00
07896	Acid Technical A	100 kg	Enquire
02018	ICN Aluminum Oxide Technical -H 31101-	100 kg	Enquire
06017	ICN Aluminum Oxide	50 kg	Enquire
06019	Technical -H 16876-	100 kg	Enquire
02029	ICN Aluminum Oxide 1-3 mm	50 kg	1890.00

ICN Alumina for Medium Pressure Liquid Chromatography (MPLC)

ICN Alumina for MPLC are produced from raw materials identical to those used for ICN Alumina Activity Super I. Thus, owing to their adsorption properties and particle size, they link HPLC and Classic Column Chromatography. These ICN Alumina are available in two particle sizes: 18-32 or 32-63 µm.

Applicational Characteristics

(approximate values)

Weight (g/ml):	0.8
Particle Size:	18-32 or 32-63 µm
Specific Surface (m^2/g):	200*
Color:	white to light pink
Loss on Ignition (1000°C/12h):	Active1.7 (Non-active -)
Loss on Drying (180°C/2h):	Non-Active 3.5% (Active -)

*when properly activated

Cat. No.	Product	Qty.	Price
02056	ICN Alumina N 18-32	10 g	51.05
02057	pH 7.5	100 g	121.45
02055		1 kg	Enquire
02061	ICN Alumina N 32-63	500 g	84.15
02026	pH 7.5	50 kg	Enquire
02063	ICN Alumina A 18-32, active, pH 4.5	100 g	173.60
02065	ICN Alumina B 18-32, active, pH 10.0	100 g	141.80
02058	ICN Alumina N 18-32,	10 g	57.35
02059	active, pH 7.5	100 g	156.40
02040	ICN Alumina B 32-63,	500 g	63.70
02041	active, pH 10.0	50 kg	1575.00
02062	ICN Alumina N 32-63,	500 g	87.40
02020	active, pH 7.5	50 kg	1575.00

ICN Alumina for High Performance Liquid Chromatography (HPLC)

ICN Alumina products HPLC products are produced from the same raw materials as those used for ICN Alumina Super I and exhibit identical separation behavior. Having extremely narrow particle-size ranges and considerably smaller particle diameter, they guarantee excellent performance and optimum elution flow conditions. It is available in three particle sizes: 3-6, 7-12, and 10-18 µm.

Applicational Characteristics

(approximate values)

pH Value:	7.5
Weight (g/ml):	0.8
Specific Surface (m^2/g):	200*
Loss on Drying % (180°C/2h):	3.5
Color:	white to light pink
Particle Size:	3-6, 7-12, or 10-18 µm

*when properly activated

Cat. No.	Product	Qty.	Price
02142	ICN Alumina N 3-6	10 g	76.30
02143		100 g	530.35
02148	ICN Alumina N 7-12	10 g	63.10
02149		100 g	411.90
02151	ICN Alumina N 10-18	10 g	57.35
02152		100 g	356.35

ICN Silica and Silica Active for Column Chromatography

ICN offers a large variety of exactly defined particle cuts of silica with pore diameters of 60**Åand100Å**. The irregular shape of the particles allows for sieve cuts of any kind. All of these cuts derive from identical raw materials, and it is simple to switch from one cut to another. Hence, it is simple to adapt various chromatographic techniques to individual purification and separation problems. The chromatographic properties are maintained within the limits of special sieve cuts. This is an additional benefit for the optimization of column permeability and maximizing the highest number of plates per column length.

Silica Gels for Preparative and Classic Column Chromatography are mainly used for the separation of synthetic and natural substances. Their application field is Adsorption, as well as, Partition Chromatography (including reverse phases). Partition Chromatography is a particularly gentle method of sample separation.

ICN Silica Applicational Characteristics

(approximate values)

pH Value:	7.0
Weight (g/ml):	0.4-0.5
Specific Surface (m^2/g):	60Å: 500-600* 100Å: 380*
Water Soluble Matter:	0.2%
Color:	white to light gray
Mean Pore Size:	60 or 100Å
Particle Size:	see product listings

*when properly activated

Apart from the conventional Silica, ICN also produces active Silica. Besides excellent cut properties, Silica Gels have well defined high initial activities. They are excellent for the separation of non-polar substances in non-polar solvent systems and for the purification of solvents for chromatographic and other applications. The standardized initial activity can be lowered by adding polar liquids as is done with Alumina.

ICN Silica, Active Applicational Characteristics

(approximate values)

pH Value:	7.0
Weight (g/ml):	0.4-0.5
Specific Surface (m^2/g):	500-600*
Color:	white to light gray
Water Soluble Matter:	0.2%
Mean Pore Size:	60Å
Loss on Ignition (1000°C/12h):	<5
Particle Size:	see product listings

Deactivation of ICN Silica, active

Activity	I	II	III	IV	V
ICN Silica	0	10	12	15	add 20% water

Cat. No.	Product	Qty.	Price
04666	ICN Silica 60Å	500 g	65.90
04668	0-63 µm	25 kg	1227.90
02745	ICN Silica 60Å	10 g	46.10
02757	18-32 µm	100 g	57.60
02753		500 g	86.55
02754		1 kg	119.80
02755		2.5 kg	229.05
02830		25 kg	1750.85
02824	ICN Silica 60Å	500 g	73.15
02825	32-63 µm	1 kg	104.15
02827		2.5 kg	200.80
02826		25 kg	1551.40
02758	ICN Silica 60Å	500 g	73.90
02759	32-100 µm	25 kg	1476.00
04641	ICN Silica 60Å	500 g	81.30
04660	63-100 µm	25 kg	1761.20
04662	ICN Silica 60Å	500 g	63.10
04664	63-200 µm	1 kg	98.00
04663		2.5 kg	185.45
04667		25 kg	1190.65
02760	ICN Silica 60Å	500 g	67.00
02761	100-200 µm	25 kg	1358.10
02811	ICN Silica 60Å	500 g	62.65
02809	200-500 µm	25 kg	1189.70
02749	ICN Silica, active 60Å	10 g	51.05
02805	18-32 µm	100 g	211.90
02750	ICN Silica, active 60Å 32-63 µm	500 g	76.15
02766	ICN Silica, active 60Å 32-100 µm	500 g	80.50
02767	ICN Silica, active 60Å 63-100 µm	500 g	86.50
02769	ICN Silica, active 60Å 63-200 µm	500 g	68.50
02747	ICN Silica, active 60Å	500 g	73.25
02751	100-200 µm	25 kg	Enquire
02770	ICN Silica, active 60Å 200-500 µm	500 g	68.50
03090	ICN Silica 100Å	10 g	50.55
03100	18-32 µm	100 g	63.10
03110		500 g	95.20
03120		1 kg	132.10
03130		25 kg	1990.75
03140	ICN Silica 100Å	500 g	79.70
03150	32-63 µm	1 kg	114.35
03160		25 kg	1759.20
03200	ICN Silica 100Å 63-100 µm	500 g	89.05
03220	ICN Silica 100Å	500 g	68.15
03230	63-200 µm	2.5 kg	205.75
03250	ICN Silica 100Å 100-200 µm	500 g	72.95

ICN Silica Gels for Industrial Applications-Technical Grade

From year to year, the pharmaceutical industry requires ever purer products. This demand creates increased chromatography use. ICN produces Silica Gels (formerly Woelm) ideal for this purpose.

Cat. No.	Product	Qty.	Price
02780	ICN Silitech 60Å 0-32 µm	25 kg	Enquire
02774	ICN Silitech 60Å 12-26 µm	25 kg	Enquire
02778	ICN Silitech 60Å 18-32 µm	25 kg	Enquire
02071	ICN Silitech 60Å 32-63 µm	25 kg	918.75

Cat. No.	Product	Qty.	Price
02066	ICN Silitech 60Å 63-200 µm	25 kg	1070.80
02068	ICN Silitech 60Å 200-500 µm	50 kg	1464.75
03320	ICN Silitech 100Å 18-32 µm	25 kg	Enquire
03330	ICN Silitech 100Å 32-63 µm	25 kg	Enquire

ICN Silica for Medium Pressure Liquid Chromatography (MPLC)

ICN Silica for MPLC are irregular particles with a mean pore diameter of either 60Å or 100Å. They are produced from the same raw materials as the Silica for Column Chromatography. Their identical sorption properties allow an easy transfer from Column Chromatography to Medium Pressure Liquid Chromatography. Their separation performances on the analytical and preparative scale are comparable to those of High Performance Liquid Chromatography.

