α1-Acid Glycoprotein

**AGP**
Orosomucoid
[66455-27-4]

α1-Acid Glycoprotein from human plasma

99% (agarose gel electrophoresis)
Purified from Cohn Fraction VI
HIV and hepatitis B antigen tested negative

- G9885-5MG 5 mg
- G9885-10MG 10 mg
- G9885-25MG 25 mg
- G9885-100MG 100 mg
- G9885-250MG 250 mg

α1-Acid Glycoprotein from baboon plasma

~99%
S: 22-24/25

- G9885-1MG 1 mg

α1-Acid Glycoprotein from bovine plasma

99%
S: 22-24/25

- G3643-25MG 25 mg
- G3643-100MG 100 mg
- G3643-250MG 250 mg

α1-Acid Glycoprotein from rat

~99%
Purified from Cohn Fraction VI
S: 22-24/25

- G5154

α1-Acid Glycoprotein from sheep plasma

99% (agarose gel electrophoresis)
Purified from Cohn Fraction VI
S: 22-24/25

- G6640-10MG 10 mg

α1-Antichymotrypsin from human plasma

[141176-92-3]
-95% (SDS-PAGE), lyophilized powder
Glycoprotein is specific inhibitor of chymotrypsin-like serine proteases.

- A9285-1MG 0.1 mg

α1-Antitrypsin from human plasma

α-Proteinase inhibitor

- A6150-25MG 25 mg
- A6150-100MG 100 mg
- A6150-500MG 500 mg

Asialofetuin from fetal calf serum
	salt

- A4781-50MG 50 mg
- A4781-250MG 250 mg
- A4781-1G 1 g

Butyrylcholinesterase from human serum

vial of ≥10 units
One unit will hydrolyze 1.0 μmol of butyrylcholine to choline and butyrate per min at pH 8.0 at 37 °C. The activity obtained using butyrylcholine as substrate is ~2.5 times that obtained using acetylcholine.
Starting material individually donor tested and found negative for HIV I & II antibodies, Hepatitis B surface antigen, and Hepatitis C antibodies.

- B4186-1VL 1 vial
Butyrylcholinesterase from equine serum

EC No. 2.3.1.1
Protein determined by biuret
S: 22-24/25
Lyophilized powder, activity: ≥900 units/mg protein
Highly purified; contains buffer salts
Composition
Protein ≥10%
One unit will hydrolyze 1.0 μmole of butyrylcholine to choline and butyrate per min at pH 8.0 at 37 °C. The activity obtained using butyrylcholine as substrate is ~2.5 times that obtained using acetylcholine.

<table>
<thead>
<tr>
<th>Product Code</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1057-1KU</td>
<td>1,000 units</td>
</tr>
<tr>
<td>C1057-5KU</td>
<td>5,000 units</td>
</tr>
</tbody>
</table>

Ceruloplasmin human

Lyopilized powder, oxidase activity: 30-75 units/mg protein
Pale blue powder containing sodium chloride and sodium acetate composition
Protein ~30%
One unit will cause a ΔA550 of 0.01 per min using N,N-dimethyl-p-phenylenediamine as substrate at pH 5.5 and 37 °C, in a 7 mL reaction volume.
Protein determined by biuret
Copper content: 1.0-2.5 μg/mg protein

<table>
<thead>
<tr>
<th>Product Code</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>C4519-50UN</td>
<td>50 units</td>
</tr>
<tr>
<td>C4519-100UN</td>
<td>100 units</td>
</tr>
</tbody>
</table>

Ceruloplasmin bovine

2,000-6,000 units/mL, saline solution, oxidase activity: 20-60 units/mg protein
Solution in 0.25 M sodium chloride, 0.05 M sodium acetate, pH ~7.0
One unit will cause a ΔA550 of 0.01 per min using N,N-dimethyl-p-phenylenediamine as substrate at pH 6.4 and 37 °C, in a 7 mL reaction volume.
Protein determined by biuret
Color: blue
Copper content: 80-120 μg/mL

<table>
<thead>
<tr>
<th>Product Code</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>C2026-5ML</td>
<td>0.5 mL</td>
</tr>
<tr>
<td>C2026-1ML</td>
<td>1 mL</td>
</tr>
</tbody>
</table>

C Reactive Protein from human plasma

[9007-41-4]
Buffered aqueous solution
C reactive protein (CRP) is an acute phase protein. Serum levels in patients with atherosclerosis is predictive of increased risk of myocardial infarction (MI) and stroke. The cytokine IL-6 is thought to be the key mediator in hepatocyte secretion of acute phase proteins including CRP. CRP mediates innate immunity by binding to microbial polysaccharides and to ligands exposed on damaged cells. The binding activates the classical complement pathway (C1, C4, C2, C3, but not C5-9). Opsonization of the substrates leads to their uptake by phagocytic cells and limits the inflammatory response.
Solution in 0.02 M Tris, 0.28 M sodium chloride, 0.005 M calcium chloride, pH 7.8 - 8.2, containing 0.1% sodium azide.
Package size based on protein content.
Protein determined by Lowry.

