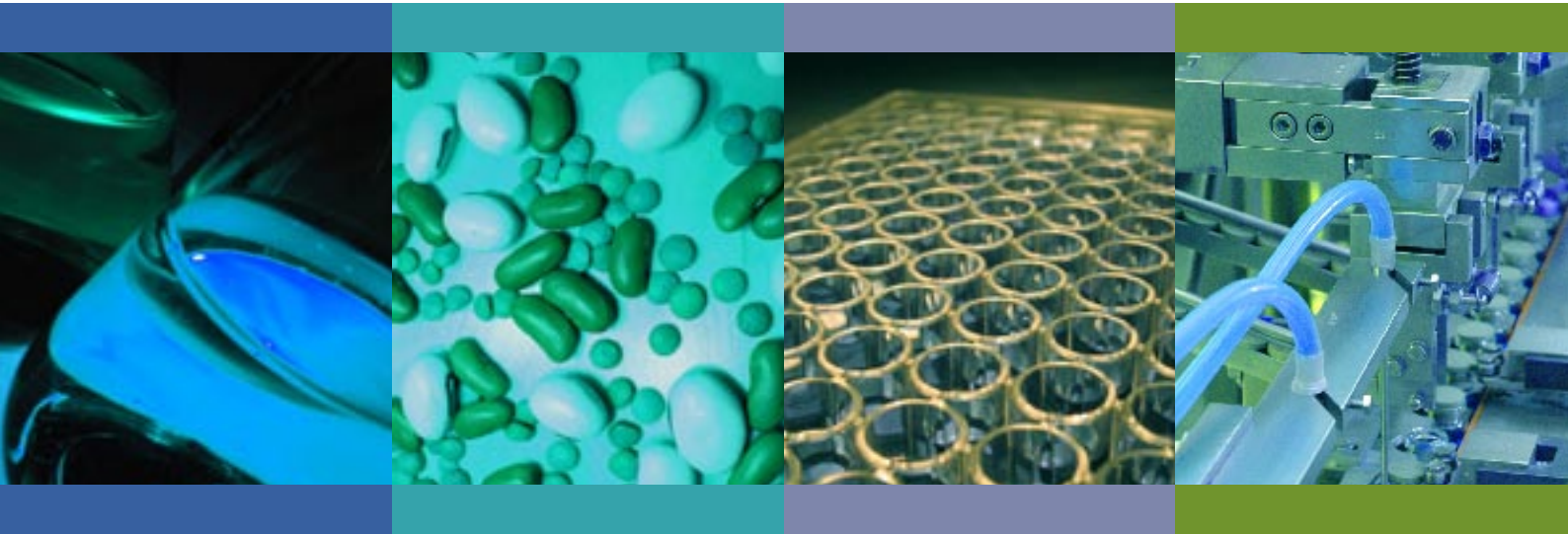


# Product Catalogue 2011/2012



Smart Buffers and Reagents

Lectins and Bioactive Proteins

Immuno Reagents

Contract Manufacturing, Bulk and OEM

## How to order

Contact our Order Centre to place an order or request a quotation for any Medicago product.

### **Order by phone**

Please call:

018 56 11 80 (Swedish customers)

+46 18 56 11 80 (International customers)

### **Order by fax**

Please send to fax number:

018 56 11 88 (Swedish customers)

+46 18 56 11 88 (International customers)

For your convenience, a fax order sheet is available at [www.medicago.se](http://www.medicago.se) under 'downloads'.

### **Order online**

Order from Medicago's online shop by visiting [www.medicago.se](http://www.medicago.se)

### **Order by e-mail**

Place your order at [order@medicago.se](mailto:order@medicago.se)

### **Order by post**

Medicago's postal address is:

Medicago AB  
Order Centre  
Danmark Berga  
SE-755 98 UPPSALA  
Sweden

### **Inquiries**

For general inquiries or further information, please refer to page 68.

### **Delivery times**

- Products ordered from our warehouse stock are shipped via FedEx. Delivery will take one business day for Sweden and two business days by post within Europe. Other countries require between three and four business days. Other shipping options are available on request.

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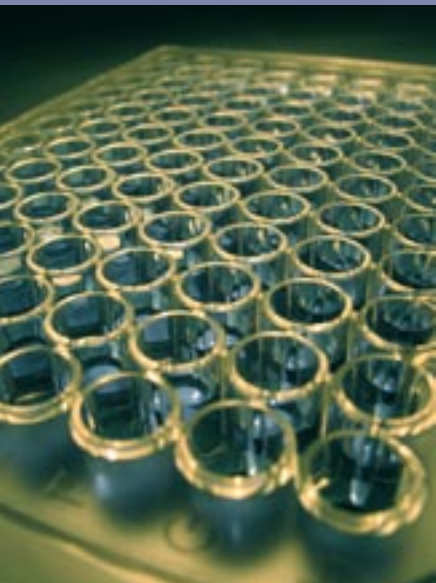
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# Welcome to our new and expanded catalogue!

Founded in 1995 in Uppsala, Sweden, Medicago is celebrating 15 years of continuous service to the life-science and biotechnology industry. We specialize in the design, development and manufacture of user-friendly research bio-reagents plus diagnostic and biochemical kits in standard pack sizes as well as bulk. We are privately-owned, enthusiastic, forward-looking and operate throughout the world.

Medicago has four product areas: Pre-made buffers and reagents, lectins, saponins and other bioactive proteins, immune reagents (antibodies and antigens), and diagnostic and biochemical kits. In each area, we offer sub-contract manufacturing, product development and customization.

## **Pre-made buffers and reagents**

We develop and manufacture a wide range of Smart Buffers and Reagents of the highest purity, pre-mixed and supplied in convenient tablets or powder pouches. Smart Buffers and Reagents save valuable time in routine laboratory work while providing maintained or even increased precision.

## **Lectins, saponins and bioactive proteins**

These bioactive proteins were the first products manufactured and marketed by Medicago. Even today, we remain one of the world's few primary manufacturers of extremely pure lectins. Our extensive expertise in this area makes us the ideal partner for customized solutions.

## **Immuno reagents**

Medicago develops and manufactures monoclonal and polyclonal antibodies, as well as antigens from viruses, bacteria and parasites. Over the last decade, we have built up a substantial body of expertise in this important area.

## **Diagnostic and biochemical kits**

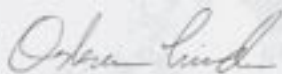
Our diagnostic kits for *in vitro* use are based on well-proven ELISA and monoclonal antibody techniques.

## **Contract manufacturing, product development and custom services**

In addition to our standard product range, we manufacture according to customer specifications and sub-contracting agreements. We welcome requests for custom, bulk and OEM in any of our product areas. Our capabilities include extensive experience of fermentation, freeze-drying, filling under aseptic conditions and downstream processing on any scale – from laboratory to large industrial. Our DIN EN ISO 9001:2008, ISO 13485:2003 quality management system ensures that your special requests are handled and delivered quickly, efficiently and accurately.

To all of you who have purchased and used Medicago products over the last 15 years, we sincerely thank you for your trust and support. We are as committed as ever to making new investments in product development and improving our customer service. Our goal, as always, is to help you achieve success.

Best regards,



Oskar Linde  
President



# New Product Highlights

## Smart Buffers **NEW**

### Tris Buffered Saline (TBS) tablets, pH 7.6, 500 ml

Page 13

Medicago has developed a new pH 7.6 TBS tablet recommended for immunoassay procedures. Uses include immunohistochemical staining with high backgrounds and diluting alkaline phosphatase or peroxidase-conjugated secondary antibodies in Western blotting. New TBS tablets pH 7.6 complement the current pH 8.0 TBS products available in pouches.

- Guaranteed reproducible results
- Ready-to-use tablets
- Isotonic
- One tablet gives 500 ml volume of 1x TBS
- Supplied in bottle (100 tablets) or blister pack (10 tablets)

#### Ordering information

Article no.	Product name	Pack size	Solution vol.
09-7500-100	TBS pH 7.6	100 tablets (bottle)	500 ml/tablet
09-7500-10	TBS pH 7.6	10 tablets (blister pack)	500 ml/tablet



### Tris Buffered Saline with Tween™ 20 (TBS-T), pH 7.6, 500 ml

Page 14

Our new Smart Buffer TBS pH 7.6 containing the non-ionic detergent Tween™ 20 is a convenient pre-mix buffer in tablet form. TBS-T has been specially developed as a washing buffer for immunoassay procedures like ELISA and CIA as well as in Western blotting.

- Formulated from analytical grade chemicals
- Exactly pre-weighed tablets
- Isotonic
- One tablet gives 500 ml volume of 1x TBS-T
- Supplied in bottle (100 tablets) or blister pack (10 tablets)

#### Ordering information

Article no.	Product name	Pack size	Solution vol.
09-7510-100	TBS-T pH 7.6	100 tablets (bottle)	500 ml/tablet
09-7510-10	TBS-T pH 7.6	10 tablets (blister pack)	500 ml/tablet



### Saline Sodium Citrate Buffer (SSC 2x), pH 7.0, 100 ml

Page 22

SSC 2x Smart Buffer is specifically developed for molecular biology techniques such as nucleic acid hybridization, blot transfer applications and nucleic acid preparation. This new product, supplied in convenient tablet form, complements the current Medicago SSC 20x and 2x buffers supplied in pouches.

- Highest purity and quality
- Documented lot-to-lot reproducibility
- Dissolve and use in minutes
- Exactly pre-weighed tablets
- One tablet gives 100 ml volume of 2x SSC

#### Ordering information

Article no.	Product name	Pack size	Solution vol.
09-9501-100	SSC buffer 2x pH 7.0	100 tablets (bottle)	100 ml/tablet



## Tris-Glycine-SDS Buffer (TG-SDS), pH 8.3, 1000 ml

Page 21

Standardize your SDS-PAGE procedures

Medicago introduces a specifically-formulated TG-SDS running buffer for denaturing protein electrophoresis in the presence of the anionic detergent sodium dodecyl sulfate (SDS-PAGE). New TG-SDS Buffer complements Medicago's current TG buffer pH 8.3 for non-denaturing PAGE procedures.

- Formulated from analytical grade chemicals
- Premixed buffer powder with preset pH
- Eliminates calculation, formulation and weighing errors
- Dissolve-and-go for greater convenience
- One pouch gives 1000 ml 1x TG-SDS

### Ordering information

Article no.	Product name	Pack size	Solution vol.
12-9222-10	Tris-glycine-SDS buffer 1x pH 8.3	10 pouches	1000 ml/pouch
12-9223-10	Tris-glycine-SDS buffer 1x pH 8.3	10 pouches	5000 ml/pouch

## Lectins **NEW**

### *Phaseolus vulgaris* lectin P (PHA-P)

Page 46

Medicago expands its range of lectins by introducing *Phaseolus vulgaris* lectin P (PHA-P) to complement the current PHA-L and PHA-E products.

PHA-P is isolated from red kidney beans and purified by affinity chromatography. It contains a mixture of PHA-E (erythroagglutinin) and PHA-L (leucoagglutinin) subunits: E<sub>4</sub>, E<sub>3</sub>L<sub>1</sub>, E<sub>2</sub>L<sub>2</sub> and E<sub>1</sub>L<sub>3</sub>.

- Ideal for lateral flow erythrocyte separation
- Erythroagglutinin activity
- Leucoagglutinin activity
- Sugar specificity for complex oligosaccharides containing galactose, N-acetylglucosamine and mannose

Supplied as a lyophilized powder.

### Ordering information

Article no.	Product name	Pack size
05-0115-10	<i>Phaseolus vulgaris</i> lectin P	10 mg
05-0115-5	<i>Phaseolus vulgaris</i> lectin P	5 mg

## Immuno Reagents **NEW**

### *Encephalitozoon cuniculi* (EC) ELISA Kit

Page 59

Ideally suited for detecting and verifying antibodies against *E. cuniculi* in rabbit serum, this new complete ELISA kit can also be used for screening entire populations of animals and for verifying the clinical diagnosis of *E. cuniculi* infection. (We recommend testing laboratory animals before use in scientific experiments to avoid misleading results.) This ELISA test complements our current *E. cuniculi* CIA (Carbon immuno assay).

- Detects antibodies against *E. cuniculi* in rabbit serum
- Enzyme Linked Immunosorbent Assay (ELISA) procedure
- Ready-to-use kit with all reagents and controls necessary for the analysis
- Includes two coated 96-well microtiter plates each providing 48 tests

For research use only.

### Ordering information

Article no.	Product name	Pack size
18-9001-1	<i>E. cuniculi</i> ELISA	1 kit



# Smart Buffers and Reagents

Biological buffers for the life-science laboratory need to meet a wide array of criteria. These include pKa between 6.0 to 8.0 (the region in which most biological reactions occur), high solubility in water, lack of toxicity, good stability, minimal salt effects due to the ionic composition of the solution, free of enzymatic and hydrolytic activity, and minimal participation in biological reactions. Buffers for molecular biology applications, e.g. Tris-Borate-EDTA and Tris-Acetate-EDTA, also need to be free from DNase and RNase activity.

Medicago's Smart Buffers and Reagents meet all these criteria. They are manufactured using highly-purified, analytical-grade chemicals and extensively tested. Manufacturing is done in a controlled clean environment to GMP procedures. A high level of automation essentially avoids operator intervention and contact with the products.

Pre-mixed reagents are exactly weighed according to specification. Tablets are packed in containers or blister packs and powders in sealed aluminium foil pouches.

## Features

- Analytical-grade reagents
- Pre-mixed powder buffers with pre-set pH
- Eliminate calculation, formulation and weighing errors
- Dissolve-and-go for greater convenience
- Stable at room temperature for 3 years
- Ideal for standardizing laboratory work
- Guaranteed reproducibility
- Save space in stock rooms

## APPLICATION TABLE FOR SMART BUFFERS

Buffer	Isotonic	Nucleic acid electrophoresis	Protein electrophoresis	Coating procedures	Western blot	Southern blot	Northern blot	ELISA	Immunohistochemistry	Molecular biology	Clinical chemistry
PBS	•							•	•		•
PBS-T	•				•			•			
TBS	•				•			•			
TBS-T	•				•			•		•	
BBS	•			•				•			
NaPi										•	
TAE		•					•				
TBE		•									
TG			•		•						
TG+SDS			•								
TE									•	•	
Carb-Bicarb				•							
SSC	• (1x)					•	•			•	
Tris-HCl										•	
NaAc										•	
Sodium Citrate											•
EDTA										•	•

## Storage and stability

Smart Buffers and Reagents supplied in tablets and pouches are stable for 3 years at room temperature. The stability of dissolved stock solutions varies according to buffer composition, concentration, water quality, cleanness of the container and the working environment. Use buffers correctly to avoid contamination, oxidation, hydration, microbial growth, etc.

In general, concentrated stock solutions (greater than 5x) are more stable than 1x working solutions. Phosphate buffers are sensitive to microbial growth and need to be kept refrigerated and stored for no more than one week. Discard turbid solutions! Other buffers can be stored longer but should still be discarded after two weeks. Basic buffers readily absorb CO<sub>2</sub> from the air. Acid buffers absorb ammonia. To extend the shelf-life of a buffer, filter the solution through a sterile 0.22 µm filter into sterile bottles or autoclave it.



## Phosphate Buffered Saline (PBS), pH 7.4 and 7.2



### Features

- Formulated from analytical grade chemicals
- Ideal for standardizing laboratory work
- Ready to use in minutes
- Choice of two formats: tablets and pouches
- Autoclavable

### Applications

- Immunoassays
- Immuno-histochemical procedures
- Microbiological procedures
- Tissue and cell culture procedures
- Protein dilution

### Description

One of the most commonly used biological buffers. Isotonic and non-toxic to cells. Medicago's PBS is specifically developed for immunological and microbiological laboratories. It is provided in sealed pouches and as pre-weighed tablets in bottles or convenient blister packs. Thirteen standard-sized packages and volumes range from 100 ml to 100 litres.

### Preparation

Dissolve one tablet or the contents of one pouch in a specified quantity of deionized water. This yields a solution containing 0.14 M Sodium chloride, 0.0027 M Potassium chloride and 0.01 M Phosphate buffer, pH 7.4, at 25°C.

### Storage and stability

Tablets and pouches stable for 3 years at room temperature.

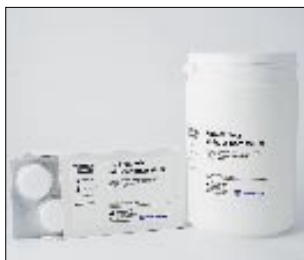
Ordering information			
Article no.	Product name	Pack size	Solution vol.
09-2051-100	PBS tablets pH 7.4	100 tablets	100 ml/tablet
09-2052-100	PBS tablets pH 7.4	100 tablets	200 ml/tablet
09-8912-100	PBS tablets pH 7.4	100 tablets	500 ml/tablet
09-8912-12	PBS tablets pH 7.4	12 tablets*	500 ml/tablet
09-9400-100	PBS tablets pH 7.4	100 tablets	1000 ml/tablet
09-9400-10	PBS tablets pH 7.4	10 tablets*	1000 ml/tablet
09-9499-100	PBS tablets pH 7.2	100 tablets	1000 ml/tablet
12-9423-5	PBS 10x pouches pH 7.4	5 pouches	1000 ml/pouch
12-9424-1	PBS pouches pH 7.4	1 pouch	10 l/pouch
12-9422-1	PBS pouches pH 7.4	1 pouch	25 l/pouch
12-9425-1	PBS pouches pH 7.4	1 pouch	50 l/pouch
12-9426-1	PBS pouches pH 7.4	1 pouch	100 l/pouch
10-9402-10	PBS solution pH 7.4	10 bottles	1000 ml/bottle

\*Blister pack

### Associated products

Product name	Page no.
PBS-Tween™	10
PBS-EDTA	11
PBS without potassium	9
NaCl 0.9%	27

## Phosphate Buffered Saline (PBS) without potassium, pH 7.4



### Features

- Choice of 2 buffer strengths
- PBS without potassium
- Exactly pre-weighed tablets
- Tablets in bottle or blister pack
- Autoclavable

### Applications

- Methods requiring PBS without potassium
- When a higher-strength (0.02 M) PBS buffer is desirable
- Biochemical downstream processing

### Description

Medicago's PBS without potassium is specifically developed for biochemical processing and immunological/microbiological laboratories. It is supplied in two formulations (low and high buffer strength) as pre-weighed tablets in bottles or convenient blister packs.

### Preparation

Dissolve one tablet in the specified quantity of deionized water. This yields a solution containing 0.15 M Sodium chloride and 0.01 M Phosphate buffer, pH 7.4, at 25°C or 0.15 M Sodium chloride and 0.02 M Phosphate buffer, pH 7.4, at 25°C.

### Storage and stability

Tablets stable for 3 years at room temperature.

Ordering information			
Article no.	Product name	Pack size	Solution vol.
09-9420-100	PBS without potassium pH 7.4	100 tablets	1000 ml/tablet
09-9420-10	PBS without potassium pH 7.4	10 tablets*	1000 ml/tablet
09-9500-100	PBS without potassium pH 7.4 high strength 0.02 M phosphate	100 tablets	1000 ml/tablet

\*Blister pack

### Associated products

Product name	Page no.
PBS-EDTA	11
PBS-Tween™	10
PBS	8
NaCl 0.9%	27

## Phosphate Buffered Saline with Tween™ 20 (PBS-T), pH 7.4



### Features

- PBS with non-ionic detergent
- Analytical grade reagents
- Exactly pre-weighed tablets
- Ready to use in minutes

### Applications

- Washing buffer for ELISA
- Washing buffer for Western blotting
- General immunoassays

### Description

PBS-T acts as a blocking agent in immunoassays such as Western blots and ELISA. The buffer contains Tween™ 20, a non-ionic detergent, which reduces non-specific binding and protein-protein interaction during the wash step in immunoassay procedures. Washing away non-specific binding makes the blots easier to interpret. Otherwise the antibodies used in Western blots can stick to the proteins, making the result difficult to interpret.