Applicational Characteristics

(approximate values)

pH Value:	6.5-7.0
Weight (g/ml):	0.4
Specific Surface (m^2/g):	60Å: 500-600* 100Å: 380*
Color:	white to light gray
Mean Pore Size:	60 or 100Å
Loss on Ignition (1000°C/12h):	<5% when activated
Particle Size:	see product listings

*when properly activated

Cat. No.	Product	Qty.	Price
04627	ICN Silica SCC, 60Å	2.5 kg	144.60
04632	10-35 µm	25 kg	1117.30
02735	ICN Silica 60Å	100 g	61.30
02736	12-26 µm	500 g	92.40
02737		1 kg	127.95
02739		2.5 kg	246.90
02738		25 kg	1910.05
02745	ICN Silica 60Å	10 g	46.10
02757	18-32 µm	100 g	57.60
02753		500 g	86.55
02754		1 kg	119.80
02755		2.5 kg	229.05
02830		25 kg	1750.85
02824	ICN Silica 60Å	500 g	73.15
02825	32-63 µm	1 kg	104.15
02827		2.5 kg	200.80
02826		25 kg	1551.40
02749	ICN Silica, active 60Å	10 g	51.05
02805	18-32 µm	100 g	211.90
02750	ICN Silica, active 60Å 32-63 µm	500 g	76.15

Cat. No.	Product	Qty.	Price
03090	ICN Silica 100Å	10 g	50.55
03100	18-32 µm	100 g	63.10
03110		500 g	95.20
03120		1 kg	132.10
03130		25 kg	1990.75
03140	ICN Silica 100Å	500 g	79.70
03150	32-63 µm	1 kg	114.35
03160		25 kg	1759.20

ICN Silica for High Performance Liquid Chromatography (HPLC)

The chromatographic properties of ICN Silica for HPLC are exactly identical to those of ICN Silica for Column Chromatography. They are porous, irregularly shaped particles with narrow and clean sieve cuts. ICN Silica allows columns with the highest possible number of obtainable plates per column length together with the lowest flow resistance.

Applicational Characteristics

(approximate values)

pH Value:	7.0
Weight (g/ml):	0.3-0.4
Specific Surface (m^2/g):	60Å: 500-600* 100Å: 380*
Color:	white to light gray
Mean Pore Size:	60 or 100Å
Loss on Drying (180°C/2h):	3.5%
Particle Size:	3-6, 7-12, or 10-18 µm

*when properly activated

Cat. No.	Product	Qty.	Price
02790	ICN Silica 60Å	10 g	60.90
02791	3-6 µm	100 g	377.80
02793	ICN Silica 60Å	10 g	56.65
02794	7-12 µm	100 g	352.40
02796	ICN Silica 60Å	10 g	51.85
02797	10-18 µm	100 g	256.35
03010	ICN Silica 100Å	10 g	67.30
03020	3-6 µm	100 g	430.90
03040	ICN Silica 100Å	10 g	62.75
03050	7-12 µm	100 g	400.95
03070	ICN Silica 100Å	10 g	57.20
03080	10-18 µm	100 g	292.25

ICN Alumina DCC and ICN Silica DCC for Dry Column Chromatography

Dry Column Chromatography is an easy and rapid method that allows a transfer of the operating parameters of Thin-Layer Chromatography to Preparative Column Chromatography. While the transfer of results from Thin-Layer Chromatography to Column Chromatography demands a high level of experience, the transfer of Thin-Layer Chromatography to Dry Column Chromatography is much easier. This simple transfer from TLC to DCC is achieved by adjusting the activity levels of the corresponding stationary phases.

Applicational Characteristics

(approximate values)

pH Value:	3.5 ICN Alumina DCC
	7.0 ICN Silica DCC
Bulk Density (g/ml):	0.8 ICN Alumina DCC
	0.5 ICN Silica DCC
Color:	white to light pink or gray
Fluorescent Indicator:	F254 nm
Particle Size:	see product listings.
Mean Pore Size:	60Å ICN Silica DCC

Cat. No.	Product	Qty.	Price
04512	ICN Alumina DCC	500 g	69.25
04511	50-200 μm	5 kg	380.85
04514	pH 7.5	50 kg	2981.95
04524	ICN Silica DCC	500 g	69.70
04526	63-200 μm	3 kg	248.30
04530	pH 7.0	25 kg	1467.70
09653	ICN Nylon Foil Tubing 40-44 mm wide (corresponding to approximately 25 mm column diameter)	20 m	40.75
04516	ICN DCC Package 1: Alumina	1 pack	Enquire
04532	ICN DCC Package 2: Silica	1 pack	Enquire

ICN Alumina for Thin-Layer Chromatograpy

ICN Alumina for TLC are produced from ICN Alumina Super I and have identical chromatographic properties. Furthermore, they are available in three surface modifications- A= acid, B= basic, and N= neutral. It can be supplied with gypsum added (G). Coating of TLC plates can be done with ICN Alumina by following established and well-known procedures. If 2% of inorganic fluor is added, then ICN Alumina can be used to produce fluorescent layers.

Applicational Characteristics

(approximate values)

Weight (g/ml):	0.7
Specific Surface (m^2/g):	200*
Color:	white to light pink
Particle Size:	5-25 μm

*when properly activated

Cat. No.	Product	Qty.	Price
04346	ICN Alumina A- TLC	1 kg	109.55
04347	pH 4.5	50 kg	2887.85
04340	ICN Alumina B- TLC	1 kg	109.55
04341	pH 9.0	50 kg	2378.25
04343	ICN Alumina N- TLC	1 kg	111.60
04344	pH 7.5	50 kg	3185.55
04409	ICN Alumina G- TLC	1 kg	109.55
04413	Contains 11% Gypsum, pH 7.5	50 kg	2811.30

ICN Silica for Thin-Layer Chromatography

ICN Silica for TLC is produced from the same raw material as the ICN Silica for Column Chromatography. ICN's considerable experience in this field guarantees reproducibility of chromatographic characteristics. ICN also produces TLC Silica with binders and fluorescent indicators. This makes it possible to produce TLC-plates with a large range of applications.

Applicational Characteristics

(approximate values)

pH Value:	6.5-7.0
Weight (g/ml):	0.4
Specific Surface (m^2/g):	500-600*
Color:	white to light gray
Mean Pore Size:	60Å
Fluroescent Indicator:	F254 nm
Particle Size:	5-15 μm

*when properly activated

Cat. No.	Product	Qty.	Price
04642	ICN Silica TLC	500 g	65.10
04671		25 kg	1188.65
04644	ICN Silica G- TLC	500 g	65.10
04674	Contains 11% Gypsum	25 kg	1431.50
04643	ICN Silica F- TLC	500 g	67.70
04677		25 kg	1530.70
04645	ICN Silica GF- TLC	500 g	67.70
04680	Contains 11% Gypsum	25 kg	1612.40

ICN Silica Plates and Ready-To-Use Silica Rapid Plates for Thin-Layer Chromatography

Besides TLC adsorbents, ICN also supplies pre-coated TLC plates which are ideal for rapid, qualitative separations and for quantitative determinations of photometric methods. ICN offers plates with different layer thicknesses of 250 μm and 500 μm plus a fluorescent indicator if necessary for a variety of applications. In addition, 254/366 Dual Fluor plates are available. Originally developed for the analysis of water-soluble vitamins of the B-group, today they are also useful for analyzing natural substances. Dual Fluor plates are inert and resistant to the usual solvents.

ICN has developed a technique of its own to produce Silica Gels. With this technique, plates of uniform capillary structure can be obtained. The migration time can be reduced by half and thus diffusion is kept within limits.

The most favorable migration time is approximately 20 minutes per 10 cm of layer. If highly viscous and/or polar eluents are used on conventional plates, these migration times will be greatly exceeded. ICN Rapid Plates shorten the migration rate. Therefore, it is not necessary to add diatomaceous earth or other similar substances.