<table>
<thead>
<tr>
<th>Product Code</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>C4063-5MG</td>
<td>0.5 mg</td>
</tr>
<tr>
<td>C4063-1MG</td>
<td>1 mg</td>
</tr>
</tbody>
</table>

Ceruloplasmin

Butyrylcholinesterase
Plasma Derived Proteins and Enzymes

Miscellaneous Plasma Derived Proteins

Creatine Kinase BB Fraction human

>90% (SDS-PAGE), liquid, recombinant, expressed in *Pichia pastoris*

Used as a control in monitoring levels in cerebrospinal fluid by EUSA.

Solution in 50% glycerol, 10 mM 2-mercaptoethanol, 145 mM NaCl and 0.1% sodium azide.

Activity: ~400 units/mg

One unit will transfer 1.0 μmole of phosphate from creatine phosphate to ADP per minute at 37 °C (measured at 340 nm as one equimolar amount of NADH produced by coupled reaction).

C9983-100UG 100 μg

Creatine Kinase MB Fraction from human heart

>90% (SDS-PAGE), liquid

Enzyme associated with coronary performance.

Solution in 50% glycerol, 5 mM succinate, 1 mM EDTA & DTE, 10 mM sodium chloride, pH 7.0

One unit will transfer 1.0 μmole of phosphate from creatine phosphate to ADP per minute at 37 °C (measured at 340 nm as one equimolar amount of NADH produced by coupled reaction).

S: 23-24/25

C0984-100UG 100 μg

Creatine Kinase MM Fraction from human heart

Lyophilized powder

May be used as a control or calibrator in monitoring myocardial injury.

One unit will transfer 1.0 μmole of phosphate from creatine phosphate to ADP per minute at 37 °C (measured at 340 nm as one equimolar amount of NADH produced by coupled reaction).

Lyophilized powder containing Tris-HCl, EDTA and N-acetyl cysteine.

All human source materials have tested negative for HIV1, HIV2, HCV antibodies and HbsAg. No test guarantees a product to be non-infectious. Therefore, all material derived from human fluids or tissues should be considered as potentially infectious.

C9858-100UN 100 units

Creatine Kinase, MB human

Creatine Kinase MB Fraction from human heart; CK-MB Type 2

≥80% (SDS-PAGE), liquid, recombinant, expressed in *Pichia pastoris*

Enzyme associated with coronary performance.

1 mg/mL in 20 mM Tris HCl, 5 mM β-mercaptoethanol, 50% glycerol, 1 mM EDTA.

One unit will transfer 1.0 μmole of phosphate from creatine phosphate to ADP per minute at 37 °C (measured at 340 nm as one equimolar amount of NADH produced by coupled reaction).

S: 23-24/25

C9608 1 ml

Dipeptidyl Peptidase IV (Human)

Dipeptidyl Peptidase IV

Native DPPIV is a ubiquitous type II transmembrane glycoprotein and a serine protease of the S9 prolyl-oligopeptidase family. In vivo, it is synthesized with a signal peptide, which functions as the membrane anchoring domain. There is an 88% sequence homology between the human and porcine kidney enzymes. Both exist as homodimers with a subunit molecular weight of ~30 kDa. The high mannose 100 kDa DPPIV precursor is processed in the Golgi to yield a 124 kDa heavily N- and O-linked mature glycoprotein. It is then sorted to the apical membrane through the concerted action of both N- and O-linked glycans and its association with lipid microdomains. The porcine enzyme contains 18.3% carbohydrates, which the glycan composition is 0.9% fucose, 3.4% mannose, 5.1% galactose, 8.2% glucosamine, and 0.7% sialic acid. DPPIV is highly expressed on endothelial cells, epithelial cells, and lymphocytes. It is also present in plasma in its soluble form.