PBS-T is supplied in exactly pre-weighed tables in bottles and convenient blister packs.

### Preparation

Dissolve one tablet in the specified quantity of deionized water. This yields a solution containing 0.14 M Sodium chloride, 0.0027 M potassium chloride, 0.05% Tween™ and 0.01 M Phosphate buffer, pH 7.4, at 25°C.

### Storage and stability

Tablets stable for 3 years at room temperature.

### Ordering information

Article no.	Product name	Pack size	Solution vol.
09-8903-100	PBS-T pH 7.4	100 tablets	100 ml/tablet
09-8902-100	PBS-T pH 7.4	100 tablets	500 ml/tablet
09-8902-12	PBS-T pH 7.4	12 tablets*	500 ml/tablet
09-9410-100	PBS-T pH 7.4	100 tablets	1000 ml/tablet
09-9410-10	PBS-T pH 7.4	10 tablets*	1000 ml/tablet

\*Blister pack

### Associated products

Product name	Page no.
PBS-EDTA	11
PBS-without potassium	9
PBS	8

Tween™ is a trade mark of the Croda Group of Companies.

## SSPE buffer, pH 7.4 (PBS-EDTA)



### Features

- Analytical grade reagents
- Exactly pre-weighted in tablets
- Good lot-to-lot reproducibility
- Dissolve and use in minutes

### Applications

- Nucleic acid probe pre-hybridization and hybridization
- Washing solution for microarrays

### Description

SSPE buffer has been specially formulated for use in blocking and hybridization in both Northern and Southern blotting, and microarray techniques.

### Preparation

One pouch dissolved in deionized water and adjusted up to 200 ml yields 0.15 M NaCl, 0.001 M EDTA, 0.010 M sodium phosphate buffer, pH 7.4. at 25°C.

### Storage and stability

Pouches stable for 3 years at room temperature.

### Ordering information

Article no.	Product name	Pack size	Solution vol.
09-8952-100	SSPE Buffer, pH 7.4	100 tablets	200 ml/tablet

### Associated products

Product name	Page no.
PBS	8
PBS-without potassium	9
PBS-Tween™	10

## Borate Buffered Saline (BBS), pH 8.2



### Features

- Formulated from analytical grade chemicals
- Exactly pre-weighed tablets
- Ready to use in minutes
- Guaranteed reproducibility
- Bactericidal

### Applications

- Protein-coating on microtiter plates or plastic tubes
- Together with casein or BSA as blocking solution in blots
- General laboratory routines

### Description

BBS is supplied in exactly pre-weighed tables in bottles.

### Preparation

Dissolve one tablet under stirring in 500 ml deionized water. This yields a solution containing 0.15 M Sodium chloride and 0.01 M Borate buffer, pH 8.2, at 25°C.

### Storage and stability

Tablets stable for 3 years at room temperature.

### Ordering information

Article no.	Product name	Pack size	Solution vol.
09-2053-100	BBS pH 8.2	100 tablets	500 ml/tablet

### Associated products

Product name	Page no.
PBS	8
TBS	13
Carbonate Bicarbonate	25

## Tris Buffered Saline (TBS), pH 8.0 and pH 7.6



### Features

- Isotonic, non-toxic buffer
- Choice of pH
- Tablets or pouches
- 1x and 10x concentrations
- Guaranteed reproducibility

### Applications

- Immuno-histochemical staining
- *In situ* hybridization
- Dilution agent in Western blotting
- General wash buffer in immunoassays

### Description

TBS is sometimes used to maintain pH within a relatively narrow range. Because it is isotonic and non-toxic, TBS is also recommended to dilute substances. It is widely used in immuno-histochemical staining when the background is high, and for diluting alkaline phosphatase or peroxidase-conjugated secondary antibodies in Western blotting. Supplied at 2 different pH (7.6 and 8.0) pre-weighed in sealed pouches and as tablets in bottles or blister packs. Standard packages cover volumes 500 ml and 1000 ml.

### Preparation

Dissolve one tablet or the content of one pouch in the specified quantity of deionized water. This yields a solution containing either:

- 1) 1x solution pH 8.0 at 25°C: 0.05 M Tris buffered saline, 0.138 M Sodium chloride, 0.0027 M Potassium chloride.
- 2) 10x solution pH 8.0 (1x) at 25°C: 0.5 M Tris buffered saline, 1.38 M Sodium chloride, 0.027 M Potassium chloride.
- 3) 1x solution pH 7.6 at 25°C: 0.05 M Tris-HCl buffer, 0.15 M Sodium chloride.

### Storage and stability

Tablets and pouches stable for 3 years at room temperature

Ordering information			
Article no.	Product name	Pack size	Solution vol.
12-9133-10	TBS pH 8.0	10 pouches	1000 ml/pouch
12-9134-10	TBS 10x pH 8.0	10 pouches	1000 ml/pouch
09-7500-100	TBS pH 7.6	100 tablets	500 ml/tablet
09-7500-10	TBS pH 7.6	10 tablets*	500 ml/tablet

\*Blister pack

### Associated products

Product name	Page no.
TBS-Tween™	14

## Tris Buffered Saline with Tween™ 20 (TBS-T), pH 7.6



### Features

- Formulated from analytical grade chemicals
- TBS buffer containing non-ionic detergent
- Pre-weighed tablets
- Ready to use in minutes

### Applications

- General wash buffer in immunoassays
- Western blotting

### Description

Used as an antibody diluent and wash reagent in ELISA and Western blotting using alkaline phosphatase or peroxidase-conjugated antibodies. Supplied in exactly pre-weighed tables in bottles or blister packs.

### Preparation

Dissolving 1 tablet under stirring in 500 ml deionized water yields a solution containing 0.15 M Sodium chloride, 0.05% Tween™ 20 and 0.05 M Tris-HCl buffer, pH 7.6, at 25°C.

### Storage and stability

Tablets stable for 3 years at room temperature. To inhibit microbial growth, store TBS-T solutions at 4°C. Discard solutions that are turbid. Filter through a sterile 0.22 µm filter into sterile bottles. Do not shake the bottle excessively (foaming degrades Tween™ 20).

### Ordering information

Article no.	Product name	Pack size	Solution vol.
09-7510-100	TBS-T pH 7.6	100 tablets	500 ml/tablet
09-7510-10	TBS-T pH 7.6	10 tablets*	500 ml/tablet

\*Blister pack

### Associated products

Product name	Page no.
TBS	13

## Tris Buffer (Tris-HCl), pH 7.4, pH 8.0 and pH 8.3



### Features

- Formulated from analytical grade chemicals
- Choice of pH
- Exactly pre-weighed in pouches
- Dissolve-and-go for greater convenience

### Applications

- General buffer used extensively in biochemistry and molecular biology laboratories.

### Description

Tris (tris-hydroxymethyl-aminomethane) has a slightly alkaline buffering capacity between pH 7.0 and 9.2. This range coincides with the typical physiological pH of most living organisms. Supplied in pouches at three different pH (7.4, 8.0, and 8.3).

### Preparation

Dissolve the contents of one pouch under stirring in deionized water. Adjusting the volume up to 1000 ml yields 1 M Tris-HCl buffer, pH 7.4, 8.0 or 8.3, at 25°C.

### Storage and stability

Pouches stable for 3 years at room temperature. Tris-HCl solutions can be stored at room temperature or 4°C for 2 weeks.

The pH value of a Tris buffer strongly depends on the temperature. The pKa of 8.06 changes approximately 0.03 units per degree Celsius.

### Ordering information

Article no.	Product name	Pack size	Solution vol.
12-9198-10	Tris buffer pH 7.4	10 pouches	1000 ml/pouch
12-9199-10	Tris buffer pH 8.0	10 pouches	1000 ml/pouch
12-9200-10	Tris buffer pH 8.3	10 pouches	1000 ml/pouch

### Associated products

Product name	Page no.
NaPi	24

## EDTA Buffer, pH 8.0



### Features

- Chelating agent
- Exactly pre-set pH
- Exactly pre-weighed in pouches
- High lot-to-lot consistency
- Ready to use in minutes

### Applications

- Added to stored blood as an anti-coagulant
- Inhibits metal-dependent enzymatic reactions
- Prevents cell-to-cell joining of cadherins
- Used in electrophoresis buffers TAE and TBE

### Description

The EDTA (ethylene-diamine-tetraacetic acid) molecule is a chelating agent widely used in molecular biology to sequester divalent and trivalent metal ions such as calcium and magnesium. It can, for example, be added to stored blood as an anti-coagulant to bind  $\text{Ca}^{2+}$  ions.

### Preparation

Dissolving the contents of one pouch under stirring in the specified volume of deionized water yields 0.5 M EDTA buffer, pH 8.0, at 25°C.

### Storage and stability

Pouches stable for 3 years at room temperature.

### Ordering information

Article no.	Product name	Pack size	Solution vol.
12-9161-5	EDTA buffer pH 8.0	5 Pouches	500 ml/pouch
12-9160-5	EDTA buffer pH 8.0	5 Pouches	1000 ml/pouch

## Tris-EDTA Buffer (TE) 10x, pH 7.4



### Features

- Pre-set pH
- 10x exactly pre-weighed in pouches
- Dissolve-and-go for greater convenience

### Applications

- Breaking protein cross-links in immuno-histochemistry procedures
- Diluting and storing DNA or RNA samples

### Description

Tris-EDTA-based solutions break protein cross-links and can therefore unmask antigens and epitopes in formalin-fixed and paraffin-embedded tissue sections. Treatment with TE Buffer enhances the staining intensity of antibodies in the immuno-histochemical detection of certain proteins.

### Preparation

Dissolve the contents of one pouch under stirring in deionized water and adjust up to 1000 ml. This yields 0.1 M Tris-HCl, 0.01 M EDTA buffer, pH 7.4, at 25°C.

### Storage and stability

Pouches stable for 3 years at room temperature. The 10x TE buffer stock solution can be stored at room temperature or 2°C to 8°C for 2 months.

Dilute the 10x TE stock solution to 1x as needed and use within a week.

For molecular biology work, filter the solution through a sterile 0.22 µm filter into sterile bottles.

### Ordering information

Article no.	Product name	Pack size	Solution vol.
12-9154-10	Tris-EDTA buffer 10x pH 7.4	10 Pouches	1000 ml/pouch

### Associated products

Product name	Page no.
TAE	19
TBE	18

## Tris-Borate-EDTA Buffer (TBE), pH 8.3

### Electrophoresis running buffer



#### Features

- No detectable DNase or RNase
- Ideal for standardizing electrophoresis
- Choice of 3 concentrations: 10x, 5x and 1x
- Exactly pre-weighed in pouches
- Dissolve and use in minutes

#### Applications

- Nucleic acid electrophoresis running buffer
- Buffer of choice when running short DNA fragments (below 1500 bp)

#### Description

In molecular biology, TBE and TAE buffers (see page 19) are often used in procedures involving nucleic acids, the most common being agarose and polyacrylamide gel electrophoresis. Tris-acid solutions are effective buffers for the slightly basic conditions that keep DNA deprotonated and soluble in water. EDTA is a chelating agent for divalent cations, particularly magnesium ( $Mg^{2+}$ ). As these ions are necessary co-factors for many enzymes, including contaminant nucleases, one task of EDTA is to protect the nucleic acids against enzymatic degradation by nucleases. However, since  $Mg^{2+}$  is also a co-factor for many DNA-modifying enzymes such as restriction enzymes and DNA polymerases, its concentration in TBE or TAE buffers is generally kept low.

Borate is a strong inhibitor for many enzymes, which makes its presence in TBE buffer very popular: the DNA sample run in a TBE buffer can better keep its integrity, which suits the purpose of many agarose gel electrophoreses runs, i.e. to analyze the size of DNA fragments.

TBE buffer is often used for agarose and polyacrylamide gel electrophoresis when analysing DNA fragments from PCR amplification, DNA isolation protocols, or DNA cloning experiments. It is particularly useful for separating smaller DNA fragments (less than 1500 bp on a 0.8% agarose gel), e.g. small products of restriction enzyme digests. TBE has a greater buffering capacity and will give sharper resolution than TAE. DNA fragments also move faster in TBE than in TAE buffer. However, TBE gels in general afford a poor recovery of nucleic acids compared with TAE gels. TBE also inhibits DNA ligase, which may cause problems if subsequent DNA purification and ligation steps are intended.

TBE buffer is supplied in 3 concentrations. Pre-weighed powders give 10x and 5x stock solutions or a 1x working solution.

#### Preparation

Dissolve the contents of one pouch under stirring in deionized water and adjust up to 1000 ml. This yields a solution containing:

- 1) 1x solution pH 8.3 at 25°C: 0.089 M Tris-borate, 0.002 M EDTA
- 2) 5x solution pH 8.3 (1x) at 25°C: 0.445 M Tris-borate, 0.01 M EDTA
- 3) 10x solution pH 8.3 (1x) at 25°C: 0.89 M Tris-borate, 0.02 M EDTA

#### Storage and stability

Pouches stable for 3 years at room temperature. Stock solutions can be stored at room temperature or 4°C for 2 months. Dilute the 5x and 10x stock solutions to 1x as needed and use within one week.

The 1x solution (Article no. 12-9110-10) is ready to use directly after it has been dissolved.

For molecular biology work, filter the solutions through a sterile 0.22  $\mu m$  filter into sterile bottles.

#### Ordering information

Article no.	Product name	Pack size	Solution vol.
12-9110-10	TBE buffer 1x pH 8.3	10 pouches	1000 ml/pouch
12-9111-10	TBE buffer 5x pH 8.3	10 pouches	1000 ml/pouch
12-9112-10	TBE buffer 10x pH 8.3	10 pouches	1000 ml/pouch

#### Associated products

Product name	Page no.
TAE	19
TE	17

## Tris-Acetate-EDTA Buffer 50x (TAE), pH 8.3

### Electrophoresis running buffer



#### Features

- For DNA and RNA work
- No detectable DNase or RNase
- Ideal for standardizing electrophoresis
- Exactly pre-weighed in pouches
- Dissolve and use in minutes

#### Applications

- Nucleic acid electrophoresis running buffer
- Used for agarose and polyacrylamide gels
- Buffer of choice when running nucleic acid fragments >1500 bp
- Native and denaturing RNA analysis
- Northern blotting buffer

#### Description

TAE is preferably used in electrophoresis because of its high recovery of nucleic acids from agarose gels (compared with TBE).

TAE is advantageous for high resolution of long nucleic acid fragments (longer than 1500 bp) on agarose gels. It has a lower buffering capacity than TBE and in general, nucleic acid fragments move slower in TAE gels (apart from linear dsDNA, which tends to run faster). However, gel temperature increases when running a TAE gel for a long time, so the pH might significantly decrease because of the temperature dependency of the Tris pKa.

TAE buffer also offers advantages in subsequent enzymatic applications of the DNA sample. For example, if the downstream application is a cloning experiment, the step following agarose gel electrophoresis is ligation to a cloning vector. A DNA sample from TAE buffer is suitable for this purpose, whereas DNA from TBE buffer is not, since TBE inhibits ligases.

TAE is also used for native (non-denaturing) RNA analysis and in denaturing gels (instead of MOPS buffer) using prior denaturation of the RNA samples in hot formamide.

#### Preparation

To prepare a 50x stock solution, dissolve the contents of one pouch under stirring in deionized water and adjust up to 500 ml or 1000 ml. This yields 2.0 M Tris-acetate buffer, 0.05 M EDTA, pH 8.3, at 25°C.

#### Storage and stability

Pouches stable for 3 years at room temperature. The 50x solution can be stored at room temperature or 4°C for 2 months.

Dilute the 50x TAE stock solution to 1x as needed before use.

For molecular biology work, filter solutions through a sterile 0.22 µm filter into sterile bottles.

Ordering information			
Article no.	Product name	Pack size	Solution vol.
12-9145-5	TAE buffer 50x pH 8.3	5 pouches	500 ml/pouch
12-9144-5	TAE buffer 50x pH 8.3	5 pouches	1000 ml/pouch

#### Associated products

Product name	Page no.
TBE	18
TE	17

## Tris-Glycine Buffer (TG), pH 8.3

### Electrophoresis running buffer



#### Features

- Formulated from analytical grade chemicals
- Ideal for standardizing protein electrophoresis
- Exactly pre-weighed in pouches
- Dissolve and use in minutes

#### Applications

- Protein electrophoresis running buffer
- Polyacrylamide gel electrophoresis
- Western blotting

#### Description

The most common running buffer in native (non-denaturing) homogeneous and gradient polyacrylamide gel electrophoresis (PAGE). Also has applications in Western blotting. Tris-Glycine gels use a stacking gel to compress the sample into a narrow band before it enters the resolving gel. This leads to much sharper bands than would be seen in gels lacking a stacking gel. Tris-Glycine gels resolve proteins by size. However, very small proteins and peptides do not resolve well due to interference from the glycine/pH discontinuity front.

TG buffer is used to make a Tris-glycine/20% methanol Western transfer buffer, which is the most common protein transfer buffer for wet blot transfers. The methanol prevents the gel from swelling during transfer and enhances protein binding to nitrocellulose. Make sufficient transfer buffer to cover the electrode wires in the wet blot transfer unit and to soak the gel, membrane and blotting paper.

Protein electrophoresis under denaturing conditions (SDS-PAGE) involves separating proteins based on their size. By treating the sample under denaturing and reducing conditions with sodium dodecyl sulfate (SDS), proteins unfold and become coated with SDS detergent molecules, thereby acquiring a high net negative charge that is proportional to the length of their polypeptide chain. During electrophoresis, the negatively-charged protein molecules migrate towards the positive electrode.

SDS-PAGE is performed using TG Buffer in combination with the anionic detergent sodium dodecyl sulfate (SDS) at a concentration of 0.1%. This is made by dissolving two tablets of Medicago Smart SDS Reagent (Article no. 09-2026-100) in 1000 ml of the Tris-glycine buffer. Medicago SDS reagent is supplied in pre-weighed 0.5 g tablets.

#### Preparation

One pouch dissolved in 1000 ml or 5000 ml deionized water yields Tris-Glycine buffer with a concentration of 0.025 M Tris and 0.192 M glycine, pH 8.3, at 25°C.

#### Storage and stability

Pouches stable for 3 years at room temperature.

Ordering information			
Article no.	Product name	Pack size	Solution vol.
12-9122-10	Tris-glycine buffer 1x pH 8.3	10 pouches	1000 ml/pouch
12-9123-10	Tris-glycine buffer 1x pH 8.3	10 pouches	5000 ml/pouch

#### Associated products

Product name	Page no.
SDS Tablets	28
TG-SDS	21

## Tris-Glycine-SDS Buffer (TG-SDS), pH 8.3

### Electrophoresis running buffer



#### Features

- Formulated from analytical grade chemicals
- Ideal for standardizing protein electrophoresis
- Exactly pre-weighed in pouches
- Dissolve and use in minutes

#### Applications

- Denaturing protein electrophoresis running buffer (SDS-PAGE)

#### Description

Protein electrophoresis under denaturing conditions (SDS-PAGE) involves separating proteins based on their size. By treating the sample under denaturing and reducing conditions with sodium dodecyl sulfate (SDS), proteins unfold and become coated with SDS detergent molecules, thereby acquiring a high net negative charge that is proportional to the length of their polypeptide chain. During electrophoresis, the negatively-charged protein molecules migrate towards the positive electrode and they are separated exclusively by size.