Applicational Characteristics

(approximate values)

Support:	glass
Binder:	inert, organic
Sulfuric Acid Resistance:	120°C
Resistance to Iodine Reagents:	no reaction
Activation:	130°C
Fluroescent Indicator:	see individual listings
Benzene Migration Time:	20 minutes cat.no. 04614 in 11minutes
Water Migration Time:	30 minutes cat.no. 04614 in 15 minutes

Cat. No.	Product	Qty.	Price
04629	ICN Silica Plates 10cm x 20 cm x 0.25mm	50 each	235.40
04613	ICN Silica Plates 20cm x 20cm x 0.25mm	25 each	200.70
04618	ICN Silica Plates F254 20cm x 20cm x 0.25mm	25 each	200.70
04616	ICN Silica Plates F254/366 20cm x 20cm x 0.25mm	25 each	200.70
04621	ICN Silica Plates F254 20cm x 20cm x 0.5mm	20 each	217.65
04614	ICN Silica Rapid Plates F254 20cm x 20cm x 0.25mm	25 each	191.95

ICN Silica Sheets for Thin-Layer Chromatography

ICN produces large quantities of high quality pre-coated aluminum backed Silica sheets. They are resistant to abrasion and are easily bent or cut into smaller sizes. This versatility allows them to be used conveniently in all types of developing chambers. They can be used for both screening purposes in the field and for sophisticated tracking in the laboratory.

Applicational Characteristics

(approximate values)

Support:	aluminum
Layer Thickness:	0.2mm
Binder:	inert, organic
Sulfuric Acid Resistance:	sensitive on heating
Resistance to Iodine Reagents:	no reaction
Activation:	up to 120°C
Fluroescent Indicator:	see individual listings
Benzene Migration Time:	27 minutes

Cat. No.	Product	Qty.	Price
04685	ICN Silica Sheets 20cm x 20cm x 0.2mm	25 each	86.40
04688	ICN Silica Sheets F254/366 20cm x 20cm x 0.2mm	25 each	136.40

ICN Polyamide

Applicational Characteristics

(approximate values)

pH Value:	7.0
Polyamide Particle Size:	50-160 µm
PolyamideTLC Particle Size:	5-20 µm
Bulk Weight (g/ml):	0.2
Color:	white to transparent
Formula:	polyamide-6

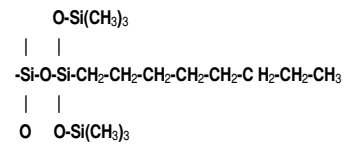
Cat. No.	Product	Qty.	Price
09602	ICN Polyamide For Column Chromatography	250 g	191.80
09603	ICN Polyamide TLC For Thin-Layer Chromatography	250 g	191.80

ICN Reversed Phase Silica

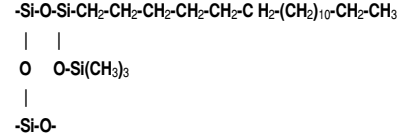
As a starting material for the production of all the ICN Reversed Phase Silica, ICN uses exactly the same types of Silica which are utilized for Straight Phase Chromatography. Accordingly, particle sizing and the adjustment of pore size are done before the modification reaction. This ensures a high quality and high reproducibility standard of the particle distribution. Therefore, the subsequent coating is done on a well suited and homogenous microscopic surface. Residual polarities are almost completely removed by a thorough endcapping procedure. These benefits make ICN Reversed Phase Silica a useful tool for economic and quality improvement of chromatographic procedures which can easily substitute the usual crystallization and/or extraction processes.

ICN Reversed Phase Silica products show a very long life span and behave highly reproducible over a large number of separation and regeneration cycles. Their absolute catalytic inactivity makes them well suited to fully automatic chromatographic separations and it is easy to scale up these procedures for the production of industrial quantities.

ICN Reversed Phase Silica RP 8:



ICN Reversed Phase Silica RP 18:



Applications

ICN Reversed Phase Silica products are suitable for both analytical and industrial scale applications. In contrast to the widely used straight phase adsorbents such as plain Silica and Alumina which generally attract polar substances, ICN Reversed Phase Silica attracts non-polar compounds generally due to a partitioning system. This specific property enables separations to be performed on a technical scale and with samples where chromatography formerly seemed to be prohibitive. Areas of applications are systems where preferably polar solvents, such as water and alcohols are used.

Additional benefits are evident for those industrial scale applications of pharmaceutical industries where straight phase systems either did not give the desired grade of purity or were economically prohibitive. In this context, it is important to know that reversed phase systems frequently give excellent results with purification procedures in the food industries where purity requirements similar to pharmaceuticals are beginning to have rigorous requirements. At the same time, chromatographic methods will become state-of-the-art for these industries as many applications in these fields already exist.

Our RP phase fixed to 60 Å Silica supports have proved very effective for the separation of compounds with a molecular weight smaller than 1000, whereas, the phases on 100 Å supports are useful for larger molecular weights.

Applicational Characteristics

(approximate values)

Specific Surface (m^2/g):	380-500* (100 for Silica RP 6-8)
Color:	white to light gray
Mean Pore Size:	60 or 100 Å
Particle Size:	see product listings

*when properly activated

Cat. No.	Product	Qty.	Price
05012	ICN Silica RP8 60Å	10 g	97.95
05013	7 µm	100 g	693.50
05005	ICN Silica RP 8 60 Å	100 g	290.90
05006	18-32 µm, carbon content: 9.5%	1 kg	2305.40
05081	ICN Silica RP C8 60Å	100 g	430.90
	20 µm	1 kg	
05010	ICN Silica RP 8 60Å	100 g	172.55
05011	32-63 µm, carbon content: 9.5%	1 kg	1306.95
05027	ICN Silica RP8 100 Å	10 g	206.45
05028	7 µm	100 g	1583.45
05015	ICN Silica RP 8 100Å	10 g	206.45
05016	10 µm	100 g	1583.45
05017	carbon content: 8%	1 kg	12951.95
05020	ICN Silica RP 8 100Å	100 g	430.90
05021	18-32 µm, carbon content: 8%	1 kg	3455.75
05087	ICN Silica RP C8 100Å	100 g	430.90
05088	20 µm	1 kg	3727.50
05025	ICN Silica RP 8 100Å	100 g	283.35
05026	32-63 µm, carbon content: 8%	1 kg	1583.45
05030	ICN Silica RP 18 60Å	10 g	97.95
05031	10 µm	100 g	693.50
05032	carbon content: 16.5%	1 kg	5626.30
05035	ICN Silica RP 18 60Å	100 g	290.90
05036	18-32 µm, carbon cont.: 16.5%	1 kg	2305.40
05084	ICN Silica RP C18 60Å	100 g	430.90
	20 µm		
05040	ICN Silica RP 18 60Å	100 g	172.55
05041	32-63 µm, carbon cont.: 16.5%	1 kg	1306.95
05067	ICN Silica RP C18 100Å	10 g	97.95
05068	7 µm	100 g	693.50
05050	ICN Silica RP 18 100Å	10 g	206.45
05051	7-12 µm,	100 g	1583.45
05052	carbon content 12.5%	1 kg	12951.95
05060	ICN Silica RP 18 100Å	100 g	430.90
05061	18-32 µm, carbon cont.: 12.5%	1 kg	3455.75
05090	ICN Silica RP C18 100Å	100 g	430.90
05091	20 µm	1 kg	3543.75
05065	ICN Silica RP 18 100Å	100 g	283.35
05066	32-63 µm, carbon cont.: 12.5%	1 kg	2229.45

ICN Bio RP Silica

ICN Bio RP Silicas are acid-washed for a very low metal ion content to avoid disturbing adsorptions when separating proteins and bases.

Cat. No.	Product	Qty.	Price
05327	ICN Silica BioRP C8 100Å	10 g	97.95
05328	7 µm	100 g	693.50
05387	ICN Silica BioRP C8 100Å	100 g	430.90
	20 µm		
05367	ICN Silica BioRP C18 100Å	10 g	97.95
05368	7 µm	100 g	693.50
05350	ICN Silica BioRP C18 100Å	10 g	97.95
	10 µm		
05390	ICN Silica BioRP C18 100Å	100 g	430.90
05391	20 µm	**1 kg**	**3455.75**
05360	ICN Silica BioRP C18 100Å	100 g	430.90
05361	18-32 µm	**1 kg**	**3455.75**
05340	ICN SIlica BioRP C18 60Å	100 g	430.90
	32-63 µm		

ICN RP Alumina - NEW!