DPPIV has a post-proline dipeptidyl aminopeptidase activity that hydrolyzes N-terminal dipeptides from the unsubstituted N-terminus of peptides with the sequence of X-Pro-Z and X-Ala-Z. Where X is a nonspecific residue at the N terminus and Z cannot be proline or hydroxyproline.

Dipeptidyl Peptidase IV human

CD26; DPPIV; Glycoprotein GP110

E.C. 3.4.14.5 recombinant, expressed in *Sf9* cells, pkg of ≥0.25 units/vial, ≥10 units/mg protein

Supplied as a solution in 10 mM Tris-HCl, pH 7.6, 200 mM NaCl, 1 mM EDTA and 10% glycerol.

One unit will produce 1.0 μmole of p-nitroaniline from Gly-L-Pro p-nitroanilide per min in 100 mM Tris-HCl at pH 7.6 at 37 °C.

D4943

Dipeptidyl Peptidase IV from porcine kidney


lyophilized powder, activity: ≥10 units/mg protein (Bradford)

Lyophilized powder containing Tris buffer salts vial of ≥0.75 unit

One unit will produce 1.0 μmole of p-nitroaniline from Gly-L-Pro p-nitroanilide per min in 100 mM Tris-HCl at pH 8.0 at 37 °C.

D7052-1VL 1 vial
**Erythropoietin human**

**EPO**

[11096-26-7] EC No. 2343172

recombinant, expressed in CHO cells, lyophilized powder, cell culture tested, activity: ~100,000 units/mg protein

Erythropoietin is a glycoprotein that is the principal regulator of red blood cell growth and differentiation.

Lyophilized from 40 mM sodium citrate, pH 7.0, and 170 mM sodium chloride.

The biological activity is assayed in tissue culture using mouse fetal liver cells.

**Fetuin from fetal calf serum**

[9014-81-7] EC No. 2327627

free N-acetylneuraminic acid ................................................................... ~0.2%

EC No. 232-762-7

lyophilized powder (from sodium acetate buffer)


**Fibronectin from human plasma**

CIG; Cold insoluble globulin

[86088-83-7] EC No. 2891492

cell culture tested

Source material tested negative for HBsAg and HIV antibody. Recommended for use as a cell culture substrate at 2.5 μg/cm² or 0.5-50 μg/ml. Optimal concentration depends on cell type as well as the application or research objectives.

Lyophilized from 0.05 M Tris buffered saline, pH 7.5

Store reconstituted solution in aliquots at -20 °C or lower.

Protein homogeneity is evaluated by immunoelectrophoresis.

Vortexing, excessive agitation, repeated freezing and thawing of reconstituted fibronectin are not recommended.

**Gc-globulin from human plasma**

[68476-36-8]

~90% (SDS-PAGE), lyophilized powder (containing sodium chloride and sodium phosphate buffer salt)

EC No. 270-678-2

**Gelsolin**

Gelsolin is an actin-severing protein found in mammalian cells and blood plasma. Exhibits tumor suppressor activity in several cancer cell lines and in nude mice.

Package size based on protein content

**Globulin, corticosteroid-binding from human plasma**

CBG; Transcortin

[9010-38-2]

lyophilized powder

A 56 kDa glycosylated β-globulin present in serum that regulates the concentration of glucocorticoids and progesterone.

Lyophilized from 1.25 mM sodium phosphate, pH 7.4, containing 0.05% sodium azide

Package size based on protein content
\textbf{\textit{\textbf{Plasma Derived Proteins and Enzymes}}}