#### Preparation

One pouch dissolved in 1000 ml or 5000 ml deionized water yields Tris-Glycine buffer with a concentration of 0.025 M Tris and 0.192 M glycine, 0.1% SDS, pH 8.3, at 25°C.

#### Storage and stability

Pouches stable for 3 years at room temperature.

Ordering information			
Article no.	Product name	Pack size	Solution vol.
12-9222-10	Tris-glycine-SDS buffer 1x pH 8.3	10 Pouches	1000 ml/pouch
12-9223-10	Tris-glycine-SDS buffer 1x pH 8.3	10 Pouches	5000 ml/pouch

#### Associated products

Product name	Page no.
Tris-glycine buffer	20

## Saline Sodium Citrate Buffer (SSC), pH 7.0



### Features

- Highest purity and quality
- Two stock solutions: 2x and 20x
- Choice of tablets or pouches
- Dissolve and use in minutes
- Pre-set pH

### Applications

- Nucleic acid hybridization
- Blot transfer procedures
- Nucleic acid preparation

### Description

Specifically developed for Northern and Southern transfer protocols and nucleic acid preparations. Supplied in tablets and pouches in two concentrations (2x and 20x).

### Preparation

One tablet or pouch dissolved in the specified volume of deionized water yields:

- 1) 20x SSC buffer, pH 7.0 (20x), at 25°C: 3.0 M NaCl, 0.3 M sodium citrate
- 2) 2x SSC buffer, pH 7.0 (2x), at 25°C: 0.3 M NaCl, 0.03 M sodium citrate

### Storage and stability

Tablets and pouches stable for 3 years at room temperature. Stock solutions can be stored at room temperature or 2°C to 8°C for 2 months.

Dilute 20x SSC buffer stock solutions as needed before use.

### Ordering information

Article no.	Product name	Pack size	Solution vol.
12-9195-5	SSC buffer 20x pH 7.0	5 pouches	1000 ml/pouch
12-9196-5	SSC buffer 2x pH 7.0	5 pouches	1000 ml/pouch
09-9501-100	SSC buffer 2x pH 7.0	100 tablets	100 ml/tablet

## Sodium Acetate Buffer, pH 7.0 and pH 5.2



### Features

- Choice of pH
- Exactly pre-weighed in pouches
- Highest purity and quality
- Dissolve and use in minutes

### Applications

- Nucleic acid purification
- Molecular biology procedures

### Description

Widely used in molecular biology laboratories for nucleic acid purification.

### Preparation

One pouch dissolved in deionized water and adjusted up to 1000 ml yields a 3 M sodium acetate buffer solution, pH 7.0 or pH 5.2, at 25°C.

### Storage and stability

Pouches stable for 3 years at room temperature.

Ordering information			
Article no.	Product name	Pack size	Solution vol.
12-9188-5	Sodium Acetate Buffer pH 7.0	5 pouches	1000 ml/pouch
12-9187-5	Sodium Acetate Buffer pH 5.2	5 pouches	1000 ml/pouch

## Buffered Sodium Citrate 3.2%, 0.109 M



### Features

- Highest purity and quality
- Choice of two concentrations
- Exactly pre-weighed in pouches
- Dissolve and use in minutes

### Applications

- General anti-coagulant agent
- Clinical laboratory examinations
- In venous blood collection tubes
- Preservation of blood in blood banks

### Description

Used in clinical laboratories and blood banks as an effective anti-coagulant, usually in a ratio of 1:9 sodium citrate/blood. The citrate ion chelates calcium ions in the blood by forming calcium citrate complexes and disrupting the blood clotting mechanism.

### Preparation

One pouch dissolved in deionized water and adjusted up to the specified volume yields 3.2%, 0.109 M buffered sodium citrate.

### Storage and stability

Pouches stable for 3 years at room temperature. Solutions can be stored at room temperature or 4°C for 2 months.

To extend the shelf-life, filter the solution through a sterile 0.22 µm filter into sterile bottles.

Ordering information			
Article no.	Product name	Pack size	Solution vol.
12-8480-10	Buffered Sodium Citrate 3.2%	10 pouches	100 ml/pouch
12-8483-5	Buffered Sodium Citrate 3.2%	5 pouches	1000 ml/pouch

## Sodium Phosphate Buffer (NaPi), pH 6.5, pH 7.0, pH 7.2 and pH 7.4



### Features

- Highest purity and quality
- Wide choice of pH
- Choice of three molar concentrations
- Exactly pre-weighed in pouches
- Dissolve and use in minutes

### Applications

- Multi-purpose buffer for many laboratory procedures

### Description

Supplied in seven different formulations to suit most biochemical and molecular biology applications.

### Preparation

One pouch dissolved in deionized water and adjusted up to the specified volume yields:

- 1) NaPi buffer 0.1 M or 1 M, pH 6.5, at 25°C.
- 2) NaPi buffer 0.1 M or 0.02 M, pH 7.0, at 25°C.
- 3) NaPi buffer 1 M, pH 7.2, at 25°C.
- 4) NaPi buffer 0.1 M or 1 M, pH 7.4, at 25°C.

### Storage and stability

Pouches stable for 3 years at room temperature.

### Ordering information

Article no.	Product name	Pack size	Solution vol.
12-9527-10	Sodium Phosphate Buffer 0.02 M pH 7.0	10 pouches	1000 ml/pouch
12-9528-10	Sodium Phosphate Buffer 0.02 M pH 7.0	10 pouches	5000 ml/pouch
12-9529-10	Sodium Phosphate Buffer 0.1 M pH 6.5	10 pouches	1000 ml/pouch
12-9530-10	Sodium Phosphate Buffer 0.1 M pH 7.0	10 pouches	1000 ml/pouch
12-9531-10	Sodium Phosphate Buffer 0.1 M pH 7.4	10 pouches	1000 ml/pouch
12-9184-10	Sodium Phosphate Buffer 1 M pH 6.5	10 pouches	1000 ml/pouch
12-9185-10	Sodium Phosphate Buffer 1 M pH 7.2	10 pouches	5000 ml/pouch

### Associated products

Product name	Page no.
PBS	8
Tris-HCl	15

## Carbonate-bicarbonate Coating Buffer, pH 9.6



### Features

- Supplied with and without sodium azide as preservative
- Pre-set pH
- Exactly pre-weighed tablets
- Highest purity and quality
- Dissolve and use in minutes

### Applications

- Protein coating on microtiter plates and plastic tubes for RIA and EIA

### Description

Specifically developed for protein-coating procedures on microtiter plates and plastic for RIA and EIA techniques. The buffer is supplied in tablets with two formulations, one of which contains 0.05% sodium azide as preservative.

### Preparation

One tablet dissolved in deionized water and adjusted up to the specified volume yields 0.05 M sodium carbonate-bicarbonate buffer, pH 9.6, at 25°C.

### Storage and stability

Pouches stable for 3 years at room temperature.

Ordering information			
Article no.	Product name	Pack size	Solution vol.
09-8932-50	Carbonate-bicarbonate Buffer, pH 9.6 with 0.05% azide	50 tablets	100 ml/tablet
09-8932-8	Carbonate-bicarbonate Buffer, pH 9.6 with 0.05% azide	8 tablets*	100 ml/tablet
09-8922-100	Carbonate-bicarbonate Buffer, pH 9.6	100 tablets	100 ml/tablet
09-8922-24	Carbonate-bicarbonate Buffer, pH 9.6	24 tablets*	100 ml/tablet
09-8922-8	Carbonate-bicarbonate Buffer, pH 9.6	8 tablets*	100 ml/tablet

\*Blister pack

### Associated products

Product name	Page no.
PBS-Tween™	10
BBS	12

## Glycine-HCl buffer, pH 3.0



### Features

- Highest purity and quality
- Exactly pre-weighed in pouches
- Dissolve and use in minutes

### Applications

- Widely used in biochemistry

### Description

Glycine can be used as a biochemical reagent and solvent for organic synthesis and biochemistry. Medicago's glycine is more than 99% pure.

### Preparation

One pouch dissolved in deionized water and adjusted up to 1000 ml yields 0.1 M glycine-HCl, pH 3.0, at 25°C.

### Storage and stability

Pouches stable for 3 years at room temperature.

### Ordering information

Article no.	Product name	Pack size	Solution vol.
12-9121-10	Glycine-HCl powder	10 pouches	1000 ml/pouch

## Washing solution for DELFIA™, pH 7.8



### Features

- Pre-formulated
- Exactly pre-weighed in pouches
- Dissolve and use in minutes

### Applications

- Washing solution for DELFIA immunoassays

### Description

Specifically developed for immunoassay procedures.

### Preparation

One pouch dissolved in deionized water and adjusted up to 10 litres yields 0.9% NaCl, 0.005% sodium azide, 0.05% Tween™ 20, 0.050 M Tris-HCl, pH 7.8, at 25°C.

### Storage and stability

Pouches stable for 3 years at room temperature.

### Ordering information

Article no.	Product name	Pack size	Solution vol.
12-9197-1	Washing solution for DELFIA™	1 pouch	10 l/pouch

## Sodium Chloride Reagent (NaCl)



### Features

- Made from the highest quality pharmaceutical grade NaCl (99.99%)
- Supplied in tablets or pouches
- Choice of 3 concentrations
- Dissolve and use in minutes

### Applications

- General laboratory solution. Physiological saline (0.9%) solution routinely used in laboratories when an isotonic solution is needed.

### Description

Sodium Chloride is usually used in laboratory routines. The product is supplied in convenient exactly pre-weighed tablets and as powder in pouches.

### Preparation

One tablet or the contents of one pouch dissolved in deionized water and adjusted up to the specified volume yields:

- 1) 0.9% (w/v) sodium chloride (physiological isotonic solution)
- 2) 3 M sodium chloride (hypertonic)
- 3) 5 M sodium chloride (hypertonic)

### Storage and stability

Tablets and pouches stable for 3 years at room temperature.

Ordering information			
Article no.	Product name	Pack size	Solution vol.
09-9103-100	Sodium chloride, 0.9%	100 tablets	100 ml/tablet
09-9105-100	Sodium chloride, 0.9%	100 tablets	200 ml/tablet
09-9104-100	Sodium chloride, 0.9%	100 tablets	1000 ml/tablet
09-9104-10	Sodium chloride, 0.9%	10 tablets*	1000 ml/tablet
12-9190-5	Sodium chloride, 3 M	5 pouches	1000 ml/pouch
12-9191-5	Sodium chloride, 5 M	5 pouches	1000 ml/pouch

\*Blister pack

## Sodium Hydroxide Reagent (NaOH)



### Features

- Highest purity and quality
- Exactly pre-weighed pellets in pouches
- Dissolve and use in minutes

### Applications

- Biochemistry and molecular biology laboratories

### Description

Sodium Hydroxide is used in biochemistry. It has a very high pH and is often utilized to raise the pH value of chemical solutions, for example to neutralize an acid. Medicago's NaOH is more than 99% pure.

### Preparation

One pouch dissolved in deionized water and adjusted up to 1000 ml yields 5 M sodium hydroxide.

### Storage and stability

Pouches stable for 3 years at room temperature.

Ordering information			
Article no.	Product name	Pack size	Solution vol.
12-9183-5	Sodium hydroxide, 5 M	5 pouches	1000 ml/pouch

## Sodium Dodecyl Sulphate Reagent (SDS)



### Features

- Highest purity and quality
- Anionic detergent
- Exactly pre-weighed tablets and pouches
- Dissolve and use in minutes

### Applications

- Solubilizes and denatures proteins
- SDS-PAGE electrophoresis
- Western blots

### Description

Anionic detergent that denatures secondary and non-disulfide-linked tertiary protein structures. Applies a negative charge to each protein in proportion to its mass. SDS binds in a ratio of approximately 1.4 g SDS per 1.0 g protein, unfolding it to give a near-uniform negative charge along the length of the polypeptide chain. As a result, the distance of migration through the gel in SDS-PAGE electrophoresis can be assumed to be directly related only to the size of the protein.

More than 99% pure. One tablet weighs 0.5 g and can be dissolved in deionized water to the desired volume.

### Preparation

One pouch dissolved in deionized water and adjusted up to 1000 ml yields a 10% or 20% solution of sodium dodecyl sulphate.

### Storage and stability

Tablets and pouches stable for 3 years at room temperature.

#### Ordering information

Article no.	Product name	Pack size	Weight/Solution vol.
09-2026-1000	SDS	1000 tablets	0.5 g/tablet
09-2026-50	SDS	50 tablets	0.5 g/tablet
12-9193-5	SDS 10%	5 pouches	1000 ml/pouch
12-9194-5	SDS 20%	5 pouches	1000 ml/pouch

## Potassium Chloride Reagent (KCl)



### Features

- Made from the highest quality analytical grade KCl ( $\geq 99.5\%$ )
- Exactly pre-weighed in pouches
- Dissolve and use in minutes

### Applications

- Multi-purpose routine laboratory reagent
- Storage buffer for pH electrodes
- Reference solution for conductivity

### Description

Potassium chloride, KCl, is generally used in laboratory routines. Its use as a storage buffer for pH electrodes and as a reference solution for conductivity measurements is well established. Supplied as a convenient exactly pre-weighed powder in pouches in two formulations: 1 M and 3 M.

### Preparation

One pouch dissolved in deionized water and adjusted up to 1000 ml yields 1 M or 3 M potassium chloride reagent.

### Storage and stability

Pouches stable for 3 years at room temperature.

#### Ordering information

Article no.	Product name	Pack size	Solution vol.
12-9175-10	Potassium chloride, 1 M	10 pouches	1000 ml/pouch
12-9176-5	Potassium chloride, 3 M	5 pouches	1000 ml/pouch

## Potassium Acetate Reagent (CH<sub>3</sub>-COOK)



### Features

- Highest purity (≥ 99%) and quality
- Exactly pre-weighed in pouches
- Dissolve and use in minutes

### Applications

- Molecular biology procedures
- In mixtures for tissue preservation and fixation

### Description

In molecular biology applications, potassium acetate reagent precipitates dodecyl sulfate (SDS) and SDS-bound proteins to allow their removal from DNA. Also used as a salt for the ethanol precipitation of DNA.

CH<sub>3</sub>-COOK is supplied as a convenient, exactly pre-weighed powder in pouches in two formulations; 3M and 5M.

### Preparation

One pouch dissolved in deionized water and adjusted up to 1000 ml yields 3 M or 5 M potassium acetate reagent.

### Storage and stability

Pouches stable for 3 years at room temperature.

### Ordering information

Article no.	Product name	Pack size	Solution vol.
12-9170-5	Potassium acetate, 3 M	5 pouches	1000 ml/pouch
12-9171-5	Potassium acetate, 5 M	5 pouches	1000 ml/pouch

## p-Nitrophenyl Phosphate Substrate (pNPP)



### Features

- Formulated from chemicals of analytical quality
- Exactly pre-weighed tablets
- Dissolve and use in minutes

### Applications

- Immunoassays
- Chromogenic substrate for phosphatase assays
- Histochemistry procedures
- Recommended for ELISA procedures

### Description

Specifically developed for immunoassay procedures. Ideal for phosphate-based ELISA methods. Also used as a chromogenic non-specific substrate in alkaline and acid phosphatase assays. Its soluble end-product is yellow and can be spectrophotometrically read at 405 to 410 nm. The reaction may be stopped with 3 M NaOH

The substrate is more than 99% pure. Supplied in convenient exactly pre-weighed tablets containing 5 mg or 20 mg of substrate.

### Preparation

Drop a magnetic stir bar in a standard laboratory bottle or beaker and put it on the magnetic stirrer. Dissolve one tablet in the appropriate amount of deionized water to reach the desired result according to the assay you are using. Within a few minutes, the substrate is ready to use.

### Storage and stability

Tablets stable for 3 years at room temperature.

### Ordering information

Article no.	Product name	Pack size
09-2001-100	p-Nitrophenyl phosphate, 5 mg	100 tablets
09-2001-24	p-Nitrophenyl phosphate, 5 mg	24 tablets*
09-2020-100	p-Nitrophenyl phosphate, 20 mg	100 tablets
09-2020-24	p-Nitrophenyl phosphate, 20 mg	24 tablets*

\*Blister Pack

## Magnesium Sulphate Reagent



### Features

- Highest purity and quality
- Exactly pre-weighed in pouches
- Dissolve and use in minutes

### Applications

- Molecular biology laboratories
- Agricultural micro-nutrient
- Process industry catalyst

### Description

Magnesium sulphate powder is widely utilized in biology. It can be used in agriculture as a micro-nutrient and in the process industry as a catalyst. The product is more than 99.5% pure.

### Preparation

One pouch dissolved in deionized water and adjusted up to 1000 ml yields 1.0 M magnesium sulphate.

### Storage and stability

Pouches stable for 3 years at room temperature.

#### Ordering information

Article no.	Product name	Pack size	Solution vol.
12-9182-5	Magnesium sulphate, 1 M	5 pouches	1000 ml/pouch

## Magnesium Chloride Reagent



### Features

- Highest purity and quality
- Exactly pre-weighed in pouches
- Dissolve and use in minutes

### Applications

- Coagulant
- Immune stimulant
- Nutritional supplement
- Industrial processing

### Description

Magnesium chloride is an important coagulant and a powerful stimulant of the immunological system. Medicago's MgCl is more than 99% pure.

### Preparation

One pouch dissolved in deionized water and adjusted up to 1000 ml yields 1.0 M magnesium chloride.

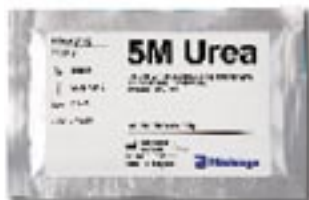
### Storage and stability

Pouches stable for 3 years at room temperature.

#### Ordering information

Article no.	Product name	Pack size	Solution vol.
12-9180-5	Magnesium chloride, 1 M	5 pouches	1000 ml/pouch

## Urea Reagent, 5 M and 8 M



### Features

- Highest purity and quality
- Exactly pre-weighed in pouches
- Choice of two concentrations
- Dissolve and use in minutes

### Applications

- Denaturing proteins
- Protein refolding
- 2D-PAGE
- Sequencing methods

### Description

Urea (carbamide) is an organic compound with the chemical formula  $(\text{NH}_2)_2\text{CO}$  extensively used in proteomics and molecular biology. The urea supplied by Medicago is more than 99% pure.

### Preparation

One pouch dissolved in deionized water and adjusted up to 100 ml yields 5 M urea (30% w/v) or 8 M urea.

### Storage and stability

Pouches stable for 3 years at room temperature.

### Ordering Information

Article no.	Product name	Pack size	Solution vol.
12-8481-5	Urea, 5 M	5 pouches	100 ml/pouch
12-8484-5	Urea, 8 M	5 pouches	100 ml/pouch

## D(+) Glucose Reagent 20%



### Features

- Highest purity and quality
- Exactly pre-weighed in pouches
- Dissolve and use in minutes

### Applications

- Sugar solution routinely used in laboratories
- Use in growth media

### Description

D-glucose, also referred to as dextrose monohydrate, is a very important carbohydrate in biology. It is biologically active.

### Preparation

One pouch dissolved in deionized water and adjusted up to 1000 ml yields 20% D(+) Glucose.

### Storage and stability

Pouches stable for 3 years at room temperature.