ICN RP Aluminas are specifically designed for chromatography in very high pH ranges (> 8). Please contact your local ICN office for detailed product information.

Cat. No.	Product	Qty.	Price
05900	ICN Alumina RP C18 50Å	20 g	10.65
05901	20 µm	**100 g**	**52.90**
05902		**1 kg**	**500.00**

Adsorbents for Specific Applications

Cat. No.	Product	Qty.	Price
02084	ICN Alumina N, Act. I	500 g	62.20
02087	for Pyrogen Removal	1 kg	96.40
02090	ICN Alumina N, Act. I	5 kg	330.00
02135	for PCB protocols (as described in U.S. EPA Method 5.002)	50 kg	2270.85
100255	ICN Alumina C for Enzyme Purification (as described in Methods in Enzymology, Vol. 1)	100 g	6.25
101233	ICN Calcium Phosphate Gel for Enzyme Purification (as described in Methods in Enzymology, Vol. 1)	50 g	19.00
06034	ICN Alumina R	500 g	67.35
06031	for Isolating Technicium	50 kg	2906.45
04627	ICN Silica SCC 60Å	2.5 kg	144.60
04632	10-35 µm for Short Column Chromatography	25 kg	1117.30

CATALOG NUMBER | US. $

ICN Chromatokits™

Frequently, the chromatographer is confronted with a new, unusual or difficult separation for which there is no previous experience. In such cases, it is often a matter of "guesswork" to find the best adsorbent to achieve optimum results. It can be disconcerting to purchase a substantial quantity of an expensive adsorbent, only to find out it does not perform adequately in your specific system.

Recognizing this adsorbent choice dilemma, ICN Adsorbents is pleased to announce a simple solution. Our ICN Chromatokits™ are specially designed to allow the chromatographer quantities for small scale trial separations. The chromatographer can determine exactly which adsorbent best suits the requirements of the separation system and then confidently order the correct adsorbent in larger quantities. ICN Chromatokits™ are designed to be convenient, easy-to-use, and economical.

410000 RT — **ICN ALUMINA CHROMATOKIT** — 1 kit — 170.60

Contains 250 g of each of the following Aluminas for preparative and classic column chromatography:
Alumina, Basic, Act. I
Alumina, Neutral, Act. I
Alumina, Acid, Act. I
Alumina, Basic, Act. Super I
Alumina, Neutral, Act. Super I
Alumina, Acid, Act. Super I

410001 RT — **ICN SILICA CHROMATOKIT™** — 1 Kit — 176.95

Contains 250 gm of each of the following Silica Gels for preparative and classic column chromatography.
04666 Silica 0-63
02824 Silica 32-63
02758 Silica 32-100
04641 Silica 63-100
04662 Silica 63-200
02760 Silica 100-200
02811 Silica 200-500

410002 RT — **ICN ACTIVATED SILICA CHROMATOKIT™** — 1 Kit — 189.65

Contains 250 gm of each of the following Activated Silica Gels for preparative and classic column chromatography.
02750 Silica 32-63, Active
02766 Silica 32-100, Active
02767 Silica 63-100, Active
02769 Silica 63-200, Active
02747 Silica 100-200, Active
02770 Silica 200-500, Active

410003 RT — **ICN ALUMINA TLC CHROMATOKIT™** — 1 Kit — 189.65

Contains 500 gm of each of the following Aluminas for Thin-Layer chromatography.
04346 Alumina A-TLC
04340 Alumina B-TLC
04343 Alumina N-TLC
04409 Alumina G-TLC

410004 RT — **ICN SILICA TLC CHROMATOKIT™** — 1 Kit — 113.75

Contains 250 gm of each of the following Silica Gels for Thin-Layer Chromatography.
04642 Silica TLC
04643 Silica F-TLC
04644 Silica G-TLC
04645 Silica GF-TLC

410005 RT — **ICN CATION EXCHANGE CHROMATOKIT** — Each — 94.80

The following kit contains 100 g of each of the listed Amberlite® resins.
CG-50(H): weakly acidic resin, carboxylic functionality, 200-400 mesh.
DP-1: weakly acidic gel, sodium form, carboxylic functionality.
IR-116 (Na): strongly acidic gel, sulfonic acid functionality.
252 (Na): strongly acidic macroreticular, sulfonic acid functionality.
IRC-50 (H): weakly acidic macroreticular, carboxylic functionality.

410006 RT — **ICN ANION EXCHANGE CHROMATOKIT** — each — 75.80

The following kit contains 100 g of each fo the listed Amberlite® resins.
IRA-35: weakly basic macroreticular, polystyrene polyamine functionality, free base.
IRA-47: weakly basic gel, polyamine functionality, hydrochloride form.
IRA-68: weakly basic gel selective for ion exchange resins, polyamine functionality.
IRA-93: weakly basic macroreticular, polystyrene polyamine functionality, free base.
IRA-402 (OH): strongly basic gel, quaternary ammonium functionality.
IRA-900 (Cl): strongly basic macroreticular, quarternary ammonium functionality.

CATALOG NUMBER			US.$
410003 RT	**ICN ALUMINA TLC CHROMATOKIT™** Contains 500 gm of each of the following Aluminas for Thin-Layer chromatography. 04346 Alumina A-TLC 04340 Alumina B-TLC 04343 Alumina N-TLC 04409 Alumina G-TLC	1 Kit	189.65
410004 RT	**ICN SILICA TLC CHROMATOKIT™** Contains 250 gm of each of the following Silica Gels for Thin-Layer Chromatography. 04642 Silica TLC 04643 Silica F-TLC 04644 Silica G-TLC 04645 Silica GF-TLC	1 Kit	113.75
410005 RT	**ICN CATION EXCHANGE CHROMATOKIT** The following kit contains 100 g of each of the listed Amberlite® resins. **CG-50(H):** weakly acidic resin, carboxylic functionality, 200-400 mesh. **DP-1:** weakly acidic gel, sodium form, carboxylic functionality. **IR-116 (Na):** strongly acidic gel, sulfonic acid functionality. **252 (Na):** strongly acidic macroreticular, sulfonic acid functionality. **IRC-50 (H):** weakly acidic macroreticular, carboxylic functionality.	Each	94.80
410006 RT	**ICN ANION EXCHANGE CHROMATOKIT** The following kit contains 100 g of each fo the listed Amberlite® resins. **IRA-35:** weakly basic macroreticular, polystyrene polyamine functionality, free base. **IRA-47:** weakly basic gel, polyamine functionality, hydrochloride form. **IRA-68:** weakly basic gel selective for ion exchange resins, polyamine functionality. **IRA-93:** weakly basic macroreticular, polystyrene polyamine functionality, free base. **IRA-402 (OH):** strongly basic gel, quaternary ammonium functionality. **IRA-900 (Cl):** strongly basic macroreticular, quarternary ammonium functionality.	each	75.80

Cation Exchange Resins

Strongly Acidic, Sulfonic Acid Functionality Standard-Type Resins

Gel-Type Resins

Cat. No.	Product	Qty.	Price
150293	Amberlite® IR-116 (Na)	100 g	15.00
		500 g	45.05
		1 kg	80.10
150294	Amberlite® IR-120 Plus (H)	100 g	15.00
		500 g	45.05
		1 kg	80.10
150295	Amberlite® IR-120 Plus (Na)	100 g	15.00
		500g	45.05
		1 kg	80.10
150296	Amberlite® IR-122 (Na)	100 g	15.00
		500 g	45.05
		1kg	80.10
150297	Amberlite® IR-124 (Na)	100 g	15.65
		500 g	47.00
		1 kg	85.10