\textit{Miscellaneous Plasma Derived Proteins}

\begin{itemize}
  \item \textit{\textbf{\textbf{\textit{\textbf{\textbullet} \ \gamma-Globulins}}}}
  \item \textit{\textbf{\textit{\textbf{\textbullet} \ γ-Globulins from bovine blood}}}
    \begin{itemize}
      \item Bovine γ-Globulin
        \begin{itemize}
          \item EC No. 2327061
          \item EC No. 232-706-1 RTECS # LZ3450000
          \item 99\% (agarose gel electrophoresis)
          \item Prepared from Cohn Fraction II, III
          \item NaCl ...................................................... <4\%
        \end{itemize}
      \end{itemize}
      \begin{itemize}
        \item G5009-1G 1 g
        \item G5009-5G 5 g
        \item G5009-10G 10 g
        \item G5009-25G 25 g
        \item G5009-100G 100 g
      \end{itemize}
      \item ≥97\% (agarose gel electrophoresis)
      \begin{itemize}
        \item Prepared from plasma
        \item NaCl ...................................................... ≤5\%
      \end{itemize}
      \begin{itemize}
        \item G7516-1G 1 g
        \item G7516-5G 5 g
        \item G7516-10G 10 g
        \item G7516-25G 25 g
        \item G7516-100G 100 g
      \end{itemize}
  \end{itemize}
  \item \textit{\textit{\textbullet} \ γ-Globulins 16\% solution bovine}
    \begin{itemize}
      \item γ-Globulins from bovine blood; Bovine γ-Globulin
        \begin{itemize}
          \item [9007-83-4] EC No. 2327061
          \item aseptically filled
          \item (~0.85\% sodium chloride)
          \item contains 0.1\% sodium azide as preservative, no stabilizer
          \item Prepared from serum.
        \end{itemize}
      \end{itemize}
    \end{itemize}
  \item \textit{\textit{\textbullet} \ γ-Globulins from cat}
    \begin{itemize}
      \item 99\% (agarose gel electrophoresis)
      \begin{itemize}
        \item Prepared from Cohn Fraction II, III
        \item NaCl ...................................................... 2-4\%
      \end{itemize}
      \begin{itemize}
        \item EC No. 232-706-1 RTECS # LZ3450000
        \item G7515-10MG 10 mg
        \item G7515-50MG 50 mg
        \item G7515-100MG 100 mg
        \item G7515-250MG 250 mg
      \end{itemize}
      \item 99\% (agarose gel electrophoresis)
      \begin{itemize}
        \item Prepared from plasma
        \item NaCl ...................................................... ≤5\%
      \end{itemize}
      \begin{itemize}
        \item G2018-1G 1 g
      \end{itemize}
    \end{itemize}
  \item \textit{\textit{\textbullet} \ γ-Globulins equine}
    \begin{itemize}
      \item 99\% (agarose gel electrophoresis)
      \begin{itemize}
        \item Prepared from Cohn Fraction II, III
        \item NaCl ...................................................... 2-4\%
      \end{itemize}
      \begin{itemize}
        \item EC No. 232-706-1 RTECS # LZ3450000
        \item G2387-5G 5 g
      \end{itemize}
    \end{itemize}
  \item \textit{\textit{\textbullet} \ γ-Globulins from goat}
    \begin{itemize}
      \item 99\% (agarose gel electrophoresis)
      \begin{itemize}
        \item Prepared from Cohn Fraction II, III
        \item NaCl ...................................................... 2-4\%
      \end{itemize}
      \begin{itemize}
        \item EC No. 232-706-1 RTECS # LZ3450000
        \item G9887-5G 5 g
      \end{itemize}
    \end{itemize}
  \item \textit{\textit{\textbullet} \ γ-Globulins from human blood}
    \begin{itemize}
      \item Human γ-Globulin
      \begin{itemize}
        \item EC No. 2327061
        \item 99\% (electrophoresis)
        \item Prepared from Cohn Fraction II, III
        \item HIV, HCV and HBsAg ................................... source material tested negative
        \item NaCl ...................................................... <4\%
      \end{itemize}
      \begin{itemize}
        \item EC No. 232-706-1 RTECS # LZ3450000
        \item G4386-250MG 250 mg
        \item G4386-1G 1 g
        \item G4386-5G 5 g
        \item G4386-10G 10 g
        \item G4386-25G 25 g
      \end{itemize}
    \end{itemize}
  \item \textit{\textit{\textbullet} \ γ-Globulins from mouse}
    \begin{itemize}
      \item 99\% (agarose gel electrophoresis)
      \begin{itemize}
        \item Prepared from Cohn Fraction II, III
        \item NaCl ...................................................... ≤4\%
      \end{itemize}
      \begin{itemize}
        \item EC No. 232-706-1 RTECS # LZ3450000
        \item G9894-10MG 10 mg
        \item G9894-50MG 50 mg
      \end{itemize}
    \end{itemize}
  \item \textit{\textit{\textbullet} \ γ-Globulins porcine}
    \begin{itemize}
      \item 99\% (agarose gel electrophoresis)
      \begin{itemize}
        \item Prepared from Cohn Fraction II, III
        \item NaCl ...................................................... 2-4\%
      \end{itemize}
      \begin{itemize}
        \item EC No. 232-706-1 RTECS # LZ3450000
        \item G2512-10G 10 g
      \end{itemize}
    \end{itemize}
  \item \textit{\textit{\textbullet} \ γ-Globulins from rabbit}
    \begin{itemize}
      \item ~99\% (agarose gel electrophoresis)
      \begin{itemize}
        \item Prepared from plasma
        \item NaCl ...................................................... ≤5\%
      \end{itemize}
      \begin{itemize}
        \item G2885-10MG 10 mg
        \item G2885-50MG 50 mg
        \item G2885-100MG 100 mg
        \item G2885-500MG 500 mg
      \end{itemize}
    \end{itemize}
  \item \textit{\textit{\textbullet} \ γ-Globulins from sheep}
    \begin{itemize}
      \item 99\% (agarose gel electrophoresis)
      \begin{itemize}
        \item Prepared from Cohn Fraction II, III
        \item NaCl ...................................................... <4\%
      \end{itemize}
      \begin{itemize}
        \item EC No. 232-706-1 RTECS # LZ3450000
        \item G9887-5G 5 g
      \end{itemize}
    \end{itemize}
  \item \textit{\textit{\textbullet} \ γ-Globulins from rodent}
    \begin{itemize}
      \item 98\% (agarose gel electrophoresis)
      \begin{itemize}
        \item Prepared from Cohn Fraction II, III
        \item NaCl ...................................................... 2-4\%
      \end{itemize}
      \begin{itemize}
        \item EC No. 232-706-1 RTECS # LZ3450000
        \item G2885-10MG 10 mg
        \item G2885-50MG 50 mg
        \item G2885-100MG 100 mg
        \item G2885-500MG 500 mg
      \end{itemize}
    \end{itemize}
  \item \textit{\textit{\textbullet} \ γ-Globulins from rat}
    \begin{itemize}
      \item 98\% (agarose gel electrophoresis)
      \begin{itemize}
        \item Prepared from plasma
        \item NaCl ...................................................... 2-4%
      \end{itemize}
      \begin{itemize}
        \item EC No. 232-706-1 RTECS # LZ3450000
        \item G2885-10MG 10 mg
        \item G2885-50MG 50 mg
        \item G2885-100MG 100 mg
        \item G2885-500MG 500 mg
      \end{itemize}
    \end{itemize}
  \item \textit{\textit{\textbullet} \ γ-Globulins from sheep}
    \begin{itemize}
      \item 99\% (agarose gel electrophoresis)
      \begin{itemize}
        \item Prepared from Cohn Fraction II, III
        \item NaCl ...................................................... <4\%
      \end{itemize}
      \begin{itemize}
        \item EC No. 232-706-1 RTECS # LZ3450000
        \item G9887-5G 5 g
      \end{itemize}
    \end{itemize}
\end{itemize}
**Globulins Cohn fraction II, III**