### Ordering information

Article no.	Product name	Pack size	Solution vol.
12-9165-5	D(+) Glucose 20%	5 pouches	1000 ml/pouch

## Reagents for Biotechnology



Medicago offers a selected range of reagents and biochemicals that are extensively tested and are of very high quality, suitable for use in numerous biotechnology applications. These reagents meet stringent requirements, such as adherence to compendial references where applicable and extremely low levels of trace element contamination.

### Ordering information

Article no.	Product Name	Purity	CAS no.	Pack size
16-0004-500	Ammonium hydrogen carbonate	≥ 99.5%	1066-33-7	500 g
16-0003-1000	Ammonium sulphate	≥ 99.5%	7783-20-2	1 kg
16-0005-1000	Boric acid	≥ 99.8%	10043-35-3	500 g
16-0006-1000	Citric acid monohydrate	≥ 99.5%	5949-29-1	1 kg
16-0007-500	EDTA di sodium	≥ 99.4%	6381-92-6	500 g
16-0024-500	Glycerol (Glycerin)	≥ 99.5%	56-81-5	500 ml
16-0008-1000	Glycine	≥ 99%	56-40-6	1 kg
16-0009-1000	Lactose	≥ 99%	64044-51-5	500 g
16-0010-1000	Potassium chloride	≥ 99.5%	7447-40-7	1 kg
16-0011-1000	Potassium di hydrogen phosphate	≥ 99%	7778-77-0	1 kg
16-0012-1000	Di potassium hydrogen phosphate	≥ 99%	7758-11-4	1 kg
16-0013-1000	Sodium chloride	≥ 99.99%	7647-14-5	1 kg
16-0014-1000	Tri sodium citrate	≥ 99.5%	68-04-2	1 kg
16-0015-500	Sodium carbonate	≥ 99.5%	497-19-8	500 g
16-0018-1000	Sodium di hydrogen carbonate	≥ 99.7%	144-55-8	1 kg
16-0016-1000	Sodium di hydrogen phosphate	≥ 99%	7558-80-7	1 kg
16-0017-1000	Di sodium hydrogen phosphate	≥ 99%	7558-79-4	1 kg
16-0019-1000	Sodium hydroxide	≥ 99%	1310-73-2	1 kg
16-0020-1000	Sucrose (saccharose)	≥ 99.5%	57-50-1	1 kg
16-0021-500	Tris	≥ 99.9%	77-86-1	500 g
16-0022-500	Tris-HCl	≥ 99.5%	1185-53-1	500 g
16-0023-1000	Tween™ 20	n.a.	9005-64-5	1000 ml
16-0023-250	Tween™ 20	n.a.	9005-64-5	250 ml
16-0025-500	Urea	≥ 99.5%	57-13-6	500 g



# Lectins and Bioactive Proteins

Medicago is a primary manufacturer of a wide variety of exceptionally pure lectins purified by affinity chromatography. Lectins are non-enzymatic proteins of non-immunoglobulin origin that bind specifically and reversibly to carbohydrate moieties without altering the covalent structure of the glycosyl ligands.

The term 'lectin' is derived from the latin word legere, meaning 'to select'. The specificity of a lectin is usually defined by the monosaccharides or oligosaccharides that are best at inhibiting the agglutination or precipitation caused by the lectin. Lectins are usually of plant origin but do occur in many types of organism; some are glycoproteins and may be soluble or membrane-bound.

The biological function of lectins is far from fully explored. Their specificity enables binding to glycoproteins and polysaccharides as well as agglutination of erythrocytes and stimulation of blood lymphocytes. Because of their ability to distinguish glycosyl ligands on human red blood cells, lectins can be used for blood typing.

Immobilized lectins can be used in affinity chromatography to purify and isolate glycoproteins, glycolipids, polysaccharides, viruses and cells. Carbohydrate-containing substances bound to the lectin may be eluted with a competitive binding substance.

Medicago offers lectins as a freeze-dried powder or as a solution manufactured under aseptic conditions. If you don't find the lectin you are looking for, we can certainly produce it for you. Furthermore, we offer different custom lectin conjugates on request.

Medicago's bioactive proteins include the calcium-binding protein Calmodulin and other custom-made proteins.

## LECTINS SELECTION TABLE

Article no.	Lectin	Mol. Wt. (kDa)	Subunits	Sugar specificity	Agglutination specificity	Mitogenic activity
05-0116	<i>Arachis hypogaea</i>	110	4	$\beta$ -gal(1->3)galNAc	T	
05-0133	<i>Artocarpus integrifolia</i>	66	4	$\alpha$ -gal->OMe	T	x
05-0106	Concanavalin A	104	4	$\alpha$ -man, $\alpha$ -glc	—	x
05-0105	<i>Crotalaria juncea</i>	124	4	Gal > GalNAc	—	x
05-0120	<i>Galanthus nivalis</i>	52	4	non-reduc. D-man	(b)	
05-0117	<i>Glycine max</i>	120	4	galNAc	—	x (c)
05-0104	<i>Lens culinaris</i>	46	2	$\alpha$ -man > $\alpha$ -glc	—	x
05-0119	<i>Narcissus pseudonarcissus</i>	26	2	$\alpha$ -D-man	(b)	x
05-0131	<i>Phaseolus vulgaris</i> PHA-E	128	4	oligosaccharide	—	x
05-0132	<i>Phaseolus vulgaris</i> PHA-L	126	4	oligosaccharide	—	x
05-0115	<i>Phaseolus vulgaris</i> PHA-P	128	4	oligosaccharide		
05-0111	<i>Pisum sativum</i>	49	4( $\alpha$ & $\beta$ ) (a)	$\alpha$ -man > $\alpha$ -glc	—	x
05-0102	<i>Triticum vulgaris</i>	36	2	(glcNAc) <sub>2</sub> , NeuNAc	—	x
05-0114	<i>Vicia ervilia</i>	53	$\alpha_2\beta_2$	$\alpha$ -Man > $\alpha$ -Glc	—	

### Abbreviations

a – Lectin has subunits of different molecular weight

b – Lectin agglutinates rabbit, but not human, erythrocytes

c – Lectin is mitogenic for lymphocytes treated with neuramidase



## Arachis hypogaea lectin (PNA, Peanut Agglutinin)



### Features

- Strong anti-T activity (1)
- Sugar specificity:  $\beta$ -D-Gal-(1-3)-D-GalNAc (1)
- Agglutinates rabbit erythrocytes at  $<0.1 \mu\text{g/ml}$  after trypsin treatment of the cells
- High activity

### Applications

- Probe in histochemistry and immuno-histochemistry
- Binds to a broad range of receptors in human tissues
- Human lymphocyte subset studies

### Description

*Arachis hypogaea* lectin (PNA, Peanut Agglutinin) is isolated from peanuts by affinity chromatography. The lectin has 4 subunits and a molecular weight of 110 kDa. PNA is a carbohydrate-free protein that displays specificity towards  $\beta$ -D-Gal(1-3)-D-galNAc (1). It has potent anti-T activity and can be used to distinguish between human lymphocyte subsets. PNA has been used in tumour tissue determination for transitional mucosa malignancies.

*Arachis hypogaea* lectin is supplied without preservatives as a lyophilized white to light-yellow powder from 10 mM  $\text{NH}_4\text{HCO}_3$ .

For laboratory use only.

### Storage and stability

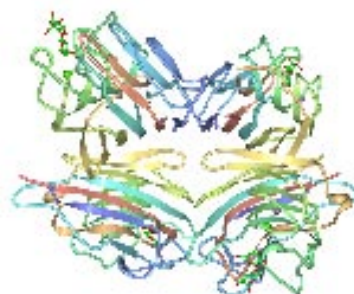
Stable for at least 3 years from production date when stored below  $-20^\circ\text{C}$ . May be shipped at ambient temperature. After reconstitution in PBS pH 7.4, the solution may be stored frozen in working aliquots for up to 12 months. Repeated freezing and thawing is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use.

### Ordering information

Article no.	Product name	Pack size
05-0116-50	<i>Arachis hypogaea</i> lectin (PNA)	50 mg
05-0116-10	<i>Arachis hypogaea</i> lectin (PNA)	10 mg

### References

- (1) Liener I. E., Sharon N., Goldstein I. J., (1986) The Lectins – Properties, Functions and Applications in Biology and Medicine.
- (2) Conformation, protein-carbohydrate interactions and a novel subunit association in the refined structure of peanut lectin-lactose complex. Banerjee, R., Das, K., Ravishankar, R., Suguna, K., Surolia, A., Vijayan, M. (1996) J.Mol.Biol. 259: 281–96.



Crystal structure of peanut lectin (2)

## Artocarpus integrifolia lectin (Jacalin)



### Features

- Galactose-binding lectin (1)
- Highly specific for the tumour-associated T-antigenic disaccharide (2)
- Agglutinates human erythrocytes at a concentration of  $\geq 7.8$   $\mu\text{g/ml}$
- High activity

### Applications

- Isolation of IgA from human serum
- Isolation of human plasma glycoproteins
- AIDS research

### Description

Jacalin, isolated by affinity chromatography from jackfruit seeds, belongs to the family of galactose-binding lectins. Jacalin is a tetrameric two-chain lectin with a molecular weight of 66 kDa (2). Applications include isolating IgA from human serum, isolating human plasma glycoproteins and histochemistry.

A post-translational proteolytic modification of Jacalin gives the lectin a novel carbohydrate-binding site involving the N terminus of the  $\alpha$ -chain. The relative affinities of the lectin for galactose derivatives, as well as the structural basis of its T-antigen specificity, are explained by its protein structure (2).

*Artocarpus integrifolia* lectin is supplied without preservatives as a lyophilized white to light-yellow powder from 50 mM  $\text{NH}_4\text{HCO}_3$ , 10  $\mu\text{M}$   $\text{CaCl}_2$ .

For laboratory use only.

### Storage and stability

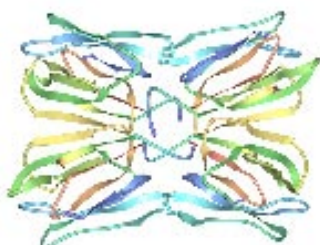
Stable for at least 5 years from production date when stored below  $-20^\circ\text{C}$ . May be shipped at ambient temperature. After reconstitution in deionized water, the solution may be stored frozen in working aliquots for up to 12 months. Repeated freezing and thawing is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use.

### Ordering information

Article no.	Product name	Pack size
05-0133-100	<i>Artocarpus integrifolia</i> lectin	100 mg
05-0133-10	<i>Artocarpus integrifolia</i> lectin	10 mg

### References

- (1) Liener I. E., Sharon N., Goldstein I. J., (1986) The Lectins – Properties, Functions and Applications in Biology and Medicine.
- (2) Sankaranarayanan R., Sekar K., Banerjee R., Sharma V., Surolia A., Vijayan M, (1996) A novel mode of carbohydrate recognition in jacalin, a Moraceae plant lectin with a b-prism fold. Nature Structural Biology 3, 596 – 603.
- (3) Structural basis for the unusual carbohydrate-binding specificity of jacalin towards galactose and mannose. Bourne, Y., Astoul, C.H., Zamboni, V., Peumans, W.J., Menu-Bouaouiche, L., Van Damme, E.J., Barre, A., Rouge, P. (2002) Biochem.J. 364: 173 –180.



Crystal structure of Jacalin (3)

## Concanavalin A (Con A)



### Features

- Sugar specificity:  $\alpha$ -Man,  $\alpha$ -Glc (1)
- Mitogen acting principally on T-lymphocytes (2)
- Reacts with a number of bacterial and animal cells
- High activity

### Applications

- Hormone receptor studies
- Lymphocyte mitogenic studies
- Characterization of certain normal and malignant cells

### Description

Concanavalin A is a lectin isolated from Jack beans (*Canavalia ensiformis*) by affinity chromatography. It has 4 subunits and a molecular weight of 104 kDa. Con A is the most widely used lectin and has broad applicability. It reacts with non-reducing  $\alpha$ -D-glucose and  $\alpha$ -D-mannose.

Con A binds specifically to certain structures found in various sugars, glycoproteins and glycolipids. It has been utilized in hormone receptor studies, mitogenic assays and for characterizing normal and malignant cells (cancer cells are readily aggregated by Con A while normal cells are not). Con A can initiate cell division (mitogenesis).

Immobilized Con A has been used in affinity chromatography purifications of a wide variety of glycoproteins and cellular structures.

Concanavalin A lectin is supplied without preservatives as a lyophilized white powder or flocculate from 0.5 mM  $\text{MnCl}_2$ , 0.5 mM  $\text{CaCl}_2$ .

For laboratory use only.

### Storage and stability

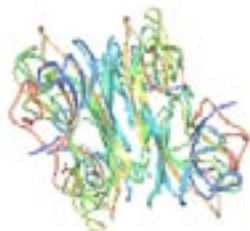
Stable for at least 5 years from production date when stored below  $-20^\circ\text{C}$ . May be shipped at ambient temperature. After reconstitution with deionized water, the solution may be stored frozen in working aliquots for up to 12 months. Repeated freezing and thawing is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use.

### Ordering information

Article no.	Product name	Pack size
05-0106-250	Concanavalin A	250 mg
05-0106-100	Concanavalin A	100 mg

### References

- (1) Liener I. E., Sharon N., Goldstein I. J., (1986) The Lectins – Properties, Functions and Applications in Biology and Medicine.
- (2) Krauss S., Buttgerit F., (1999) Effects of the mitogen concanavalin A on pathways of thymocyte energy metabolism. *BrandBiochim Biophys Acta* 1412: 129 – 38.
- (3) The Determination of Protonation States in Proteins. Ahmed, H.U., Blakeley, M.P., Cianci, M., Cruickshank, D.W.J., Hubbard, J.A., Helliwell, J.R. (2007) *Acta Crystallogr., Sect. D* 63: 906.



Crystal structure of Ni, Ca Concanavalin A (3)

## Crotalaria juncea lectin



### Features

- Non-specific blood group activity (1)
- Sugar specificity: Gal > GalNAc (1)
- Phytohaemagglutinin
- High activity

### Applications

- Studies of virus surface glycoproteins
- Purifying bovine diarrhea virus when immobilized on an agarose gel/matrix.

### Description

*Crotalaria juncea* lectin is isolated from Sunn Hemp seeds by affinity chromatography. It has a molecular weight of 124 kDa and is composed of four identical polypeptide chains of 31 kDa each. The lectin is a glycoprotein that displays specificity toward  $\beta$ -galactosides and interacts with serum glycoproteins, cytochrome b5 and virus surface glycoproteins such as BVDV, influenza and bovine diarrhea (1).

*Crotalaria juncea* lectin is supplied without additives as a white to yellowish-white lyophilized powder.

For laboratory use only.

### Storage and stability

Stable for at least 3 years from production date when stored below  $-20^{\circ}\text{C}$ . May be shipped at ambient temperature. After re-constitution with deionized water, the solution may be stored frozen in working aliquots for up to 12 months. Repeated freezing and thawing is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use.

### Ordering information

Article no.	Product name	Pack size
05-0105-50	<i>Crotalaria juncea</i> lectin	50 mg
05-0105-10	<i>Crotalaria juncea</i> lectin	10 mg

### References

(1) Liener I. E., Sharon N., Goldstein I. J., (1986) The Lectins – Properties, Functions and Applications in Biology and Medicine.

## Galanthus nivalis lectin (GNA)



### Features

- Contains little or no carbohydrate
- Binds serum IgM and  $\alpha$ 2-macroglobulin
- Sugar specificity: structures containing ( $\alpha$ -1,3) mannose residues

### Applications

- Model systems to help understand the molecular basis of how proteins recognize carbohydrates
- HIV research (1)

### Description

*Galanthus nivalis* lectin is isolated from snowdrop bulbs and has a molecular weight of 52 kDa. The lectin contains little or no carbohydrate and does not need  $\text{Ca}^{2+}$  or  $\text{Mn}^{2+}$  for binding, since unlike most mannose-specific lectins it is not a metalloprotein. Structures containing ( $\alpha$ -1,3) mannose residues are preferred for binding. Unlike the majority of mannose-binding lectins, GNA does not bind alpha-linked glucose.

*Galanthus nivalis* lectin is supplied without preservatives as a lyophilized powder.

Larger quantities are available on request.

For laboratory use only.

### Storage and stability

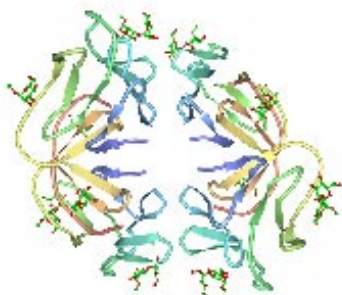
Stable for at least 5 years from production date when stored at  $-20^{\circ}\text{C}$ . May be shipped at ambient temperature. After reconstitution with deionized water, the solution may be stored frozen in working aliquots for up to 12 months. Repeated freezing and thawing is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use.

### Ordering information

Article no.	Product name	Pack size
05-0120-5	<i>Galanthus nivalis</i> lectin	5 mg

### References

- (1) Gilljam, G. AIDS Reserach and Human Retroviruses. May 1993; 9(5): 431–8.
- (2) The mannose-specific bulb lectin from *Galanthus nivalis* (snowdrop) binds mono- and dimannosides at distinct sites. Structure analysis of refined complexes at 2.3 Å and 3.0 Å resolution. Hester, G., Wright, C.S. (1996) J.Mol.Biol. 262: 516–31.



Crystal structure of *Galanthus nivalis* lectin in complex with mannose-alpha 1,3-methyl-d-mannose (2)

## Glycine max lectin (SBA)



### Features

- Binding specificity for N-acetyl-D-galactosamine (1)
- Specificity for blood group: A1 > A2 >> B (1)
- High activity

### Applications

- Studies of SBA-binding normal and tumour cells
- Blood group agglutination
- Glycoprotein studies

### Description

*Glycine max* lectin is isolated from soy bean (Soy bean agglutinin, SBA) by affinity chromatography. The protein has 4 subunits and a molecular weight of 120 kDa. SBA is not blood group specific. It displays carbohydrate binding specificity for N-acetyl-D-galactosamine and galactopyranosyl residues of glycoproteins (1).

The lectin interacts better with neuramidase-treated cells than with untreated cells. It possesses selective affinity for lymphocytes and human CD34<sup>+</sup> hematopoietic stem cells. Immobilized conjugates of SBA are therefore important tools for removing T-cells in bone marrow transplantation.

*Glycine max* lectin is supplied without preservatives as a white to cream-coloured lyophilized powder from 50 mM NH<sub>4</sub>HCO<sub>3</sub>, 10 μM CaCl<sub>2</sub>.

For laboratory use only.

### Storage and stability

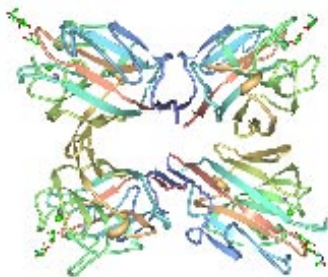
Stable for at least 3 years from production date when stored below -20°C. May be shipped at ambient temperature. After reconstitution with deionized water, the solution may be stored frozen in working aliquots for up to 12 months. Repeated freezing and thawing is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use.

### Ordering information

Article no.	Product name	Pack size
05-0117-50	<i>Glycine max</i> lectin	50 mg
05-0117-10	<i>Glycine max</i> lectin	10 mg

### References

- (1) Liener I. E., Sharon N., Goldstein I. J., (1986) *The Lectins – Properties, Functions and Applications in Biology and Medicine*.
- (2) X-ray crystallographic studies of unique cross-linked lattices between four isomeric biantennary oligosaccharides and soybean agglutinin. Olsen, L.R., Dessen, A., Gupta, D., Sabesan, S., Sacchettini, J.C., Brewer, C.F. (1997) *Biochemistry* 36: 15073–80.