Macroreticular-Type Resins

Cat. No.	Product	Qty.	Price
150278	Amberlite® 200 (Na)	100 g	15.00
		500 g	45.05
		1 kg	80.10
150281	Amberlite® 252 (Na)	100 g	15.65
		500 g	45.05
		1 kg	80.10
150282	Amberlite® 252 C (Na) High Flow Rates	100 g	15.00
		500 g	45.05
		1 kg	80.10

Amberlyst® Catalysts

Cat. No.	Product	Qty.	Price
150336	Amberlyst® 15 (H)	100 g	23.05
		500 g	77.00
		1 kg	137.80
150337	Amberlyst® 15 (H) Wet	100 g	12.45
		500 g	31.80
		1 kg	52.95

Weakly Acidic, Carboxylic Acid Functionality Standard-Type Resins

Amberlite® CG-50 (H)

Cat. No.	Product	Qty.	Price
150283	Amberlite® 100-200 Mesh	50 g	39.75
		100 g	69.10
		500 g	313.90
150284	Amberlite® 200-400 Mesh	50 g	37.85
		100 g	55.10
		500 g	215.65
150285	Amberlite® 400-600 Mesh	100 g	38.20
		500 g	124.85
		1 kg	209.15

Macroreticular-Type Resins

Cat. No.	Product	Qty.	Price
150327	Amberlite® IRC-50 (H)	100 g	11.15
		500 g	34.10
		1 kg	61.20

Gel-Type Resins

Cat. No.	Product	Qty.	Price
150292	Amberlite® DP-1	100 g	12.50
		500 g	50.10
		1 kg	90.20
150329	Amberlite® IRC-84	100 g	12.35
		500 g	35.75
		1 kg	63.70

Anion Exchange Resins

Strongly Basic, Quarternary Ammonium Functionality Standard-Type Resins

Macroreticular-Type Resins

Cat. No.	Product	Qty.	Price
150319	Amberlite® IRA-900 (Cl)	100 g	9.85
		500 g	34.90
		1 kg	56.85
150320	Amberlite® IRA-900 C (Cl)	100 g	16.00
	High Flow Rates	500 g	46.55
		1 kg	84.05
150321	Amberlite® IRA-900 C (OH)	100 g	17.80
		500 g	.00
		1 kg	.00
150322	Amberlite® IRA-904 (Cl)	100 g	15.25
		500 g	40.65
		1 kg	71.40
150323	Amberlite® IRA-910 (Cl)	100 g	14.35
		500 g	38.20
		1 kg	64.40
150325	Amberlite® IRA-928 (OH)	100 g	34.00
		500 g	127.50
		1 kg	212.60

Weakly Basic, Free Base, Polystyrene Polyamine Functionality

Macroreticular-Type Resins

Cat. No.	Product	Qty.	Price
150305	Amberlite® IRA-93	100 g	15.60
		500 g	73.55
		1 kg	138.75
150306	Amberlite® IRA-94	100 g	15.25
		500 g	54.40
		1 kg	95.20

Weakly Basic, Free Base, Polyamine Functionality

Gel-Type Resins

Cat. No.	Product	Qty.	Price
150304	Amberlite® IRA-68	100 g	12.50
		500 g	45.05
		1 kg	80.10

Selective Ion Exchange Resins

Cat. No.	Product	Qty.	Price
150318	Amberlite® IRA-73	100 g	15.05
	Free Base	500 g	49.30
150317	Amberlite® IRC-718	100 g	12.80
	Sodium Form	500 g	40.55
	Carboxylic Acid Functionality	1 kg	67.50
	Specific for Transition Metal Cations		

Monobed Resins- Mixtures of Strongly Acidic and Strongly Basic Gel-Type Resins

Cat. No.	Product	Qty.	Price
150331	Amberlite® MB-3	100 g	16.00
	Indicator Dyed	500 g	50.00
	Contains a Thymolphthalein Indicator which changes color when the resin is exhausted.	1 kg	89.20
198581	Amberlite® MB-150	100 g	24.80
	Contains 40 % strong acid cation and 60% basic anion resins.	500 g	51.25
		1 kg	90.40

Affinity Chromatography Media

Affinity Chromatography has become a very important and versatile technique for the separation and purification of biologically active molecules. The following collection features numerous combinations of matrices, ligands, and means of attachment. In addition, we have categorized products in the following areas for your convenience:

- Activated Matrices
- Avidin and Biotin
- Derivatized Agarose Beads
- Dye Agaroses
- Endocrinology Agaroses
- Enzymology Agaroses
- Hydrophobic Agaroses
- Immunology Agaroses
- Nucleotides/Coenzymes
- Protease Binding Ligands
- Miscellaneous Specialty Ligands
- Specialty Media

Activated Matrices

CATALOG NUMBER			US. $
191310 0-5°C	**ALDEHYDE-AGAROSE** **Fast Flow Grade** 5 atoms spacer arm; contains 40-50 μmoles of aldehyde groups per ml gel. Ligand specificity: -NH_2 Flow-rate of approximately 3000 cmh^{-1} can be attained. Suspension in distilled water containing 0.02% sodium azide. Applications: covalent immobilization of ligands containing primary amino groups anywhere between pH 3 and pH 10.	5 ml 50 ml	100.00 916.00
191317 0-5°C	**ALDEHYDE-AGAROSE, COUPLING SOLUTION** 1M sodium cyanoborohydride coupling solution. In coupling reactions, dilute with protein and buffers to 0.1M final connection.	50 ml	71.60
191271 0-5°C	**THIOL-AGAROSE** 12 atoms spacer arm; contains 25-30 μmoles of sulfhydryl groups per ml gel. Ligand specificity: -SH. Suspension in 5 mM EDTA solution containing 0.02% sodium azide.	5 ml	95.50

Avidin and Biotin

CATALOG NUMBER			US. $
191323 0-5°C	**AVIDIN-AGAROSE** 5 atoms hydrophilic spacer arm; contains 1 mg avidin (hen egg white) per ml gel. Capacity: approx. 60 nmoles d(+) biotin per ml packed gel. Suspension in PBS containing 0.02% sodium azide. Applications: Isolation of biotinyl-peptides, proteins, ligands and immobilization of biotinylated enzymes.	5 ml	155.20
191287 0-5°C	**BIOTIN-AGAROSE** 12 atoms hydrophilic spacer arm; contains 30-35 μmoles of d(+)biotin per ml gel. **Capacity:** approx. 40 mg avidin per ml gel. Attached through amino group on spacer and carboxyl group on ligand. Suspension in distilled water containing 0.02% sodium azide. **Applications:** Binding of avidin-labeled ligands.	5 ml	114.50
191288 0-5°C	**2-IMINOBIOTIN-AGAROSE** 12 atoms hydrophilic spacer arm; contains 30-35 μmoles of 2-iminobiotin per ml gel. Attached through amino group on spacer and carboxyl group of ligand. Suspension in distilled water containing 0.02% sodium azide. Applications: Purification of avidin.	1 ml 5 ml	36.50 151.25
191524 0-5°C	**STREPTAVIDIN-AGAROSE** Streptavidin is attached to agarose through a stable amide linkage with a spacer arm of 15 carbons. Supplied in PBS containing 2 mM NaN_3. Streptavidin concentration: >1 mg/ml agarose. Binding of Biotinylated IgG: 13-16 mg/ml of gel.	1 mg 5 mg	95.50 381.80

Derivatized Agarose Beads

CATALOG NUMBER			US. $
191275 0-5°C	**AMINO-AGAROSE** 8 atoms spacer arm; contains 25-30 μmoles of amino groups per ml gel. Ligand specificity: -COOH. Suspension in distilled water containing 0.02% sodium azide.	5 ml 50 ml	87.50 294.25
191270 0-5°C	**CARBOXY-AGAROSE** 10 atoms spacer arm; contains 25-30 μmoles of carboxyl groups per ml gel. Ligand specificity: -NH_2. Suspension in distilled water containing 0.02% sodium azide.	5 ml	77.00