<table>
<thead>
<tr>
<th>EC No. 270-678-2</th>
<th></th>
</tr>
</thead>
</table>

**Globulins Cohn fraction II, III human**

- Lyophilized powder
- Primarily \( \gamma \)- and \( \beta \)-globulins
- Contains NaCl
- **composition**
  - Protein 60-85\% (biuret)
  - HIV and HBsAg tested negative

| G2388-10G | 10 g |

**Globulins Cohn fraction II, III from goat**

<table>
<thead>
<tr>
<th>EC No. 270-678-2</th>
<th></th>
</tr>
</thead>
</table>

**Globulins Cohn fraction II, III from sheep**

<table>
<thead>
<tr>
<th>EC No. 270-678-2</th>
<th></th>
</tr>
</thead>
</table>

**Globulins Cohn fraction IV-1**

|  |  |

**Globulins Cohn fraction IV-1 human**

- HIV and HBsAg tested negative

| G2011-250MG | 250 mg |
| G2011-1G | 1 g |
| G2011-5G | 5 g |

**Globulins Cohn fraction IV-1 canine**

|  |
| G7015-1G | 1 g |
| G7015-5G | 5 g |

**Globulins Cohn fraction IV-1 equine**

|  |
| G5765-5G | 5 g |
Plasma Derived Proteins and Enzymes
Miscellaneous Plasma Derived Proteins

Globulins Cohn fraction IV-1 (continued)

Globulins Cohn fraction IV-4

Globulins Cohn fraction IV-4 human

[68476-36-8]
Predominantly α- and β-globulins
HIV and HBsAg ................................................ source material tested negative
EC No. 270-678-2
G3637-SG 5 g

Globulins Cohn fraction IV-4 canine

[68476-36-8]
Predominantly α- and β-globulins
EC No. 270-678-2
G6890-1G 1 g
G6890-SG 5 g

Globulins Cohn fraction IV-4 bovine

[68476-36-8]
Predominantly α- and β-globulins; remainder (~30%) albumin
EC No. 270-678-2
G6837-1G 1 g
G6837-SG 5 g