Crystal structure of *glycine max* lectin (2)

## *Lens culinaris* lectin (LCA/LcH)



### Features

- Sugar specificity:  $\alpha$ -D-mannose and  $\alpha$ -D-glucose (1)
- Hemagglutinating activity
- High activity

### Applications

- Hemagglutination
- Cell agglutination studies

### Description

*Lens culinaris* lectin is isolated from lentil seeds by affinity chromatography. It has 2 subunits and a molecular weight of 46 kDa (1). The lectin gives two major bands in isoelectrofocusing corresponding to the isomers LCA-A and LCA-B.

*Lens culinaris* is not blood group specific. Its carbohydrate specificity is D-mannose and D-glucose. Adding  $Mn^{2+}$  and  $Ca^{2+}$  to the reconstitution buffer will enhance hemagglutination activity (1).

LCA contains a hemagglutinin A and B mixture that agglutinates human red blood cells but that is not group-specific. *Lens culinaris* agglutinates a 2% suspension of human erythrocytes at a lectin concentration of  $\leq 16 \mu\text{g/ml}$  in 0.9% NaCl after 2 h at 25°C. Adding 60 mM methylmannoside gives an inhibition with a titer that is at least 16-fold lower than the control.

*Lens culinaris* lectin is supplied as a white lyophilized powder from a buffer containing 1 mM  $CaCl_2$ , 1 mM  $MnCl_2$  and 1 mM  $MgCl_2$ . No preservatives are added.

For laboratory use only.

### Storage and stability

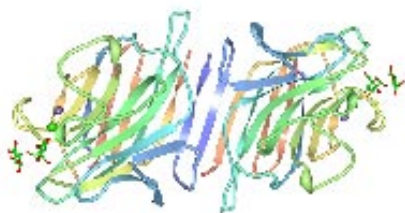
Stable for at least 3 years from production date when stored below -20°C. May be shipped at ambient temperature. After reconstitution with 2 ml of deionized water, the solution may be stored frozen in working aliquots for up to 12 months. Repeated freezing and thawing is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use.

### Ordering information

Article no.	Product name	Pack size
05-0104-100	<i>Lens culinaris</i> lectin	100 mg
05-0104-25	<i>Lens culinaris</i> lectin	25 mg
05-0104-10	<i>Lens culinaris</i> lectin	10 mg

### References

- (1) Liener I. E., Sharon N., Goldstein I. J., (1986) The Lectins – Properties, Functions and Applications in Biology and Medicine.
- (2) NMR, molecular modeling, and crystallographic studies of lentil lectin-sucrose interaction. Casset, F., Hamelryck, T., Loris, R., Brisson, J.R., Tellier, C., Dao-Thi, M.H., Wyns, L., Poortmans, F., Perez, S., Imberty, A. (1995) J.Biol.Chem. 270: 25619–28.



Crystal structure of *Lens culinaris* lectin complexed with sucrose (2)

## Narcissus pseudonarcissus lectin (NPA/NPL)



### Features

- Sugar specificity:  $\alpha$ -D-mannose
- Mitogenic activity (1)
- Non-reactive with human erythrocytes (2)

### Applications

- Mitogenic studies of human lymphocytes

### Description

*Narcissus pseudonarcissus* lectin (NPL) is isolated from daffodils. It exists as a dimeric protein (molecular weight 26 kDa) composed of two subunits of 13 kDa each. NPL dissociates into its monomers below pH 5.0 and above pH 9.0.

NPL is mitogenic for human lymphocytes (1). Specificity for blood group: non-reactive with human erythrocytes (2).

*Narcissus pseudonarcissus* lectin is supplied as a white lyophilized powder in 10 mM  $\text{CH}_3\text{COONH}_4$ .

For laboratory use only.

### Storage and stability

Stable for at least 5 years from production date when stored below  $-20^\circ\text{C}$ . May be shipped at ambient temperature. After reconstitution with PBS pH 7.4, the solution may be stored frozen in working aliquots for up to 12 months. Repeated freezing and thawing is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use.

### Ordering information

Article no.	Product name	Pack size
05-0119-50	<i>Narcissus pseudonarcissus</i> lectin	50 mg
05-0119-10	<i>Narcissus pseudonarcissus</i> lectin	10 mg

### References

- (1) Summers C., Forrest J., Norval M., Sharp J. M. (2002) The potentially insecticidal *Narcissus pseudonarcissus* lectin demonstrates age-related mitogenicity. *FEMS immunology and medical microbiology* vol 33 Issue 1, 47–9.
- (2) Van Damme J. M., Allen A. K., Peumans W. J. (2007). Related mannose-specific lectins from different species of the family Amaryllidaceae. *Physiologia Plantarum* Vol 53, Issue 1, 52–7.
- (3) Structure of *Narcissus pseudonarcissus* lectin complex with Mannobiose at 1.7 Å resolution, form II Rizkallah, P.J., Ozbey, S., Sauerborn, M.K. To be Published.



Structure of *Narcissus pseudonarcissus* lectin complex with Mannobiose (3)

## Phaseolus vulgaris lectin E (PHA-E)



### Features

- Sugar specificity: complex oligosaccharides (1)
- High erythroagglutinin activity (1)
- High activity

### Applications

- Erythrocyte agglutination studies
- Model systems to help understand the molecular basis of how proteins recognize carbohydrates

### Description

*Phaseolus vulgaris* lectin E is a tetrameric protein with a molecular weight of 128 kDa. It is isolated from red kidney beans by affinity chromatography and ion-exchange chromatography. The lectin recognizes terminal galactose residues of complex glycans on mammalian glycoproteins (2). Because it has high erythrocyte agglutinating activity, it is also known as Erythroagglutinin (PHA-E). PHA-E is not blood group specific (1). Less than 5 µg/ml will agglutinate human erythrocytes type O.

*Phaseolus vulgaris* lectin is supplied as a white to light-pink lyophilized powder from 50 mM NH<sub>4</sub>HCO<sub>3</sub>.

For laboratory use only.

### Storage and Stability

Stable for at least 3 years from production date when stored below -20°C. May be shipped at ambient temperature. After reconstitution with deionized water, the solution may be stored frozen in working aliquots for up to 12 months. Repeated freezing and thawing is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use.

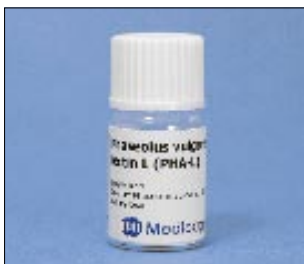
### Ordering information

Article no.	Product name	Pack size
05-0131-5	<i>Phaseolus vulgaris</i> lectin E	5 mg

### References

- (1) Liener I. E., Sharon N., Goldstein I. J., (1986) The Lectins – Properties, Functions and Applications in Biology and Medicine.
- (2) Chrispeels M. J., Raikhel N. V. (1991). Lectins, Lectin Genes, and Their Role in Plant Defense. The Plant Cell Vol.3, 1–9.

## Phaseolus vulgaris lectin L (PHA-L)



### Features

- Sugar specificity: complex oligosaccharides (1)
- High mitogenic and leucoagglutinating activity (1)
- Very low erythroagglutinating activity

### Applications

- Leucocyte agglutination studies
- Mammalian glycoprotein studies
- Model system to help understand the molecular basis of how proteins recognize carbohydrates

### Description

*Phaseolus vulgaris* lectin L is composed of four units each of molecular weight of 31 kDa. The protein has a molecular weight of 126 kDa. It is isolated from red kidney beans by affinity chromatography (1).

Also known as Leucoagglutinin (PHA-L), this lectin has high mitogenic and leucoagglutinating activity, but low erythroagglutinating activity (1). The lectin recognizes terminal galactose residues of complex glycans on mammalian glycoproteins such as thyroglobulin (2). PHA-L does not agglutinate human erythrocytes at concentrations of 250 µg/ml or less, and is non-specific for blood groups.

*Phaseolus vulgaris* lectin is supplied as a white lyophilized powder from 10 mM NH<sub>4</sub>HCO<sub>3</sub>.

For laboratory use only.

### Storage and stability

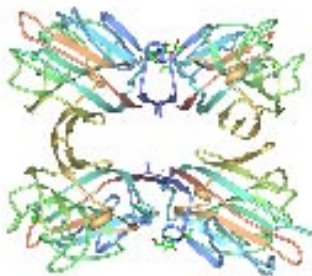
Stable for at least 3 years from production date when stored below -20°C. May be shipped at ambient temperature. After reconstitution with deionized water, the product may be stored frozen in working aliquots for up to 12 months. Repeated freezing and thawing is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use.

### Ordering information

Article no.	Product name	Pack size
05-0132-10	<i>Phaseolus vulgaris</i> lectin L	10 mg
05-0132-2	<i>Phaseolus vulgaris</i> lectin L	2 mg

### References

- (1) Liener I. E., Sharon N., Goldstein I. J., (1986) The Lectins – Properties, Functions and Applications in Biology and Medicine.
- (2) Chrispeels M. J., Raikhel N. V. (1991). Lectins, Lectin Genes, and Their Role in Plant Defense. The Plant Cell Vol.3, 1–9.
- (3) Weak protein-protein interactions in lectins: the crystal structure of a vegetative lectin from the legume *Dolichos biflorus*. Buts, L., Dao-Thi, M.H., Loris, R., Wyns, L., Etzler, M., Hamelryck, T. (2001) J.Mol.Biol. 309: 193–201.



Crystal structure of PHA-L (3)

## Phaseolus vulgaris lectin P (PHA-P)



### Features

- Mixture of L and E subunits: L<sub>1</sub>E<sub>3</sub>, L<sub>2</sub>E<sub>2</sub>, L<sub>3</sub>E<sub>1</sub>, E<sub>4</sub> (PHA-E) (1)
- Sugar specificity: complex oligosaccharides (1)
- High activity

### Applications

- Lateral flow erythrocyte separation

### Description

*Phaseolus vulgaris* lectin P is isolated from red kidney beans by affinity chromatography. The lectin has a molecular weight of 128 kDa and the purity of the product is decided by SDS electrophoresis. PHA-P is a mixture of isolectins containing L (leucoagglutinin) and E (erythroagglutinin) subunits.

*Phaseolus vulgaris* lectin is supplied without preservatives as a white to light-pink lyophilized powder.

For laboratory use only.

### Storage and stability

Stable for at least 5 years from production date when stored below -20°C. May be shipped at ambient temperature. After reconstitution with deionized water, the solution may be stored frozen in working aliquots for up to 12 months. Repeated freezing and thawing is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use.

### Ordering information

Article no.	Product name	Pack size
05-0115-10	<i>Phaseolus vulgaris</i> lectin P	10 mg
05-0115-5	<i>Phaseolus vulgaris</i> lectin P	5 mg

### References

- (1) Liener I. E., Sharon N., Goldstein I. J., (1986) The Lectins – Properties, Functions and Applications in Biology and Medicine.

## *Pisum sativum* lectin (PSA)



### Features

- Carbohydrate binding specificity:  $\alpha$ -D-mannose and  $\alpha$ -D-glucose (1)
- Non-specific blood group agglutinin (1)
- Mitogenic activity (2)
- High activity

### Applications

- Model systems to help understand the molecular basis of how proteins recognize carbohydrates

### Description

*Pisum sativum* agglutinin (PSA) is isolated from peas by affinity chromatography. It has 4 subunits and a molecular weight of 49 kDa. PSA has a carbohydrate binding specificity for  $\alpha$ -D-mannose and  $\alpha$ -D-glucose. The lectin agglutinates human erythrocytes without regard to blood type (1). PSA lectin is a mitogen similar to Concanavalin A (2).

*Pisum sativum* lectin is supplied without preservatives as a white to cream-coloured lyophilized powder.

For laboratory use only.

### Storage and stability

Stable for at least 3 years from production date when stored below  $-20^{\circ}\text{C}$ . May be shipped at ambient temperature. After reconstitution with PBS pH 7.4, the solution may be stored frozen in working aliquots for up to 12 months. Repeated freezing and thawing is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use.

### Ordering information

Article no.	Product name	Pack size
05-0111-100	<i>Pisum sativum</i> lectin	100 mg
05-0111-25	<i>Pisum sativum</i> lectin	25 mg
05-0111-10	<i>Pisum sativum</i> lectin	10 mg

### References

- (1) Liener I. E., Sharon N., Goldstein I. J., (1986) The Lectins – Properties, Functions and Applications in Biology and Medicine.
- (2) Preedy V. R., Watson R. R. (2005). Reviews in food and nutrition toxicity Vol 4.
- (3) The Structure of Pea Lectin-D-Glucopyranose Complex at a 1.9 Å Resolution Pletnev, V.Z., Ruzhenikov, S.N., Tsygannik, I.N., Mikhailova Yu, I., Duax, W., Ghosh, D., Pangborn, W. (1997) RUSS.J.BIOORGANIC CHEM. 23: 469.



Crystal structure of PSA-D-glucopyranose complex (3)

## Triticum vulgaris lectin (WGA)



### Features

- Sugar specificity: N-acetylglucosamine and N-acetylneuraminic acid residues
- Agglutinates erythrocytes and most types of malignant cells
- High purity
- Agglutinates rabbit erythrocytes at  $\leq 0.1 \mu\text{g/ml}$  after treating the cells with trypsin

### Applications

- Studies of glycoproteins and glycolipids
- Purification of membrane proteins
- Affinity chromatography of cells and sub-cellular particles

### Description

Wheat germ agglutinin (WGA) is isolated from *Triticum vulgaris* (Wheat germ) by affinity chromatography. It has two subunits and a molecular weight of 36 kDa. The WGA lectin selectively binds to N-Acetyl glucosamine (GlcNAc) and to N-acetylneuraminic acid (sialic acid) residues of glycoproteins and glycolipids (1).

The lectin agglutinates erythrocytes and most types of malignant cells more readily than the same cells from normal tissues. WGA agglutinates rabbit erythrocytes at  $< 0.1 \mu\text{g/ml}$  following trypsin treatment of the cells. Adding 300 mM N-Acetyl-D-Glucosamine gives an inhibition with a titer that is at least 8-fold lower than the control.

Wheat germ agglutinin inhibits the C5a receptor interaction, which has implications in studies of receptor micro-heterogeneity and ligand binding sites (1).

WGA and Con A are the two lectins most widely used as analytical and preparative agents when studying glycoproteins and cell surface proteins. The immobilized lectins can be used for affinity chromatography of cells and sub-cellular particles.

*Triticum vulgaris* lectin is supplied as a white to pale-yellow lyophilized powder from 10 mM  $\text{CH}_3\text{COONH}_4$ . No preservatives are added.

For laboratory use only.

### Storage and stability

Stable for at least 3 years from production date when stored below  $-20^\circ\text{C}$ . May be shipped at ambient temperature. After reconstitution with deionized water, the solution may be stored frozen in working aliquots for up to 12 months. Repeated freezing and thawing is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use.

### Ordering information

Article no.	Product name	Pack size
05-0102-100	<i>Triticum vulgaris</i> lectin	100 mg
05-0102-25	<i>Triticum vulgaris</i> lectin	25 mg
05-0102-10	<i>Triticum vulgaris</i> lectin	10 mg

### References

(1) Johnson R. J., Simpson S., Van Epps D. E., Chenoweth D. E. (1992) Wheat germ agglutinin inhibits the C5a receptor interaction: implications for receptor microheterogeneity and ligand binding site. *Journal of Leukocyte Biology* Vol 52, Issue 1, 3–10.

## Vicia ervilia lectin (VEA)



### Features

- Sugar specificity:  $\alpha$ -Mannose >  $\alpha$ -Glucose (1)
- Non-specific blood group agglutination (1)

### Applications

- Membrane protein studies

### Description

*Vicia ervilia* lectin is isolated from bitter vetch seeds and has a molecular weight of 53 kDa. This lectin is blood group non-specific with sugar specificity for  $\alpha$ -mannose and, to a lesser extent,  $\alpha$ -glucose residues. Agglutination is inhibited by mannose, glucose, fructose, methyl mannoside, maltose, melezitose and,  $\alpha$ ,  $\alpha'$ -trehalose (1).

*Vicia ervilia* lectin is supplied without preservatives as a yellow lyophilized powder.

For laboratory use only.

### Storage and stability

Stable for at least 3 years from production date when stored below  $-20^{\circ}\text{C}$ . May be shipped at ambient temperature. After reconstitution with PBS pH 7.4, the product may be stored frozen in working aliquots for up to 12 months. Repeated freezing and thawing is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use.

### Ordering information

Article no.	Product name	Pack size
05-0114-50	<i>Vicia ervilia</i> lectin	50 mg
05-0114-10	<i>Vicia ervilia</i> lectin	10 mg

### References

- (1) Liener I. E., Sharon N., Goldstein I. J., (1986) The Lectins – Properties, Functions and Applications in Biology and Medicine.

## Calmodulin



### Features

- Derived from bovine testes
- Calcium-binding protein
- Intracellular receptor protein

### Applications

- Protein calcium-binding studies on the regulation of a multitude of different protein targets
- Activation of cyclic nucleotide-dependent phosphodiesterase
- Co-factor/activator for kinase studies
- Studies of edema factor toxin and anthrax bacteria

### Description

Calmodulin is a bioactive protein isolated from bovine testes. The material is derived from cattle born and raised in Sweden, a country where BSE is not known to exist. Calmodulin is a calcium-binding protein expressed in many eukaryotic cells. By binding to and regulating various protein targets, it affects cellular processes such as metabolism, nerve growth, apoptosis, inflammation, muscle contraction and memory.

Calmodulin is used by many proteins as a calcium sensor and signal transducer, as the proteins themselves are not able to bind calcium. The molecule can bind a maximum of four calcium ions and by undergoing post-translational modifications such as acetylation, phosphorylation, proteolytic cleavage and methylation, its functions can potentially be altered.

Calmodulin is supplied as a lyophilized white powder or flocculate from 50 mM  $\text{NH}_4\text{HCO}_3$  with 10  $\mu\text{M}$   $\text{CaCl}_2$ . No preservatives are added.

For laboratory use only.

### Storage and stability

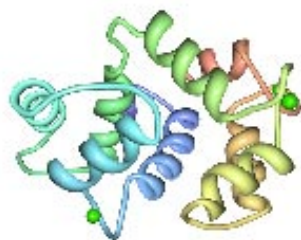
Stable for at least 5 years from production date when stored at  $-20^\circ\text{C}$ . May be shipped at ambient temperature. After reconstitution with deionized water, the solution may be stored frozen in working aliquots for up to 12 months. Repeated freezing and thawing is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use.

### Ordering information

Article no.	Product name	Pack size
05-0103-2	Calmodulin	2.5 mg
05-0103-1	Calmodulin	1 mg

### References

(1) A closed compact structure of native  $\text{Ca}^{2+}$ -calmodulin. Fallon, J.L., Quijcho, F.A. (2003) Structure 11: 1303–7.