Dye Agaroses

CATALOG NUMBER			US. $
191263 0-5°C	**CIBACRON BLUE-AGAROSE** Contains 2-5 μmoles of Cibacron Blue F3GA per ml gel. Suspension in distilled water containing 0.02% sodium azide. Applications: Enzymes requiring NAD^+ and NADP, albumin, interferon, steroid receptors, and 1,25 dihydroxyvitamin D_3-receptor.	1 ml 10 ml	7.95 62.00
191294 0-5°C	**FLUORESCEIN ISOTHIOCYANATE-CASEIN-AGAROSE** (FITC-Casein-Agarose) 5 atoms hydrophilic spacer arm; contains 3-5 mg fluorescein-labeled ligand per ml gel. Suspension in PBS containing 0.02% sodium azide. Applications: Protease substrate. Immobilized FITC-Casein allows an inexpensive, rapid and highly sensitive method of detecting proteolytic enzymes. Proteases can be detected in the nanogram and subnanogram range. This technique has low blank value and, unlike the Protease Substrate Gel Tablet method, is insensitive to interfering substances. Magnetic separation of FITC-Casein beads from the supernatant speed up the separation step by eliminating centrifugation.	5 ml	124.15
191262 0-5°C	**REACTIVE GREEN-AGAROSE** Contains 2-5 mg Reactive Green per ml gel. One ml gel will bind 3-5 mg human serum albumin in 0.01 M Tris HCl, pH 8.0 at 25 C. Suspension in distilled water containing 0.02% sodium azide. **Applications:** Nucleotide enzymes, complement factors, human serum albumin.	10 ml 100 ml	73.20 332.00
191261 0-5°C	**REACTIVE RED-AGAROSE** Contains 3-5 μmoles of Reactive Red per ml gel. Suspension in distilled water containing 0.02% sodium azide. **Applications:** Nucleotide enzymes; higher binding of NADP over NAD enzymes than Cibacron Blue.	10 ml 100 ml	30.05 182.40
191260 0-5°C	**REACTIVE YELLOW-AGAROSE** Contains 2-3 mg of Reactive Yellow per ml gel. Suspension in distilled water containing 0.02% sodium azide.	10 ml 100 ml	73.20 362.70

Endocrinology Agaroses

For Hormone Receptor Research

CATALOG NUMBER			US. $
191272 0-5°C	**ADRENOCORTICOTROPIC HORMONE-AGAROSE** 10 atoms hydrophilic spacer arm; contains 0.5-1.5 mg of porcine adrenocorticotropic hormone per ml gel. Formed by reacting diazo functional group of spacer and ligand. Suspension in PBS containing 0.02% sodium azide. Applications: Studies on isolated adrenal cells.	1 ml	152.80
191273 0-5°C	**ALPRENOL-AGAROSE** 12 atoms hydrophilic spacer arm; contains 1-3 μmoles of ligand per ml gel. Formed by a free radical chain addition reaction of the sulfhydryl group of the spacer to propylene side chain of alprenolol. Suspension in PBS containing 0.02% sodium azide. Applications: Purification of β-adrenergic receptor.	1 ml	76.35
191274 0-5°C	**DIETHYLSTILBESTEROL-AGAROSE** 12 atoms hydrophilic spacer arm; contains 2-3 μmoles of ligand per ml gel. Formed by the direct ligand-epoxy-activated agarose reaction. Suspension in distilled water containing 0.02% sodium azide. Applications: Purification of estrogen receptor.	1 ml	114.50
191306 0-5°C	**NOREPINEPHRINE-AGAROSE** 10 atoms hydrophilic spacer arm; contains 2-6 μmoles of ligand per ml gel. Formed by reaction of diazo functional group of spacer and ligand. Suspension in PBS containing 0.02% sodium azide. **Applications:** Interaction of catecholamines with cell membrane receptors.	1 ml	104.00
191302 0-5°C	**TRIIODOTHYRONINE-AGAROSE** 5 atoms hydrophilic spacer arm; contains 0.5-1.5 μmoles of 1-triiodothyronine per ml gel. Formed by linking α-amino group of ligand to Actigel. Suspension in distilled water containing 0.02% sodium azide. **Applications:** Purification of thyroid hormone receptors.	1 ml	101.00

Enzymology Agaroses

For the purification of various enzymes such as ATPases, protein kinases, nucleic acid enzymes or dehydrofolate reductase.

CATALOG NUMBER			US. $
191303 0-5°C	**CALMODULIN-AGAROSE** 5 atoms hydrophilic spacer arm; contains 1 mg calmodulin per ml gel. Suspension in PBS containing 0.02% sodium azide. Applications: ATPases, protein kinases, phosphodiesterases, proteins in neurotransmission.	1 ml	43.85
191301 0-5°C	**CHOLIC ACID-AGAROSE** 9 atoms hydrophilic spacer arm; contains 10-15 μmoles of cholic acid per ml gel. Formed by reaction of spacer and ligand through carbodiimide reagent. Suspension in distilled water containing 0.02% sodium azide. Applications: Purification of serum albumin and glutathione-S-transferase isoenzymes.	5 ml	87.50
191300 RT	**GELATIN-AGAROSE** 5 atoms hydrophilic spacer arm; contains 3-6 mg of gelatin per ml gel. Suspension in PBS containing 0.02% sodium azide. **Applications:** Fibronectin.	5 ml 50 ml	57.35 425.00
191299 0-5°C	**HEPARIN-AGAROSE** 5 atoms hydrophilic spacer arm; contains 0.8-1 mg ligand per ml gel. Suspension in PBS containing 0.02% sodium azide. **Applications:** Nucleic acid enzymes, plasma proteins, coagulation proteins, steroid receptors.	5 ml 50 ml	72.20 541.75
194111 0-5°C	**HEPARIN-AGAROSE** **Type I** **Matrix:** cross-linked 4% beaded agarose **Activation:** cyanogen bromide **Activity:** >1500 units/ml **Form:** suspension in 0.5M NaCl containing 0.02% thimerosal.	25 ml	125.00
191298 0-5°C	**HISTONE-AGAROSE** 5 atoms hydrophilic spacer arm; contains 10-15 mg total calf thymus histone per ml gel. Suspension in PBS containing 0.02% sodium azide. Applications: Protein kinase assay, binding of hormone receptors.	5 ml	114.50
191304 0-5°C	**IMINODIACETIC ACID-AGAROSE** (Chelating-Agarose) 5 atoms hydrophilic spacer arm; binds approximately 20-25 μmoles of Zn^{2+} per ml gel. Suspension in distilled water containing 0.02% sodium azide. Applications: Serum proteins, lactoferrin, interferon, plasminogen activator.	1 ml 5 ml	14.55 57.75
191297 0-5°C	**METHOTREXATE-AGAROSE** 8 atoms hydrophilic spacer arm; contains 10-15 μmoles of ligand per ml gel. Formed by reaction of spacer and ligand through carbodiimide reagent. Suspension in distilled water containing 0.02% sodium azide. **Applications:** Purification of dihydrofolate reductase.	5 ml	98.00
191296 0-5°C	**PYRIDOXAMINE-AGAROSE** 12 atoms hydrophilic spacer arm; contains 10-15 μmoles of ligand per ml gel. Formed by a spacer having aldehyde functional group and amino group of ligand. Suspension in distilled water containing 0.02% sodium azide. **Applications:** Purification of vitamin B_6-dependent enzymes.	5 ml	250.30

Hydrophobic Agaroses

191312 0-5°C	**ALKOXY-AGAROSE** **Fast Flow Grade** A weak hydrophobic ligand is attached to agarose. Binding capacity 5-6 mg antibody per ml gel. The support can withstand a linear flow rate of 3000 cm/h. Suspension in distilled water containing 0.02% sodium azide. Application: monoclonal antibody purification.	5 ml	127.25

CATALOG NUMBER			US. $
191483 0-5°C	**DECYL-AGAROSE** 15-20 µmoles of decylamine are coupled to 1 ml resin. Suspension v:v 1:1 in water containing 0.5% toluene. Decyl-Agarose is decylamine bound to Agarose. It is one of the components of the Shaltiel Hydrophobic Chromatography kit, Agarose-Cn Series (n = 0,2,4,6,8,*10*).	5 ml	19.00
191277 0-5°C	**HEXYL-AGAROSE** Hexyl groups are attached through an amino group to agarose. Binding capacity >10 mg BSA per ml gel. Suspension in distilled water containing 0.02% sodium azide.	5 ml 50 ml	57.35 310.15
191482 0-5°C	**OCTYL-AGAROSE** 15-20 µmoles of octylamine are coupled to 1 ml resin. Suspension v:v 1:1 in water containing 0.5% toluene. Octyl Agarose is octylamine bound to Agarose.	5 ml 50 ml	63.70 358.00
191276 0-5°C	**PHENYL-AGAROSE** Phenyl groups are attached through an amino group to agarose. Binding capacity >15 mg bovine serum albumin per ml gel. Suspension in distilled water containing 0.02% sodium azide.	5 ml 50 ml	57.35 201.00