Globulins Cohn fraction IV-4 equine

Predominantly α- and β-globulins.
EC No. 270-678-2
G5890-SG 5 g

Globulins Cohn fraction IV-4 from rat

[68476-36-8]
Predominantly α-globulins
EC No. 270-678-2
G5015-100MG 100 mg

Globulins Cohn fraction IV-4 human

[68476-36-8]
Predominantly α- and β-globulins
Coprecipitation of Cohn Fractions IV-I and IV-4
HIV and HBsAg ................................................ source material tested negative
EC No. 270-678-2
G3387-250MG 250 mg
G3387-1G 1 g
G3387-SG 5 g

Glutamic-Oxalacetic Transaminase

Aspartate Aminotransferase; L-Aspartate:2-oxoglutarate aminotransferase; GGT
EC No. 2.6.1.1
One unit will convert 1.0 μmole of α-ketoglutarate to L-glutamate per min at pH 7.5 at 37 °C, in the presence of L-aspartic acid. One unit is equivalent to ~2,000 O.D. (Karmen) units at 25 °C.
Protein determined by biuret.
glutamic-pyruvic transaminase .............................................................. <0.03%
S: 22-24/25
Glutamic-Oxalacetic Transaminase from porcine heart

Type II-A, lyophilized powder, activity: 100-400 units/mg protein
Lyophilized powder containing ~20% sodium citrate buffer salt composition
Protein ~80%
lactic dehydrogenase and malic dehydrogenase ................................. <0.01%
G7005-500UN 500 units
Glutamic-Oxalacetic Transaminase from porcine heart

Type I, ammonium sulfate suspension, activity: 200-500 units/mg protein
Suspension in 3.0 M (NH4)2SO4 containing 0.05 M maleate and 2.5 mM α-ketoglutarate, pH 6.0
lactic dehydrogenase ................................................................. <0.01%
malic dehydrogenase ................................................................. <0.01%
G2751-1KU 1,000 units
G2751-2KU 2,000 units
G2751-10KU 10,000 units
Glutamic-Pyruvic Transaminase from porcine heart

Alanine Aminotransferase (catalytic concentration); L-Alanine: 2-Oxo-glutarate Aminotransferase; GPT
[9000-86-6]  E.C.  2.6.1.2  EC No. 2325614  BRN 3562140
One unit will convert 1.0 μmole of α-ketoglutarate to L-glutamate per min at pH 7.6 at 37 °C in the presence of L-alanine.
EC No. 232-561-4
Lyophilized powder, activity: ≥75 units/mg protein
Lyophilized powder containing buffer salts as citrate and acetate composition
Protein ~85%
Protein determined by biuret.
glutamic-oxalacetic transaminase ≤0.1%
<0.05% i-glutamic dehydrogenase, lactic dehydrogenase and malic dehydrogenase ≤0.01%

Haptoglobin Human, Phenotype 1-1
98-100%, essentially salt-free, lyophilized powder
Occurs as 3 major phenotypes: type 1-1, type 2-1, type 2-2.
capacity (hemoglobin) ........................................... >0.5 mg/mg

Haptoglobin Human, Phenotype 2-2
98-100%, essentially salt-free, lyophilized powder
Occurs as 3 major phenotypes: type 1-1, type 2-1, type 2-2.
capacity (hemoglobin) ........................................... >0.5 mg/mg

α2-hs-Glycoprotein from human plasma
≥90% (SDS-PAGE), lyophilized powder
Lyophilized from 20 mM Tris-HCl, pH 8.0, with 200 mM NaCl
Package size based on protein content

Insulin
Insulin from bovine pancreas
C_{25}H_{37}N_{65}O_{75}S_{6} FW 5733.49  [11070-73-8]  EC No. 2342912
powder, activity: ≥27 USP units/mg (HPLC)
Two-chain polypeptide hormone produced by the β-cells of pancreatic islets. Its molecular weight is ~5800 Da. The α and β chains are joined by two interchain disulfide bonds. The α chain contains an intrachain disulfide bond. Insulin regulates the cellular uptake, utilization, and storage of glucose, amino acids, and fatty acids and inhibits the breakdown of glycogen, protein, and fat.