Crystal structure of bovine  $\text{Ca}^{2+}$  calmodulin (1)

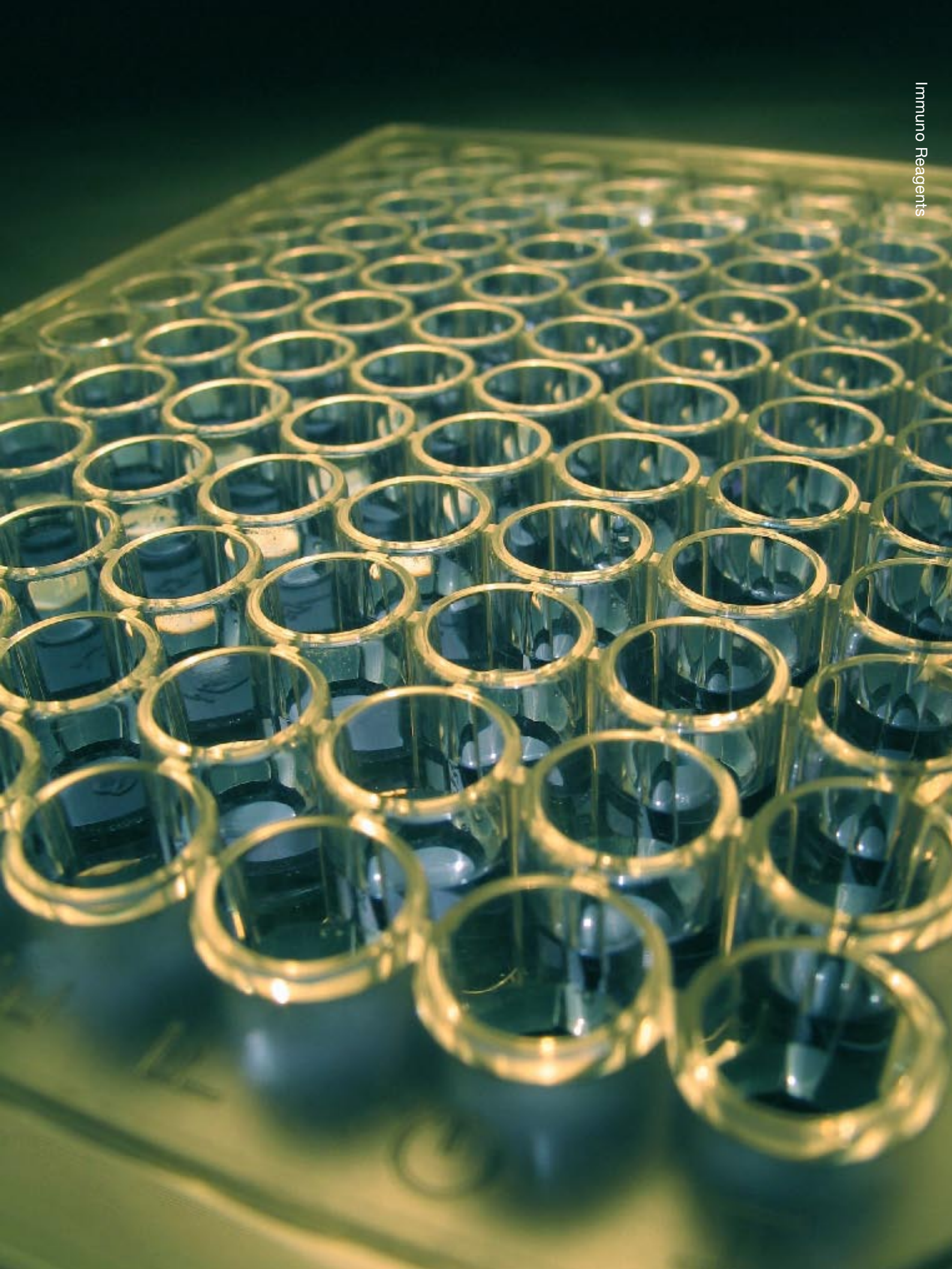


Medicago is a primary manufacturer of a wide variety of exceptionally pure lectins.

# Immuno Reagents

Medicago develops and manufactures a wide range of immuno reagents, including monoclonal and polyclonal antibodies as well as antigens from bacteria, parasites and other sources plus synthetically-manufactured antigens and antigen analogues. We also offer complete kits for the *in vitro* diagnosis of parasite diseases in rabbits and rodents.

Scientists at Medicago have broad experience in the production and purification of antibodies used in the general *in vitro* diagnostics markets. We provide full service from design of the antigen and immunisation protocol to immunisation, harvesting, fusion, sub-cloning and production. We have developed special expertise in producing monoclonal antibodies against very small molecules (molecular weights down to 190 g/mol) by binding an antigen molecule analogue to a larger carrier protein in order to induce immune response. Our antibodies are developed in mice, rats, rabbits, goats and other animals.



## Immunosorb A



### Features

- Pure recombinant Protein A
- Immobilized on a cross-linked agarose matrix
- Strong binding to Fc region of IgG
- High capacity: > 20 mg IgG/ml

### Applications

- Affinity chromatography
- Purification of immunoglobulins

### Description

Immunosorb A is protein A immobilized on a cross-linked agarose matrix. The Protein A is a non-hazardous recombinant version derived from the surface of *Staphylococcus aureus*. Cloned and expressed in *E. coli*, it displays high purity.

Protein A binds with the Fc region of immunoglobulins by interacting with the heavy chain. The protein binds to specific classes of immunoglobulins. It binds with high affinity to human IgG<sub>1</sub> and IgG<sub>2</sub> as well as mouse IgG<sub>2a</sub> and IgG<sub>2b</sub>. Protein A binds with moderate affinity to human IgM, IgA and IgE as well as to mouse IgG<sub>3</sub> and IgG<sub>1</sub>. It does not react with human IgG<sub>3</sub> or IgD, nor will it react with mouse IgM, IgA or IgE.

This affinity chromatography matrix is ideal for purifying human, mouse and rabbit immunoglobulins.

Immunosorb A is supplied as a white liquid substrate containing 20% ethanol as preservative. No additional mixing or reagents is required. Warming the product to room temperature before use is not necessary.

For research use only.

### Storage and stability

Immunosorb A is stable at 2°C to 8°C for 12 months. The product does not contain any animal-derived products or additives such as albumin or serum. Toxic or harmful substances are not present.

### Ordering information

Article no.	Product name	Pack size
10-1257-200	Immunosorb A	200 ml
10-1257-100	Immunosorb A	100 ml
10-1257-5	Immunosorb A	5 ml

## β-galactosidase



### Features

- High specific activity
- Hydrolysis of β-galactosides into monosaccharides
- Supplied as lyophilized powder

### Applications

- Reporter molecule
- Cloning studies
- Blue/white screening of recombinant clones

### Product description

β-galactosidase is a hydrolase enzyme that catalyzes the hydrolysis of β-galactosides into monosaccharides. The protein comprises four chains and has a molecular weight of 464 kDa (each subunit is 116 kDa).

β-galactosidase is a commonly-used reporter molecule and a very important marker for the lacZ gene. The enzyme can be split into two peptides; LacZα and LacZΩ. Neither is active by itself but both spontaneously reassemble into a functional enzyme. This characteristic is used in many cloning vectors to achieve α-complementation in specific laboratory strains of *E. coli* (the small LacZα peptide is encoded by the plasmid while the large LacZΩ is encoded in trans by the bacterial chromosome). When DNA fragments are inserted in the vector and production of LacZα disrupted, cells exhibit no β-galactosidase activity. This allows the blue/white screening of recombinant clones.

Specific activity is 230–375 Units/mg protein at 410 nm, pH 7.0 and 25°C (0.2 M Na-phosphate, 2 mM MgCl<sub>2</sub>, 8% methanol, 0.25% Tween 20). One unit of enzyme hydrolyses 1 micromole of o-nitro-phenyl-β-D-galactopyranoside (ONPG) (46 mM) per minute. The protein concentration is assayed by the biuret method with BSA as standard. The free thiol groups on the enzyme surface are characterized to be 14-18 mole/mole enzyme. These free groups are useful for derivatisation of the enzyme.

One vial contains approximately 25 mg (8 KU) lyophilizate of partly purified enzyme. Reconstitution of this lyophilizate in 4 ml of water gives a solution of approximately 1 mM Tris-HCl, pH 7.2 and 1 mM MgCl<sub>2</sub>.

For laboratory use only.

### Storage and stability

The enzyme is stable for 5 years when stored at -20°C in an unbroken package. Repeated freezing and thawing is not recommended.

Ordering information		
Article no.	Product name	Pack size
10-1101-25	β-galactosidase	25 mg (8 KU)

## Carbon Suspension for CIA



### Features

- Ready-to-use
- Specially developed carbon suspension for CIA

### Applications

- Custom Carbon Immunoassay studies

### Product description

Medicago's Carbon Suspension is especially developed for Carbon Immunoassays (CIA). The suspension contains microscopic carbon particles that attach to IgG molecules in many different mammalian sera, including human serum.

For laboratory use only.

### Ordering information

Article no.	Product name	Pack size
18-6010-3	Carbon suspension for CIA	3 ml

## Stop Solution for TMB Substrate



### Features

- Ready-to-use
- Contains 0.5 M H<sub>2</sub>SO<sub>4</sub>
- Sufficient for 10 plates (96-wells)

### Applications

- Stop solution for TMB substrate

### Product description

Stop Solution especially developed for the EC-Blue Enhanced Substrate (TMB) (Article no. 10-9405). Supplied in a 50 ml bottle.

For laboratory use only.

### Ordering information

Article no.	Product name	Pack size
10-9500-50	Stop Solution for TMB substrate	50 ml

## EC-Blue Enhanced™ Substrate (TMB)



### Features

- Ready-to-use liquid substrate
- Substrate for assays using horseradish peroxidase (HRP)
- Low background
- High sensitivity
- Long stability

### Applications

- Recommended for ELISA procedures

### Product description

3, 3', 5, 5'-Tetramethylbenzidine (TMB) substrate is a ready-to-use liquid substrate for HRP, specially developed for ELISA procedures. EC-Blue Enhanced™ Substrate turns deep blue (620-650 nm) in the presence of a peroxidase-labelled conjugate. Colour development can be stopped by adding an equal volume of 0.5 M H<sub>2</sub>SO<sub>4</sub> (Article no. 10-9500-50), which turns the substrate yellow (450 nm).

One bottle of EC Blue consists of a solution containing proprietary ready-mixed chromogen substrate reagents, pH 3.8. The solution has a straw-yellow colour at room temperature and a light greenish tint when stored at 4°C. The colour returns to normal when warmed overnight to room temperature.

For laboratory use only.

### Storage and stability

Store at 2°C to 8°C. Do not freeze and do not expose to direct sunlight. Prolonged exposure to light is not recommended. Store in an amber bottle. As some metal ions can oxidize TMB, allow only glass or plastic to come in contact with the substrate.

Never pipette directly from the bottle. Do not leave the cap off. EC-Blue Enhanced™ Reagent is stable for at least 18 months when stored at 4°C.

Ordering information		
Article no.	Product name	Pack size
10-9405-1000	EC-Blue Enhanced™ Substrate	1000 ml
10-9405-250	EC-Blue Enhanced™ Substrate	250 ml
10-9405-100	EC-Blue Enhanced™ Substrate	100 ml
10-9405-5000	EC-Blue Enhanced™ Substrate	5 litre
10-9405-0	EC-Blue Enhanced™ Substrate	25 litre

### Associated products

Product name	Page no.
Stop Solution for TMB substrate	56
p-Nitrophenyl phosphate (pNPP) substrate tablets	29

## Encephalitozoon cuniculi (EC) CIA



### Features

- Complete ready-to-use kit
- Fast 5-minute test
- Detection of antibodies against *Encephalitozoon cuniculi* in rabbits
- Carbon Immuno Assay (CIA) procedure using EC whole-cell antigen and carbon suspension

### Applications

- Veterinary procedures
- Quick and easy test to screen rabbit populations for encephalitozoonosis
- Verification of a putative clinical diagnosis of EC infection in rabbits

### Product description

*Encephalitozoon cuniculi* is a parasite that causes encephalitozoonosis in animals and humans. Rabbits and rodents may be infected with EC, resulting in chronic disease. Infection can persist for a long time without clinical signs.

To avoid misleading experimental results, laboratory animals should be tested before use. Note that the disease can occur sporadically, and is apparently unrelated to the age or sex of the animals. Clinical signs include stunted growth and signs of central nervous damage due to granulomatous encephalitis and nephritis. Other diseases can, however, give rise to the same neurological symptoms, which can make correct diagnosis difficult.

Medicago Carbon Immuno Assay is a quick (5-minute) and easy test to screen populations of rabbits and guinea pigs for encephalitozoonosis, or to verify a putative clinical diagnosis of *E. cuniculi* infection. Sera from some other animal species and humans can also be tested.

The kit contains reagents and controls necessary to perform 100 CIA determinations.

For research use only.

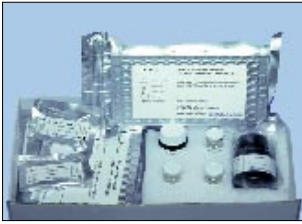
### Storage and stability

The product is stable for 12 months from manufacture at 2°C to 8°C.

### Ordering information

Article no.	Product name	Pack size
18-2001-1	<i>E. cuniculi</i> CIA	1 kit

## Encephalitozoon cuniculi (EC) ELISA



### Features

- Complete ready-to-use kit
- Detection of antibodies against *E. cuniculi* in rabbit serum
- Enzyme Linked Immunosorbent Assay (ELISA) procedure using EC and control antigen and carbon suspension with control antigen-coated microtiter plates

### Applications

- Veterinary procedures
- Detection and verification of antibodies against EC in rabbit serum
- Screening entire populations of rabbits for encephalitozoonosis
- Verification of a putative clinical diagnosis of *E. cuniculi* infection

### Product description

The kit is used to detect antibodies against *E. cuniculi*. It includes two coated 96-well microtiter plates and all reagents and controls necessary to perform the analysis. Each plate provides 48 tests.

For research use only.

### Storage and stability

The product is stable for 12 months from manufacture at 2°C to 8°C.

### Ordering information

Article no.	Product name	Pack size
18-9001-1	<i>E. cuniculi</i> ELISA	1 kit

## Encephalitozoon cuniculi whole cell antigen suspension



### Features

- Whole cell suspension
- High antigenicity

### Applications

- Diagnostics
- Immunology

### Product description

The *Encephalitozoon cuniculi* antigen suspension consists of about  $3 \times 10^7$  spores per ml. The spores, killed by heating, are washed and suspended in phosphate buffered saline solution (PBS) containing 0.1% formalin.

For laboratory use only.

### Storage and stability

Store at 2°C to 8°C. Antigenicity will last for 2 years or more.

### Ordering information

Article no.	Product name	Pack size
18-2002-3	<i>E. cuniculi</i> whole cell antigen suspension	3 ml

### Associated products

Product name	Page no.
<i>T. gondii</i> whole cell antigen suspension	61

## Antiserum against *Encephalitozoon cuniculi*



### Features

- Antiserum against *E. cuniculi*
- Different animal sources available (guinea pig, rabbit, rat)

### Applications

- Veterinary procedures
- A parasite reagent that can be used as a positive control in immunoassays

### Product description

The serum is produced from naturally-infected animals. 0.1%  $\text{NaN}_3$  is added. Before use in a test, dilute the serum 1:20 or more in PBS.

For laboratory use only.

### Storage and stability

Store undiluted serum at -20°C. Avoid repeated thawing and freezing.

### Ordering information

Article no.	Product name	Pack size
18-4004-1	Guinea pig antiserum against <i>E. cuniculi</i>	1 ml
18-4001-1	Rabbit antiserum against <i>E. cuniculi</i>	1 ml
18-4002-1	Rat antiserum against <i>E. cuniculi</i>	1 ml

## Rabbit antiserum against *Toxoplasma gondii*



### Features

- Rabbit antiserum against *Toxoplasma gondii*

### Applications

- Veterinary procedures
- A parasite reagent that can be used as a positive control in ELISA procedures

### Product description

*Toxoplasma gondii* is a species of parasitic protozoa. The definitive host of *T. gondii* is the cat, but the parasite can be carried by all known mammals. *T. gondii* is the causative agent of Toxoplasmosis, a disease that is usually minor and self-limiting but that can have serious or even fatal effects on a fetus whose mother first contracts the disease during pregnancy, or on an immuno-compromised human or cat

For laboratory use only.

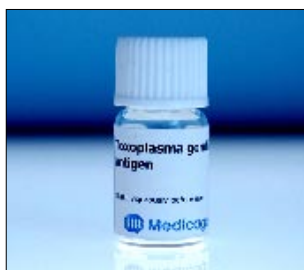
### Storage and stability

Store undiluted serum at -20°C. Avoid repeated thawing and freezing.

#### Ordering information

Article no.	Product name	Pack size
18-5001-1	Rabbit antiserum against <i>T. gondii</i>	1 ml

## *Toxoplasma gondii* whole cell antigen suspension



### Features

- Ready-to-use suspension
- High antigenicity

### Applications

- Immunology
- Diagnostics

### Product description

The *Toxoplasma gondii* antigen suspension consists of about  $3 \times 10^7$  tachyzoites per ml. These are killed by heating and then washed and suspended in PBS with 0.1% formalin.

For laboratory use only.

### Storage and stability

Store at 2°C to 8°C. Antigenicity will last for 2 years or more.

#### Ordering information

Article no.	Product name	Pack size
18-2003-3	<i>T. gondii</i> whole cell antigen suspension	3 ml

### Associated products

Product name	Page no.
<i>E. cuniculi</i> whole cell antigen suspension	60

# Contract Manufacturing, Product Development and Custom Services

## We enjoy challenges

Medicago was founded in 1995 with the purpose of supplying the Pharmaceutical and Biotechnology industries with high-quality customized bio-reagents and ready-to-use kits. For the last 15 years, we have collaborated with large and small industrial partners as well as academic institutions. We have also expanded our expertise and facilities in Uppsala plus our operations throughout the world.

## Today Medicago's industrial group serves the:

- Pharmaceutical industry
- Biotech industry
- Diagnostics industry
- Veterinary and Agricultural industries
- Life Science Research industry

In addition to our standard product range, we manufacture according to customer specifications and sub-contracting, contract product development, customization, bulk and OEM.

We are recognized as a flexible partner with short decision and lead times plus a proven record for the highest quality, cost-efficiency and delivery standards. Our commitment to excel in these areas ensures our industrial partners success in their increasingly complex product development and manufacturing processes.

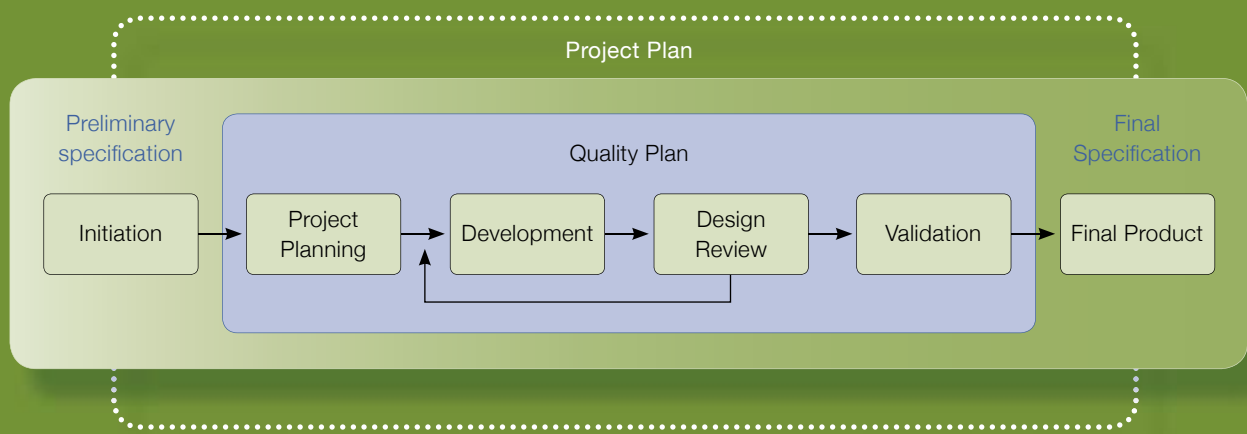
We enjoy the challenge of working with large and small companies as a sub-contractor for new or established products, or in assisting university researchers in the commercialisation of their ideas. Try us!