Immobilized Enzymes

191259 0-5°C	**β-GALACTOSIDASE-AGAROSE** 33 atoms hydrophilic spacer arm; contains 2-6 µmoles of p-aminophenyl-1-thio-β-D-Galactoside per ml gel. Suspension in PBS containing 0.02% sodium azide. Applications: β-Galactosidase fusion proteins.	2 ml	198.85
191290 0-5°C	**PAPAIN-AGAROSE** 5 atoms hydrophilic spacer arm. Papain purified from papaya latex is immobilized to agarose. Contains approx. 2 mg enzyme per ml of gel. Suspension in 50 mM sodium acetate, pH 4.5. Applications: Preparation of Fab fragments of IgG antibodies.	5 ml	174.35
191291 0-5°C	**PEPSIN-AGAROSE** 5 atoms hydrophilic spacer arm. Pepsin purified from porcine stomach is immobilized to agarose. Contains approx. 3-4 mg enzyme per ml of gel. Suspension in 50 mM sodium acetate, pH 4.5. **Applications:** Preparation of $F(ab')_2$ fragments of IgG antibodies.	5 ml	170.30
191324 0-5°C	**TRYPSIN-AGAROSE** 5 atoms hydrophilic spacer arm. Trypsin purified from bovine pancrease is immobilized to agarose. Contains approx. 1 mg enzyme per ml of gel. Suspension in mM acetic acid, pH 3.2. **Applications:** Preparation of protein fragments and Fab fragments of IgM antibodies.	5 ml	170.35
191293 0-5°C	**TRYPSIN INHIBITOR, SOYBEAN-AGAROSE** 5 atoms hydrophilic spacer arm; contains 3-6 mg of ligand per ml gel. Suspension in PBS containing 0.02% sodium azide. **Applications:** Purification of trypsin.	5 ml	85.00

Immunology Agaroses

191257 0-5°C	**BSA-AGAROSE** **Anti-Albumin** (Anti-BSA-Agarose) 5 atoms hydrophilic spacer arm; contains 2 mg anti-bovine serum albumin Ig capacity: approx. 1 mg BSA per ml gel. Suspension in PBS containing 0.02% sodium azide. Applications: Purification or removal of bovine serum albumin.	2 ml	204.70
191253 0-5°C	**IgM-AGAROSE** **Anti-Human** 5 atoms hydrophilic spacer arm; contains 2 mg affinity purified anti-human IgM; capacity: approx. 1.0 mg human IgM per ml gel. Suspension in PBS containing 0.02% sodium azide. Applications: Purification of human IgM antibodies.	2 ml	155.90

CATALOG NUMBER

IgG-AGAROSE — 2 ml — 160.35
191255 **0-5°C**
Anti-Mouse
5 atoms hydrophilic spacer arm; contains 2 mg affinity purified anti-mouse IgG; capacity: approx. 1-2 mg mouse IgG per ml gel. Suspension in PBS containing 0.02% sodium azide.
Applications: Purification or removal of mouse IgG.

IgM-AGAROSE — 2 ml — 155.90
191252 **0-5°C**
Anti-Mouse
5 atoms hydrophilic spacer arm; contains 2 mg affinity purified anti-mouse IgM; capacity: approx. 1.0 mg mouse IgM per ml gel. Suspension in PBS containing 0.02% sodium azide.
Applications: Purification of mouse IgM antibodies.

IgG-AGAROSE — 2 ml — 160.35
191254 **0-5°C**
Anti-Rat
5 atoms hydrophilic spacer arm; contains 2 mg affinity purified anti-rat IgG; capacity: approx. 1-2 mg rat IgG per ml gel. Suspension in PBS containing 0.02% sodium azide.
Applications: Purification of rat IgG.

IgM-AGAROSE — 2 ml — 155.90
191251 **0-5°C**
Anti-Rat
5 atoms hydrophilic spacer arm; contains 2 mg affinity purified anti-rat IgM capacity: approx. 1.0 mg rat IgM per ml gel. Suspension in PBS containing 0.02% sodium azide.
Applications: Purification of rat IgM antibodies

IgG-AGAROSE — 2 ml — 140.00
191279 **0-5°C**
(Human)
5 atoms hydrophilic spacer arm; contains approx. 10 mg affinity purified human IgG per ml resin. Suspension in PBS containing 0.02% sodium azide.
Applications: Protein A-fusion proteins.

CATALOG NUMBER

Nucleotides/Coenzymes

ADENOSINE-5′-DIPHOSPHATE-AGAROSE — 5 ml — 146.30
191318 **-20°C**
10 atoms hydrophilic spacer arm; contains 2-4 μmoles of ligand/ml gel. The points of linkage at site of ribose hydroxyls. Suspension in 50% glycerol containing 0.02% sodium azide.
Applications: Hexokinase, acetate kinase.

ADENOSINE-5′-MONOPHOSPHATE-AGAROSE — 5 ml — 155.90
191319 **-20°C**
10 atoms hydrophilic spacer arm; contains 2-4 μmoles of ligand per ml gel. The point of linkage is at the ribose hydroxyls. Suspension in 50% glycerol containing 0.02% sodium azide.
Applications: dehydrogenases and other enzymes.

cyclic-**ADENOSINE-5′-MONOPHOSPHATE-AGAROSE** — 5 ml — 146.30
191321 **-20°C**
11 atoms hydrophilic spacer arm; contains 1-4 μmoles of ligand per ml gel. The point of linkage is at the N-6 amino group of the adenine ring. Suspension in 50% glycerol containing 0.02% sodium azide.
Applications: Protein kinase.

DEOXYTHYMIDINE-AGAROSE — 1 ml — 38.00; 5 ml — 149.50
191246 **0-5°C**
12 atoms hydrophilic spacer arm; contains 5-10 μmoles of ligand per ml gel. The point of linkage is at site of N-3 of the pyrimidine ring. Suspension in distilled water containg 0.02% sodium azide.
Applications: Purification of thymidine kinase.

GUANOSINE-5′-TRIPHOSPHATE-AGAROSE — 5 ml — 176.00
191243 **-20°C**
10 atoms hydrophilic spacer arm; contains 1-4 μmoles of ligand per ml gel. Attached through ribose hydroxyls. Suspension in 50% glycerol containing 0.02% sodium azide.
Applications: dehyrogenases, retroviral proteins.

CATALOG NUMBER			US. $
191244 -20°C	**NICOTINAMIDE ADENINE DINUCLEOTIDE-AGAROSE** 10 atoms hydrophilic spacer arm; contains 2-4 μmoles of β-NAD^+ per ml gel. The point of linkage is at site of ribose hydroxyls. Suspension in 50% glycerol containing 0.02% sodium azide. **Applications:** Dehydrogenases.	5 ml	158.00
191245 -20°C	**NICOTINAMIDE ADENINE DINUCLEOTIDE PHOSPHATE-AGAROSE** 11 atoms hydrophilic spacer arm; contains 2-4 μmoles of β-NADP per ml gel. The point of linkage at site of N-6 amino group of the adenine ring. Suspension in 50% glycerol containing 0.02% sodium azide. **Applications:** Dehydrogenases, nucleases.	5 ml	220.90