Glycophorin Predominantly glycophorin A from blood type MN
[76416-15-4]
lyophilized powder
A membrane glycoprotein with several isoforms that interact with other membrane proteins to confer shape and antigenicity to erythrocytes.
solubility
H_2O ............................................................. clear to hazy

Haptoglobin from pooled human plasma
[9087-69-8]
Functions by binding to hemoglobin1.
Occurs as 3 major phenotypes: type 1-1, type 2-1, type 2-2.
RTECS # MG8575500
98-100%, essentially salt-free, lyophilized powder
capacity (Hemoglobin) ........................................... 0.5-0.9 mg/mg

Haptoglobin Human, Phenotype 1-1
98-100%, essentially salt-free, lyophilized powder
Occurs as 3 major phenotypes: type 1-1, type 2-1, type 2-2.
capacity (hemoglobin) ........................................... >0.5 mg/mg

Haptoglobin Human, Phenotype 2-2
98-100%, essentially salt-free, lyophilized powder
Occurs as 3 major phenotypes: type 1-1, type 2-1, type 2-2.
capacity (hemoglobin) ........................................... >0.5 mg/mg

α2-hs-Glycoprotein from human plasma
≥90% (SDS-PAGE), lyophilized powder
Lyophilized from 20 mM Tris-HCl, pH 8.0, with 200 mM NaCl
Package size based on protein content

Insulin
Insulin from bovine pancreas
C_{25}H_{37}N_{65}O_{75}S_{6} FW 5733.49  [11070-73-8]  EC No. 2342912
powder, activity: ≥27 USP units/mg (HPLC)
Two-chain polypeptide hormone produced by the β-cells of pancreatic islets. Its molecular weight is ~5800 Da. The α and β chains are joined by two interchain disulfide bonds. The α chain contains an intrachain disulfide bond. Insulin regulates the cellular uptake, utilization, and storage of glucose, amino acids, and fatty acids and inhibits the breakdown of glycogen, protein, and fat.

Zn .......................................................................................................... ~0.5%
S: 22-24/25  EC No. 234-291-2

α2-hs-Glycoprotein from human plasma
≥90% (SDS-PAGE), lyophilized powder
Lyophilized from 20 mM Tris-HCl, pH 8.0, with 200 mM NaCl
Package size based on protein content

Haptoglobin Human, Phenotype 1-1
98-100%, essentially salt-free, lyophilized powder
Occurs as 3 major phenotypes: type 1-1, type 2-1, type 2-2.
capacity (hemoglobin) ........................................... >0.5 mg/mg

Haptoglobin Human, Phenotype 2-2
98-100%, essentially salt-free, lyophilized powder
Occurs as 3 major phenotypes: type 1-1, type 2-1, type 2-2.
capacity (hemoglobin) ........................................... >0.5 mg/mg

α2-hs-Glycoprotein from human plasma
≥90% (SDS-PAGE), lyophilized powder
Lyophilized from 20 mM Tris-HCl, pH 8.0, with 200 mM NaCl
Package size based on protein content

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Zn .......................................................................................................... ~0.5%
S: 22-24/25  EC No. 234-291-2

α2-hs-Glycoprotein from human plasma
≥90% (SDS-PAGE), lyophilized powder
Lyophilized from 20 mM Tris-HCl, pH 8.0, with 200 mM NaCl
Package size based on protein content
Plasma Derived Proteins and Enzymes

Miscellaneous Plasma Derived Proteins

Insulin (continued)

Insulin human

C_{62}H_{112}N_{46}O_{57}S_6, FW 9598.24 EC No. 235-703-3 RTECS # NM8900250

Two-chain polypeptide hormone produced by the β-cells of pancreatic islets. Its molecular weight is ~5800 Da. The α and β chains are joined by two interchain disulfide bonds. The α chain contains an intrachain disulfide bond. Insulin regulates the cellular uptake, utilization, and storage of glucose, amino acids, and fatty acids and inhibits the breakdown of glycogen, protein, and fat.

EC No. 234-279-7, RTECS # NM8900250

- α chain contains an intrachain disulfide bond. α and β chains are joined by two interchain disulfide bonds. The α chain contains an intrachain disulfide bond. Insulin regulates the cellular uptake, utilization, and storage of glucose, amino acids, and fatty acids and inhibits the breakdown of glycogen, protein, and fat.