## Turning your product ideas into reality

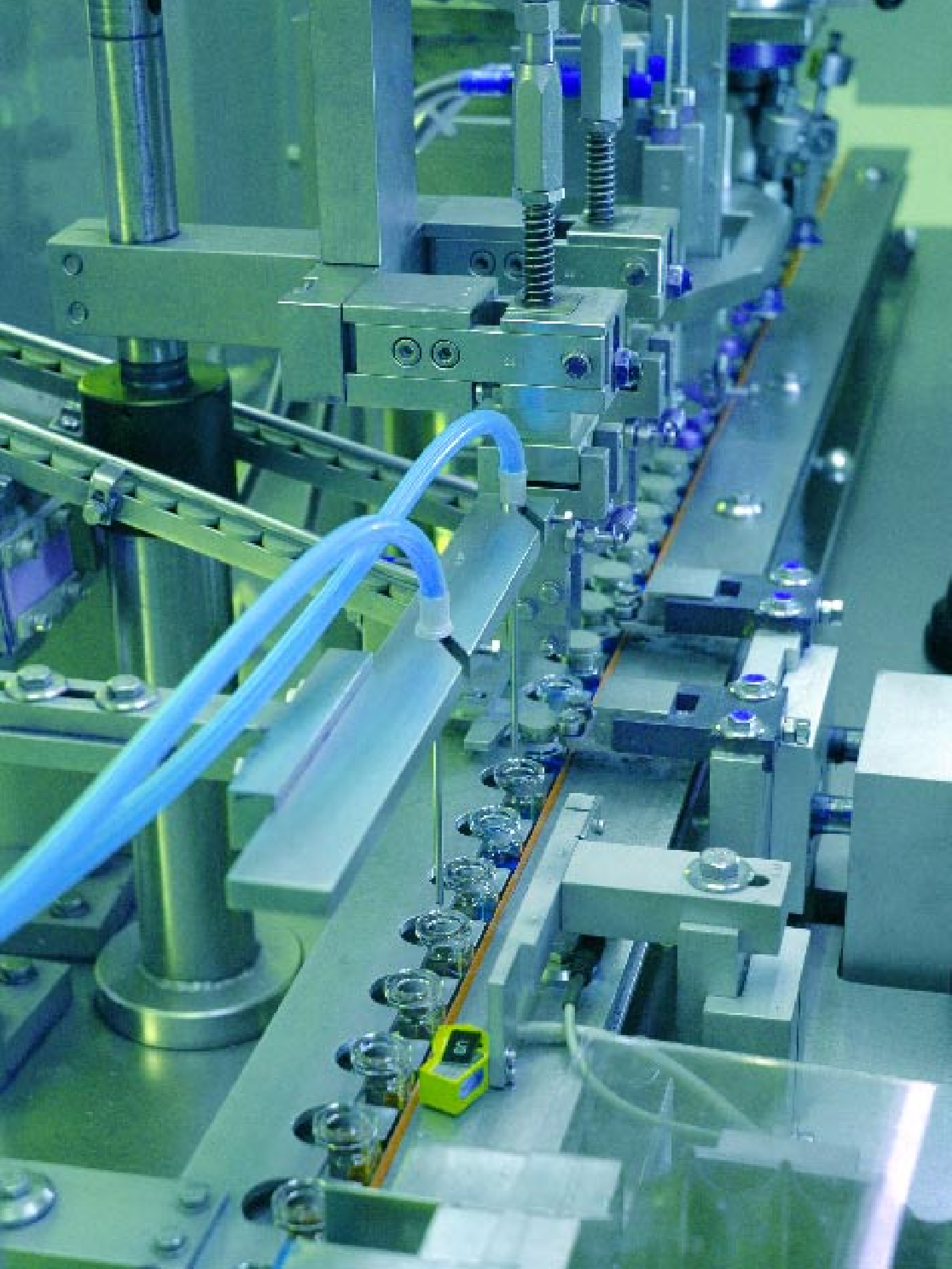
This concept summarises our interest in working together with partners to develop their product ideas and business concepts within our areas of expertise. After initial contact, our Development Group Project Leader will liaise with you to resolve scientific matters and planning issues, manage costs and make available all the resources that Medicago can provide to deliver your product on time and according to agreed specifications.

We have established metrics and key indicators for our projects, including continuous and uniform reporting to partners throughout project duration. We maintain current, accurate and complete documentation. At Medicago, we take pride in promoting free and open communication with our partners based upon mutual confidentiality, respect and trust.

Our competences include extensive experience of freeze-drying, fermentation, filling under aseptic conditions, and downstream processing on any scale – from laboratory to large industrial.



The six stages of Medicago's custom development projects.



Our laboratories and manufacturing site in Uppsala are ISO 9001:2008 and ISO 13485:2003 certified. Furthermore, we strive to continuously improve the excellence of our highly skilled personnel, daily operational routines and quality assurance systems. Each stage of the manufacturing process is controlled and monitored by stringent quality control procedures to guarantee the highest possible quality and lot-to-lot reproducibility. We welcome on-site audits by our industrial partners.

ISO 9001 and ISO 13485 certification means that our organisation has better documentation and control of processes due to constant quality control. Naturally, this means less time is wasted due to inconsistencies in processes, which results in increased productivity and reduced costs. ISO 9001 focuses our organization on customer satisfaction through seeking feedback. This feedback is then analysed so that improvements can be made to our services and offering.

We are very receptive to confidentially issues raised by our industrial partners. We aim to develop long-term relationships based on trust and respect with mutually-agreed confidentially for each project we undertake.



### ISO 9001:2008 and ISO 13485:2003 certification means:

- Reproducible processes
- Rigorous QA/QC systems
- Documented product development
- Complete product documentation
- Product traceability
- Product validation files
- Regular inspections by ISO authorities

### Excellence in bio-reagents development and manufacturing

Medicago is a developer and primary manufacturer of a wide range of bio-reagents and ready-to-use kits. We can accommodate requests from microliters to liters and from milligrams to kilograms. We can synthesise and manufacture special batches with unique specifications, blends and premixes to your requirements in any format or formulation. Private labeling, OEM and product/kit packaging arrangements are also possible.

Our facilities are supplied with cGMP-validated WFI and PW water plus Clean Steam. Clean room areas are qualified according to cGMP and ISO standards.

*Medicago's product range includes:*

#### Pre-made Smart Buffers and Reagents

As a world-leading producer of biological and chemical buffers in tablets and pre-mixed powders, Medicago is sure to comply with any request you may have. And if you don't find what you are looking for, we will develop and manufacture your buffer exactly to your specifications.

Manufacturing is done in a controlled clean environment using GMP procedures. Pre-mixed reagents are exactly weighed according to the specifications of the tablets and powders. Processes are largely automated to avoid operator intervention and contact with products. Tablets are packed in clean containers or in blister packs and powders in sealed aluminium laminate foil pouches.

- Manufacture in tablets, powder or solution
- Packaged in bottles, blister packs or pouches
- Customized to any blend or formulation
- Any volume or weight
- Provided as OEM buffers for inclusion in any of your own kits





### Lectins and Bioactive Proteins

Medicago is one of the world's few primary manufacturers of extremely pure lectins. Our state-of-the-art purification equipment and extensive expertise in this area make us a unique partner for customized solutions.

- Custom lectins and conjugates
- Any scale: milligrams to kilograms
- Lyophilised or liquid solutions
- Special and reserved batches
- Private label arrangements

### Saponins

Over the years, Medicago has developed expertise in manufacturing bulk and custom-made saponins. These compounds are amphipathic glycosides used commercially in dietary supplements and nutraceuticals. Saponins are also used as adjuvants in vaccine preparations.

- Bulk and custom saponins
- Pharmaceutical and Diagnostic grades
- Any scale: milligrams to kilograms
- Special and reserved batches
- Private label arrangements

### Immuno Reagents

Medicago develops and manufactures monoclonal and polyclonal antibodies, as well as antigens from viruses, bacteria and parasites. During the last decade, this has repre-

sented a steadily expanding area of expertise. We have also developed special skills in producing monoclonal antibodies against very small molecules such as common explosive and narcotic substances, for example.

- Monoclonal and polyclonal antibodies
- Highly purified antigens
- Synthesis of hapten conjugates
- Manufacturing under aseptic conditions
- Development of unique hybridoma clones

### Kit development, construction and assembly

Medicago possesses long and unique experience in the development, construction and assembly of diagnostic, biochemical and chemical kits according to customer specifications on a sub-contracting basis.

- We turn your ideas into finished products ready to be marketed
- We do as much or as little as you need in the design and manufacture of your kit
- We use modern design packaging with an appealing and attractive appearance for end-users
- We can organize the warehousing and distribution of your product

## Diagnostic Kits

In addition to developing and producing our own kits for *in vitro* diagnostic use based on ELISA and monoclonal antibody techniques, we also undertake production of diagnostic kits validated according to ISO 13485:2003 requirements.

- ELISA kits
- Rapid tests
- *In vitro* diagnostics
- Veterinary kits

## Chemical and Biochemical Kits

- Reagent kits
- Calibration kits
- Spare part kits
- Sterile kits
- Maintenance kits
- Analytical kits

## Expertise and Capabilities at your service

Medicago's experienced and highly-qualified staff of product development and manufacturing scientists is on hand to provide our partners with a wide range of competences and capabilities. We are committed to putting your needs first. Our Project Leader will manage the entire process to ensure the success of your project.

*Our areas of expertise include:*

- Process engineering
- Organic chemistry
- Analytical chemistry
- Biochemistry
- Molecular biology
- Immunology
- Parasitology
- Microbiology
- Cell biology

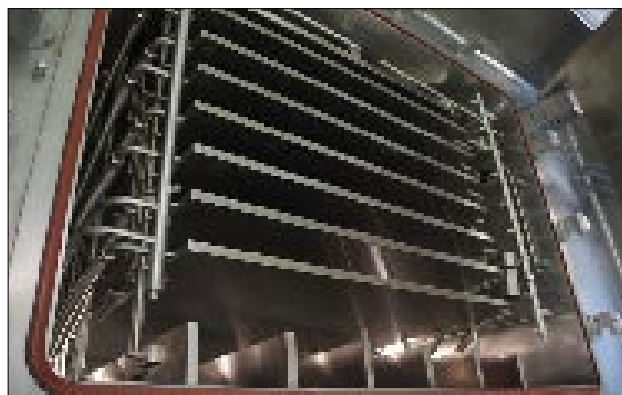
*Our capabilities include the following operations:*

### Chemical synthesis

A wide range of organic preparative services fit the needs of our diverse clientele. Our experienced staff share their expertise in the synthesis of non-commercial compounds by:

- Optimising and scaling-up published procedures
- Using proprietary processes developed by our customers
- Designing new syntheses
- Synthesising oligopeptides
- Conjugation

We manufacture speciality chemicals, drug intermediates and analytical bio-reagents in quantities from milligrams to kilograms with high standards of quality, safety and reproducibility.



## Freeze-drying

Medicago's contract freeze-drying capability is one of the largest in Northern Europe. Our state-of-the-art freeze dryers accommodate up to 120 kilos of material or 25,000 vials. We have the capacity to satisfy industrial customer requests for both bulk and vial freeze-drying from pilot to production scale. Furthermore, we offer aseptic-filling freeze-drying that meets most customer needs in this area.

- Development of freeze-drying processes
- Fully cGMP compliant
- Automated cleaning and sterilization of equipment (SIP&CIP)
- Fully-automated processes
- Aseptic freeze-drying
- From one milligram to 120 kilograms

## Fermentation

We have the capability to produce bacteria and yeast under stringently controlled conditions using state-of-the-art fermentation systems. Our fermentation service provides clients with a wide range of growth conditions plus high reproducibility for their products. Vector design and recombinant protein purification services are also available.

- Fully-automated bioreactors
- Validated clean-room environment
- Process development on request
- Downstream processing and separation



## Downstream Processing and Separation

Our services in this area assist clients from early research and development to pilot studies, manufacture and delivery of the final product. Medicago can engineer a process and provide cell or protein extracts, fractions or pure products specific to your requirements.

Our extensive facilities include modern, large-scale instrumentation and systems. We use integrated technologies and a wide variety of separation techniques, e.g. industrial-scale liquid chromatography, to provide protein fractions or pure proteins.

- Fully cGMP compliant
- State-of-the-art equipment
- Industrial-scale separation equipment
- Process engineering on request
- Ultrafiltration capability
- Continuous centrifuges

## Aseptic Filling

Medicago offers both liquid and powder filling under aseptic conditions from small to production scale.

- Fully cGMP compliant
- Controlled clean environment
- Fully-automated lines
- Wide range of vial sizes
- Automated product labelling



## Flexibility is our speciality

- From laboratory to industrial scale
- Any concentration, any pack size
- Special syntheses and batches
- Special blends and formulations
- Development and purification of new bioactive proteins
- Special testing as required
- Complete product documentation
- Cost-efficient manufacturing of your products
- Customized packaging
- Assembly of custom kits
- Private label and OEM arrangements
- Scheduled delivery to fit your needs
- Temporary warehousing
- Fast-track technical and scientific support
- Mutually-agreed confidentiality



# Customer and Product Support Services

Our ISO certification is highly focused on delivering service excellence based on customer experience and satisfaction in doing business with Medicago. We have lived up to this aim for the last 15 years. It's an integral part the company's business proposition; we strive to continuously improve our services and offerings to today's end-users.

Medicago's Customer Service is on hand during office hours to give a quick response to your questions about prices and product availability as well as order and delivery status. In addition, our website is open 24 hours a day to accept your questions online.

We can also put you in direct contact with our Technical Support scientists. They answer technical questions about our products, provide useful tips and hints, and keep you informed about new product developments.

Medicago's website is a key element in our contact with customers. Here you can find detailed and up-to-date information about our products, including technical data and downloads. You can also download our Product Catalogue and contact us online. Our website features current prices plus a convenient, easy-to-use order online service.

Product Support Literature, which includes Product Data Sheets, Material Safety Data Sheets (MSDS) and Certificates of Analysis, can be downloaded from our website or ordered from our offices.

## Customer Service

Contact our customer service during regular business hours to ask about prices and product availability, to place an order, for quotations for standard and bulk packages, to check delivery status, request product literature or be put in direct contact with our Technical Support team.

Direct line: +46 18 56 11 80

Business hours: 8.00 to 17.00 (8 am to 5 pm) CET weekdays only

Outside business hours, e-mail [info@medicago.se](mailto:info@medicago.se)

For bulk and OEM information, e-mail [bulk@medicago.se](mailto:bulk@medicago.se)

## Technical Support

Our team of Technical Support scientists is on hand to answer technical questions about our products and protocols, give you tips and hints about their uses and applications, help you choose the right Medicago product for your research, provide you with information about our new products, etc. They are here to support you in your research!

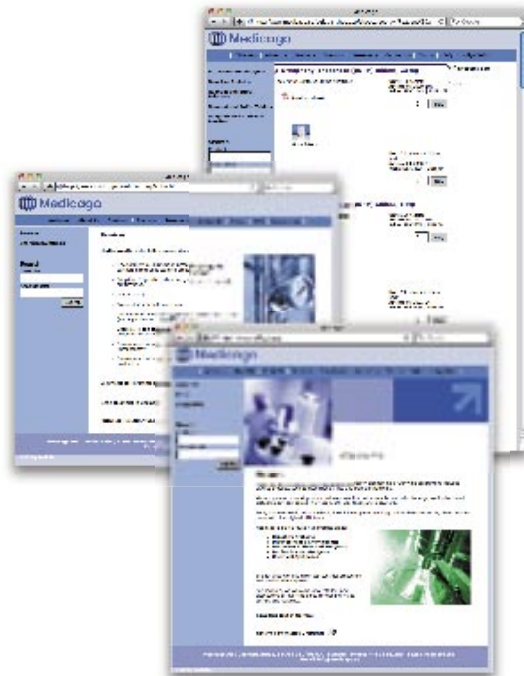
Direct line: +46 18 56 11 80. Ask for Technical Support

Business hours: 8.00 to 17.00 (8 am to 5 pm) CET weekdays only

Outside business hours, e-mail [support@medicago.se](mailto:support@medicago.se)

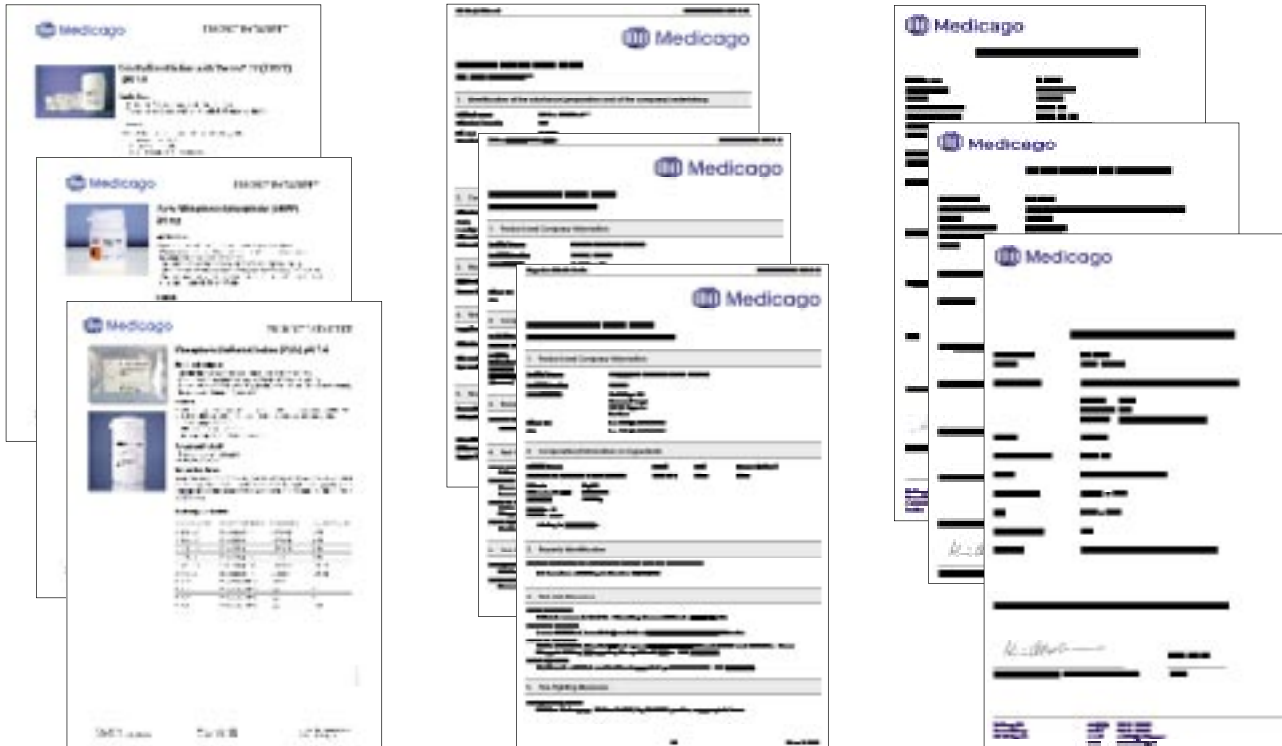
## Medicago Online

Browse our well-documented website with the latest detailed product information, technical data and downloads on each individual page. The website is continuously upgraded, so be sure to check [www.medicago.se](http://www.medicago.se) regularly for the latest news and product introductions.