Protease Binding Ligands

191283 0-5°C	**ARGININE-AGAROSE** 5 atoms hydrophilic spacer arm; contains 40-50 μmoles of L-arginine per ml gel. The point of linkage is at site of amino group of ligand. Suspension in PBS containing 0.02% sodium azide. Applications: Purification of plasminogen activator, prothrombin.	5 ml	61.30
191295 0-5°C	**BENZAMIDINE-AGAROSE** 5 atoms hydrophilic spacer arm; contains 30-35 μmoles of ligand per ml gel. The point of linkage is at site of p-amino group of ligand. Suspension in distilled water containing 0.02% sodium azide. Applications: Purification of thrombin, serine proteases.	5 ml	69.60
191282 0-5°C	**CASEIN-AGAROSE** 5 atoms hydrophilic spacer arm; contains 10-15 mg ligand per ml gel. Suspension in PBS containing 0.02% sodium azide. **Application:** Iodinatable reagent for protease activity measurement, protein kinase substrate.	5 ml 50 ml	36.60 336.00
191294 0-5°C	**FLUORESCEIN ISOTHIOCYANATE-CASEIN-AGAROSE** (FITC-Casein-Agarose) 5 atoms hydrophilic spacer arm; contains 3-5 mg fluorescein-labeled ligand per ml gel. Suspension in PBS containing 0.02% sodium azide. Applications: Protease substrate. Immobilized FITC-Casein allows an inexpensive, rapid and highly sensitive method of detecting proteolytic enzymes. Proteases can be detected in the nanogram and subnanogram range. This technique has low blank value and, unlike the Protease Substrate Gel Tablet method, is insensitive to interfering substances. Magnetic separation of FITC-Casein beads from the supernatant speed up the separation step by eliminating centrifugation.	5 ml	124.15
191281 0-5°C	**LYSINE-AGAROSE** 5 atoms hydrophilic spacer arm; contains 10-18 μmoles of L-lysine per ml gel. Suspension in distilled water containing 0.02% sodium azide. **Applications:** Purification of plasminogen activator, Ribosomal RNA, double-stranded DNA.	5 ml 50 ml	111.75 770.00
191293 0-5°C	**TRYPSIN INHIBITOR, SOYBEAN-AGAROSE** 5 atoms hydrophilic spacer arm; contains 3-6 mg of ligand per ml gel. Suspension in PBS containing 0.02% sodium azide. **Applications:** Purification of trypsin.	5 ml	85.00

Miscellaneous Specialty Ligands

191116 0-5°C	**ACETYLCHOLINE-AGAROSE** Ligand concentration: Approx. 2 μM/gm in pH4.5 buffer with 0.02% NaN_3 at 4°C.	1 ml 5 ml	187.80 901.55
191114 0-5°C	**CHOLECYSTOKININ-AGAROSE** Ligand concentration: Approx. 2 μM/gm in pH 4.5 buffer with 0.02% NaN_3 at 4°C.	1 ml 2 ml	94.50 175.00

CATALOG NUMBER			US. $
191474 0-5°C	**CONCANAVALIN A-AGAROSE** (Canavalia ensiformis-Agarose; Con A-Agarose) 5 atoms hydrophilic spacer arm; contains 10 mg lectin per ml gel. Sugar specificity for α-D-glucosyl, α-D-mannosyl residues. Suspension in 0.5 M acetate buffer pH 6.0 containing 1 M NaCl, 4 mM $MnCl_2$ and 0.02% sodium azide. Applications: Purification of membrane glycoproteins hormones and receptors, IgM, α-fetoprotein, glycoprotein enzymes.	5 ml	78.25
191522 0-5°C	**DOPAMINE-AGAROSE** Ligand concentration: Approx. 6μM/gm in pH 4.5 buffer, with 0.02% NaN_3 and 0.02% ascorbic acid. Store at 4°C with protection from light.	1 ml 2 ml 5 ml	55.00 94.90 163.55
191113 0-5°C	**ENKEPHALIN-AGAROSE** Ligand concentration: ~ 1μmole/gm in pH 4.5 buffer, with 0.02% NaN_3 at 4°C.	2 ml 5 ml 10 ml	159.05 365.90 668.15
191265 0-5°C	**GLUTATHIONE-AGAROSE** 10 atoms hydrophilic spacer arm; contains 25-30 μmoles of glutathione, with active sulfhydryl, per ml gel. Suspension in 5 mM EDTA containing 0.02% sodium azide. Applications: Glutathione transferase.	5 ml	124.15
191473 0-5°C	**LENS CULINARIS-AGAROSE** (Lentil lectin-Agarose; LCH-Agarose) Supplied in a prepacked column. 5 atoms hydrophilic spacer arm; contains 2 mg lectin per ml gel. Sugar specificity for α-D-mannosyl residues. Suspension in PBS containing 0.02% sodium azide. **Applications:** Purification of detergent solubilized membrane glycoproteins, cell surface antigens, glycoproteins, viral glycoproteins.	2 ml	69.40
191467 0-5°C	**NOVOBIOCIN-AGAROSE** 12 atoms hydrophilic spacer arm; contains 3-6 μmoles of ligand per ml gel. Formed by direct ligand epoxy-activated agarose reaction. Suspension in distilled water containing 0.02% sodium azide. **Applications:** Purification of DNA-gyrase, and topoisomerase II.	5 ml	183.00

CATALOG NUMBER			US. $
152424 -20-0°C	**PHOSPHOTYROSINE** *ANTIBODY* **ICN PY20 - AGAROSE** Monoclonal anti-phosphotyrosine Py 20 coupled to 4% agarose at a concentration of 10mg Py 20/ml. Supplied as 1ml of wet gel ready-to-use.	1 ml	550.00
191249 -20°C	**POLY (A)-AGAROSE** 5 atoms hydrophilic spacer arm; Polyadenylic acid chains coupled via N_6-amino groups. Results in covalent attachment of chains approx. 100 nucleotides long. Contains approx. 0.25 mg ligand per ml of gel. Binds >0.5 mg 2.5 S Poly(U) per ml of gel. Suspension in 50% glycerol. Applications: mRNA-binding proteins, poly(A)-binding RNA, DNA-dependent RNA polymerase.	5 ml	154.35
191250 -20°C	**POLY (U)-AGAROSE** 5 atoms hydrophilic spacer arm; Polyuridylic acid chains coupled via the tautomeric enolate form of the nucleotides. Results in covalent attachment of chains approx. 100 nucleotides long. Contains approx. 0.5 mg ligand per ml of gel. Binds approx. 150-200 ug mRNA per ml of gel. Suspension in 50% glycerol. **Applications:** mRNA reverse transcriptase, interferon, nucleic acids from plants.	5 ml	210.35
191289 0-5°C	**POLYMIXIN B-AGAROSE** 1 atom hydrophilic spacer arm; contains approx. 1 mg Polymixin B per ml gel. Suspension in 50% glycerol with 0.02% sodium azide. **Applications:** Reported to be useful in removing endotoxins from solutions. DO NOT FREEZE!	5 ml	79.90
191284 0-5°C	**PROTEIN A-AGAROSE** 5 atoms hydrophilic spacer arm; contains 1.2-1.5 mg of Protein A per ml gel. **Capacity:** approx. 12-15 mg human IgG bound per ml gel. Suspension in PBS containing 0.02% sodium azide. **Applications:** purification of some IgG molecules.	1 ml 5 ml 10 ml	68.50 308.10 558.95

CATALOG NUMBER			US.$
191314 RT	**PROTEIN A-AGAROSE** Preweighed solid buffer mixture. **Binding Reagent** Reconstitute to 500 ml with distilled water. **Applications:** To facilitate the binding of monoclonal mouse IgG's to Protein A-Agarose.	1 bottle	153.60
191316 0-5°C	**PROTEIN A-AGAROSE** Nondenaturing, nontoxic neutral buffer solution. **Elution Reagent** Effective buffering range pH 4.0-7.0. **Applications:** Elution of antigens from immunoadsorbents, or immunoglobulins from Protein A-Agarose.	100 ml	61.35
191472 0-5°C	**TRITICUM VULGARIS-AGAROSE** (Wheat Germ Lectin-Agarose: WGA-Agarose) Supplied in a pre-packed column. 5 atoms hydrophilic spacer arm; contains 5 mg lectin per ml gel. Sugar specificity for N-acetyl-D-glucosaminyl residues. Suspension in PBS containing 0.02% sodium azide. **Applications:** Glycoproteins, polysaccharides, major sialoglycoprotein (glycophorin A) from human erythrocyte membrane, subcellular particles, cells (esp. T-lymphocytes).	2 ml	190.95

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