## Product Support Literature

Each Medicago product is supported by technical literature such as a Data Sheet, MSDS and Certificate of Analysis. These can be downloaded from the website or requested via Customer Service.



## Product Ordering

Please refer to the inside cover.

### Order by phone

Please call:  
018 56 11 80 (Swedish customers)  
+46 18 56 11 80 (International customers)

### Order by fax

Please send to fax number:  
018 56 11 88 (Swedish customers)  
+46 18 56 11 88 (International customers)  
For your convenience, a fax order sheet is available at [www.medicago.se](http://www.medicago.se) under 'downloads'.

### Order online

Order from Medicago's online shop by visiting [www.medicago.se](http://www.medicago.se)

### Order by e-mail

Place your order at [order@medicago.se](mailto:order@medicago.se)

### Order by post

Medicago's postal address is:

Medicago AB  
Order Centre  
Danmark Berga  
SE-755 98 UPPSALA  
Sweden

# Terms & Conditions

These terms and conditions cover all sales of products and services by Medicago AB and any information and advice given whether charged for or not. No variation in these terms and conditions will apply unless agreed by Medicago AB in writing.

## 1. Delivery

- Terms of delivery: EXW Uppsala according to INCOTERMS 2000.
- Medicago will charge for freight costs, insurances and for any specialised packaging.
- Custom duties, taxes and other impositions shall be borne by the Buyer.

## 2. Prices/charges

- Medicago has the right to change the prices shown in price lists at any time and to invoice at prices current at the date of receipt of an order.
- Price on application and all other quotations will be valid for 60 days from the date of the quotation, unless otherwise notified by Medicago AB.
- All prices in price lists and quotations are exclusive of Value Added Tax (VAT). VAT will be charged separately, if applicable.

## 3. Payment

Unless otherwise agreed in writing payment in full is due within 30 days from date of an invoice. Medicago has the right to charge interest on all overdue sums at the rate of 12 percent per annum.

- Payment in advance may be required from customers without an account.
- Customers who exceed their credit limits will be asked to pay in advance for additional goods until the account is settled.
- Any claims for shortages must be made within 7 days of delivery.
- Any claims for non-ordered items or non-delivery must be made within 7 days of receiving the invoice.

## 4. Return of damaged or unsuitable goods

- No goods may be returned without the authorisation of Medicago.
- Authorisation to return products damaged during delivery or delivered in error must be requested within 7 days of delivery. Medicago has the right to repair and return damaged products.
- Authorisation for the return of products which fail to meet current product specifications must be requested in writing within 14 days of delivery.
- Credit will be given for those products authorised for return which are unused and in re-saleable condition other than those in the categories shown below:
  - Diagnostic reagents
  - Refrigerated or frozen products
  - Items with an expired shelf life or an expiration date too short for resale
  - Discontinued items
  - Custom products or special orders

## 5. Intended use/field of use

- Products are sold for research and laboratory use only.
- Medicago products are NOT to be administered to humans or used for medical diagnosis.
- Please read the product label and material safety data sheet for information pertaining to any product hazards which may exist. Products are intended for use only by qualified laboratory personnel.

## 6. Limited Product Warranty

- Medicago warrants that its products will conform to the standards stated in its product specification sheets in effect at the time of shipment. Medicago will replace free of charge, any product that does not conform to the specifications. This warranty limits Medicago's liability only to the replacement of the product.

- THIS WARRANTY IS EXCLUSIVE AND MEDICAGO MAKES NO OTHER WARRANTY, WHETHER EXPRESSED IN THESE CONTRACTS OR IMPLIED, INCLUDING WITHOUT LIMITATION, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

- The stated warranties expressed and the remedy provided for any breach thereof, are in lieu of any other liabilities or obligations of Medicago for any damages whatsoever, arising out of or in connection either with the delivery, or with the Buyer's inability to use any of its products.
- IN NO EVENT SHALL BIOLINE BE LIABLE UNDER ANY LEGAL THEORY (INCLUDING BUT NOT LIMITED TO CONTRACT, NEGLIGENCE, STRICT LIABILITY IN TORT, OR WARRANTY OF ANY KIND, FOR ANY INDIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL OR EXEMPLARY DAMAGES (INCLUDING, BUT NOT LIMITED TO, LOST PROFITS).
- Without limiting the effect of the preceding sentence, Medicago's maximum liability, if any, shall not exceed the purchase price paid by the buyer for the product.

## 7. Claims, Disclaimers and Liability

- No claim under the Warranty (see section 6) will be met if, in the opinion of Medicago:
  - The defect is not due solely to defective materials or manufacture.
  - The goods have been misused, treated with carelessness, contaminated, involved in an accident or dealt with in a manner at variance with the company's directions.
- The Buyer acknowledges that the goods will be used for laboratory and research purposes and undertakes not to make them available for human consumption, drugs or household use, directly or indirectly. The buyer shall indemnify the company permanently against claims by any third party, arising out of the use or sale of the goods by the buyer.
- All descriptions, representations, illustrations and samples furnished or statements made orally by the company are given for general information purposes only. Any possible claim can be based only on written specifications agreed at the time of contract.
- Medicago shall not be responsible for any injury or damages resulting from the use or misuse of any of its products.
- Unless explicitly stated, no license or immunity under any patent is either granted or implied by the sale of any of Medicago products.
- Medicago does not warrant that the resale or use of its products delivered will not infringe the claims of any patents, trademarks or copyright covering use of the product itself, or its use in combination with any other products, or its use in the operation of any process. Furthermore, the purchaser assumes all risks of patent, trademark or copyright infringement associated with any such use, combination or operation.

## 8. Force Majeure

Any product sell to which these conditions apply is subject to cancellation by the company or to any such variation as it might find necessary by reason of strike, lock-out, trade dispute, weather conditions, hostilities, legislation, Acts of God or any cause whatsoever, beyond the control of Medicago AB.

## 9. Governing Law

The selling and shipping of Medicago products shall be governed by and construed in accordance with the laws of the country of Sweden where the company's principal or registered offices are situated and the Buyers hereby submit to the non-exclusive jurisdiction of the courts of Sweden.

## 10. Copyright

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12-9199-10	Tris buffer powder, pH 8.0, 1000 ml	10 pouches	15
12-9200-10	Tris buffer powder, pH 8.3, 1000 ml	10 pouches	15
12-9222-10	Tris-Glycine-SDS buffer (TG-SDS) powder, pH 8.3, 1000 ml	10 pouches	21
12-9223-10	Tris-Glycine-SDS buffer (TG-SDS) powder, pH 8.3, 5000 ml	10 pouches	21
12-9422-1	Phosphate Buffered Saline powder (PBS) , pH 7.4, 25 l	1 pouch	8
12-9423-5	Phosphate Buffered Saline (PBS) 10x powder, pH 7.4, 1000 ml	5 pouches	8
12-9424-1	Phosphate Buffered Saline powder (PBS) , pH 7.4, 10 l	1 pouch	8
12-9425-1	Phosphate Buffered Saline powder (PBS) , pH 7.4, 50 l	1 pouch	8
12-9426-1	Phosphate Buffered Saline powder (PBS) , pH 7.4, 100 l	1 pouch	8
12-9527-10	Sodium Phosphate Buffer (NaPi) powder, 0.02M pH 7.0 1000 ml	10 pouches	24
12-9528-10	Sodium Phosphate Buffer (NaPi) powder, 0.02M pH 7.0 5000 ml	10 pouches	24
12-9529-10	Sodium phosphate buffer (NaPi) powder, 0.1M pH 6.5 1000 ml	10 pouches	24
12-9530-10	Sodium phosphate buffer (NaPi) powder, 0.1M pH 7.0 1000 ml	10 pouches	24
12-9531-10	Sodium phosphate buffer (NaPi) powder, 0.1M pH 7.4 1000 ml	10 pouches	24
16-0003-1000	Ammonium sulphate	1 kg	32
16-0004-500	Ammonium hydrogen carbonate	500 g	32
16-0005-1000	Boric acid	500 g	32
16-0006-1000	Citric acid monohydrate	1 kg	32
16-0007-500	EDTA di sodium	500 g	32
16-0024-500	Glycerol (Glycerin)	500 ml	32
16-0008-1000	Glycine	1 kg	32
16-0009-1000	Lactose	500 g	32
16-0010-1000	Potassium chloride	1 kg	32
16-0011-1000	Potassium di hydrogen phosphate	1 kg	32
16-0012-1000	Di potassium hydrogen phosphate	1 kg	32
16-0013-1000	Sodium chloride	1 kg	32
16-0014-1000	Tri sodium citrate	1 kg	32
16-0015-500	Sodium carbonate	500 g	32
16-0016-1000	Sodium di hydrogen phosphate	1 kg	32
16-0017-1000	Di sodium hydrogen phosphate	1 kg	32
16-0018-1000	Sodium di hydrogen carbonate	1 kg	32
16-0019-1000	Sodium hydroxide	1 kg	32
16-0020-1000	Sucrose (saccharose)	1 kg	32
16-0021-500	Tris	500 g	32
16-0022-500	Tris-HCl	500 g	32
16-0023-1000	Tween™ 20	1000 ml	32
16-0023-250	Tween™ 20	250 ml	32
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18-2001-1	<i>Encephalitozoon cuniculi</i> CIA (Carbon Immuno Assay)	1 kit	58
18-2002-3	<i>Encephalitozoon cuniculi</i> whole cell antigen suspension	3 ml	60
18-2003-3	<i>Toxoplasma gondii</i> whole cell antigen suspension	3 ml	61
18-4001-1	Rabbit antiserum against <i>Encephalitozoon cuniculi</i>	1 ml	60
18-4002-1	Rat antiserum against <i>Encephalitozoon cuniculi</i>	1 ml	60
18-4004-1	Guinea pig antiserum against <i>Encephalitozoon cuniculi</i>	1 ml	60
18-5001-1	Rabbit antiserum against <i>Toxoplasma gondii</i>	1 ml	61
18-6010-3	Carbon suspension for CIA test	3 ml	56
18-9001-1	<i>Encephalitozoon cuniculi</i> ELISA (Enzyme Linked Immuno Sorbent Assay)	1 kit	59

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	<i>Arachis hypogaea</i> lectin (PNA)	50 mg	05-0116-50	36
	<i>Artocarpus integrifolia</i> lectin (Jacalin)	10 mg	05-0133-10	37
	<i>Artocarpus integrifolia</i> lectin (Jacalin)	100 mg	05-0133-100	37
B	Borate Buffered Saline (BBS) tablets, pH 8.2, 500 ml	100 tablets	09-2053-100	12
	Boric acid	500 g	16-0005-1000	32
	Buffered Sodium Citrate 3.2 % powder (0.109M), 100 ml	10 pouches	12-8480-10	23
	Buffered Sodium Citrate 3.2 % powder (0.109M), 1000 ml	5 pouches	12-8483-5	23
C	Calmodulin	1 mg	05-0103-1	50
	Calmodulin	2,5 mg	05-0103-2	50
	Carbon suspension for CIA test	3 ml	18-6010-3	56
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	Carbonate-bicarbonate buffer tablets with Azide, pH 9.6, 100 ml	8 tablets	09-8932-8	25
	Carbonate-bicarbonate buffer tablets, pH 9.6, 100 ml	100 tablets	09-8922-100	25
	Carbonate-bicarbonate buffer tablets, pH 9.6, 100 ml	24 tablets	09-8922-24	25
	Carbonate-bicarbonate buffer tablets, pH 9.6, 100 ml	8 tablets	09-8922-8	25
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	<i>Crotalaria juncea</i> lectin	50 mg	05-0105-50	39
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	EC-Blue® Enhanced Substrate (TMB)	1000 ml	10-9405-1000	57
	EC-Blue® Enhanced Substrate (TMB)	250 ml	10-9405-250	57
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	<i>Encephalitozoon cuniculi</i> ELISA (Enzyme Linked Immuno Sorbent Assay)	1 kit	18-9001-1	59
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	<i>Glycine max</i> lectin (SBA)	50 mg	05-0117-50	41
	Glycine powder, 0.1 M pH 3.0 1000 ml	10 pouches	12-9121-10	26
	Guinea pig antiserum against <i>Encephalitozoon cuniculi</i>	1 ml	18-4004-1	60
I	Immunosorb A	100 ml	10-1257-100	54
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	<i>Lens culinaris</i> lectin (LCA/LcH)	100 mg	05-0104-100	42
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M	Magnesium chloride powder, 1 M, 1000 ml	5 pouches	12-9180-5	30
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	Product name	Pack size	Article no.	Page no.
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	<i>p</i> -Nitrophenyl phosphate (pNPP) tablets, 5 mg	100 tablets	09-2001-100	29
	<i>p</i> -Nitrophenyl phosphate (pNPP) tablets, 5 mg	24 tablets	09-2001-24	29
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	<i>Phaseolus vulgaris</i> lectin L (PHA-L)	2 mg	05-0132-2	45
	<i>Phaseolus vulgaris</i> lectin P (PHA-P)	10 mg	05-0115-10	46
	<i>Phaseolus vulgaris</i> lectin P (PHA-P)	5 mg	05-0115-5	46
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	Phosphate Buffered Saline (PBS) tablets without Potassium, pH 7.4, 1000 ml	10 tablets	09-9420-10	9
	Phosphate Buffered Saline (PBS) tablets without Potassium, pH 7.4, 1000 ml	100 tablets	09-9420-100	9
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	Phosphate Buffered Saline (PBS) tablets, pH 7.4, 100 ml	100 tablets	09-2051-100	8
	Phosphate Buffered Saline (PBS) tablets, pH 7.4, 1000 ml	10 tablets	09-9400-10	8
	Phosphate Buffered Saline (PBS) tablets, pH 7.4, 1000 ml	100 tablets	09-9400-100	8
	Phosphate Buffered Saline (PBS) tablets, pH 7.4, 200 ml	100 tablets	09-2052-100	8
	Phosphate Buffered Saline (PBS) tablets, pH 7.4, 500 ml	100 tablets	09-8912-100	8
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	Phosphate Buffered Saline powder (PBS) , pH 7.4, 10 l	1 pouch	12-9424-1	8
	Phosphate Buffered Saline powder (PBS) , pH 7.4, 100 l	1 pouch	12-9426-1	8
	Phosphate Buffered Saline powder (PBS) , pH 7.4, 25 l	1 pouch	12-9422-1	8
	Phosphate Buffered Saline powder (PBS) , pH 7.4, 50 l	1 pouch	12-9425-1	8
	Phosphate Buffered Saline with Tween™ 20 (PBS-T) tablets, pH 7.4, 100 ml	100 tablets	09-8903-100	10
	Phosphate Buffered Saline with Tween™ 20 (PBS-T) tablets, pH 7.4, 1000 ml	10 tablets	09-9410-10	10
	Phosphate Buffered Saline with Tween™ 20 (PBS-T) tablets, pH 7.4, 1000 ml	100 tablets	09-9410-100	10
	Phosphate Buffered Saline with Tween™ 20 (PBS-T) tablets, pH 7.4, 500 ml	100 tablets	09-8902-100	10
	Phosphate Buffered Saline with Tween™ 20 (PBS-T) tablets, pH 7.4, 500 ml	12 tablets	09-8902-12	10
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S	Saline Sodium Citrate (SSC 2x) tablets, pH 7.0, 100 ml	100 tablets	09-9501-100	22
	Saline sodium citrate buffer (SSC) 20x powder, pH 7.0, 1000 ml	5 pouches	12-9195-5	22
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	Sodium chloride powder, 5 M, 1000 ml	5 pouches	12-9191-5	27
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	Sodium Chloride tablets, 1000 ml	100 tablets	09-9104-100	27
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	Sodium dodecyl sulphate (SDS) tablets, 0.5 g	1000 tablets	09-2026-1000	28
	Sodium dodecyl sulphate (SDS) tablets, 0.5 g	50 tablets	09-2026-50	28
	Sodium hydroxide	1 kg	16-0019-1000	32
	Sodium hydroxide powder, 5 M, 1000 ml	5 pouches	12-9183-5	27
	Sodium Phosphate Buffer (NaPi) powder, 0.02M pH 7.0 1000 ml	10 pouches	12-9527-10	24
	Sodium Phosphate Buffer (NaPi) powder, 0.02M pH 7.0 5000 ml	10 pouches	12-9528-10	24
	Sodium phosphate buffer (NaPi) powder, 0.1M pH 6.5 1000 ml	10 pouches	12-9529-10	24
	Sodium phosphate buffer (NaPi) powder, 0.1M pH 7.0 1000 ml	10 pouches	12-9530-10	24
	Sodium phosphate buffer (NaPi) powder, 0.1M pH 7.4 1000 ml	10 pouches	12-9531-10	24
	Sodium Phosphate Buffer (NaPi) powder, 1M pH 6.5, 1000 ml	10 pouches	12-9184-10	24
	Sodium Phosphate Buffer (NaPi) powder, 1M pH 7.2, 1000 ml	10 pouches	12-9185-10	24
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	Stop Solution for TMB substrate	50 ml	10-9500-50	56
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	Tris buffer powder, pH 8.0, 1000 ml	10 pouches	12-9199-10	15
	Tris buffer powder, pH 8.3, 1000 ml	10 pouches	12-9200-10	15
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	Tris Buffered Saline (TBS) powder, pH 8.0, 1000 ml	10 pouches	12-9133-10	13
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	Tris Buffered Saline (TBS) tablets, pH 7.6, 500 ml	100 tablets	09-7500-100	13
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	Tris-Acetate-EDTA buffer (TAE) 50x powder, pH 8.3, 500 ml	5 pouches	12-9145-5	19
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	Tris-Borate-EDTA buffer (TBE) 5x powder, pH 8.3, 1000 ml	10 pouches	12-9111-10	18
	Tris-Borate-EDTA buffer (TBE) powder, pH 8.3, 1000 ml	10 pouches	12-9110-10	18
	Tris-EDTA buffer (TE) 10x powder, pH 7.4, 1000 ml	10 pouches	12-9154-10	17
	Tris-Glycine buffer (TG) powder, pH 8.3, 1000 ml	10 pouches	12-9122-10	20
	Tris-Glycine buffer (TG) powder, pH 8.3, 5000 ml	10 pouches	12-9123-10	20
	Tris-Glycine-SDS buffer (TG-SDS) powder, pH 8.3, 1000 ml	10 pouches	12-9222-10	21
	Tris-Glycine-SDS buffer (TG-SDS) powder, pH 8.3, 5000 ml	10 pouches	12-9223-10	21
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	<i>Triticum vulgare</i> lectin (WGA)	10 mg	05-0102-10	48
	<i>Triticum vulgare</i> lectin (WGA)	100 mg	05-0102-100	48
	<i>Triticum vulgare</i> lectin (WGA)	25 mg	05-0102-25	48
	Tween™ 20	1000 ml	16-0023-1000	32
	Tween™ 20	250 ml	16-0023-250	32
U	Urea	500 g	16-0025-500	32
	Urea, 5M, 100ml	5 pouches	12-8481-5	31
	Urea, 8M, 100 ml	5 pouches	12-8484-5	31
V	<i>Vicia ervilia</i> lectin (VEA)	10 mg	05-0114-10	49
	<i>Vicia ervilia</i> lectin (VEA)	50 mg	05-0114-50	49
W	Washing solution for DELFIA™, pH 7.8, 10 litres	1 pouch	12-9197-1	26



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