- Composition

- Lyophilized powder

- Insulin Biotin-Fluorescein isothiocyanate labeled from bovine insulin

- Insulin from bovine pancreas

- Lyophilized powder

- Insulin from porcine pancreas

- Lyophilized powder

- Insulin from human pancreas

- Lyophilized powder

- Insulin-Biotin labeled from bovine pancreas

- Lyophilized powder

- Insulin-Fluorescein isothiocyanate labeled from bovine pancreas

- Lyophilized powder

- L-Lactic Dehydrogenase

- Lyophilized powder

- L-Lactic Dehydrogenase from bovine heart

- Protein determined by biuret

- Type III, ammonium sulfate suspension, activity: 500-700 units/mg protein

- Type XVII, buffered aqueous glycerol solution, activity: 400-600 units/mg protein

- Solution in 50% glycerol containing 0.025 M potassium phosphate buffer, pH 7.5

- pyruvate kinase, myokinase and α-glycerophosphate dehydrogenase

- glutamic-pyruvic transaminase and glutamic-oxalacetic transaminase

- ammonium (NH_4)^+
L-Lactic Dehydrogenase from bovine heart

Type X, ammonium sulfate suspension, activity: ≥600 units/mg protein
Crystalline suspension in 2.4 M (NH₄)₂SO₄ solution, pH 6.0
Protein determined by biuret.
pyruvate kinase .............................................. <0.01% S: 22-24/25 EC No. 232-617-8
L1378-3KU 3,000 units
L1378-15KU 15,000 units

L-Lactic Dehydrogenase from porcine heart
ammonium sulfate suspension, activity: ≥400 units/mg protein (biuret)
Suspension in ammonium sulfate and 0.1 M potassium phosphate, pH 7.0
malic dehydrogenase and glutamic-pyruvic transaminase ............ <0.03%
pyruvate kinase, myokinase and glutamic-oxalacetic transaminase ...... <0.01% S: 22-24/25 EC No. 232-617-8
L7525-12.5KU 12,500 units

L-Lactic Dehydrogenase from rabbit muscle
Lactic Dehydrogenase (LDH) has a total molecular weight of 140 kDa and is composed of 4 subunits which are designated M subunit (muscle) and H subunit (heart). These subunits may be mixed in any of 5 combinations (M4, M3H1, M2H2, MH3, and H4). Skeletal muscle contains LDH that is predominately M4 with some small amounts of M3H and traces of H2H2. The H and M subunits are quite similar in molecular weight, but differ substantially in amino acid composition. Rabbit muscle LDH dissociates into dimeric species (MW = ~70 kDa) in molecular weight, but differ substantially in amino acid composition. Rabbit muscle LDH dissociates into dimeric species (MW = ~70 kDa) in acetate-chloride at pH 5.0, the dissociation is reversible. Biochemistry, 13, 3527-3531 (1974). Oxidizes glyoxylate and lactate.
Isoelectric point: 8.4-8.6
Optimal pH: 7.5
Protein determined by biuret.
pyruvate kinase, myokinase, malic dehydrogenase, glutamic-pyruvic transaminase, glutamic-oxalacetic transaminase and α-glycerophosphate dehydrogenase .............................................. <0.01% S: 22-24/25 EC No. 232-617-8
L7525-50KU 50,000 units

L-Lactic Dehydrogenase from human plasma

α₂-Macroglubulin from human plasma

α₂-M
lyophilized powder, ≥98% (SDS-PAGE)
α₂-Macroglubulin is found abundantly in plasma and interstitial fluids. The protease-α₂-M balance plays an important role in mediating inflammation-associated tissue destruction. Serum levels of α₂-M and protease-α₂-M complexes are increased in patients with sepsis, emphysema, periodontitis, rheumatoid arthritis, and other inflammatory diseases. It is hypothesized that the oxidant inactivation of α₂-M contributes to tissue destruction in inflammation. α₂-M has been implicated as a genetic risk factor for late-onset Alzheimer’s disease. Activated α₂-M enhances the clearance of soluble αβ-amyloid via low-density lipoprotein receptor-related protein in cortical neurons, but has no effect on secreted or full-length APP levels.
Inhibits all classes of endoproteases by forming a 1:1 complex with the protease. When the protease cleaves the macroglubulin "bait" sequence, the macroglubulin rearranges and traps the protease.
Lyophilized from 0.02 M Tris, 0.13 M glycine, pH 8.0, and 0.08 M trehalose.
mol wt ~720 kDa (four glycoprotein subunits)
composition
Protein –20% (biuret)
Package size based on protein content
Plasma from each donor has been tested and found negative for antibody to HIV-1/HIV-2, antibody to HCV and HbSAg.
One mg of α₂-macroglubulin will inhibit a minimum of 10 μg trypsin with an activity of 10,000 BAEE un/mg protein

M6159-1MG 1 mg
M6159-5MG 5 mg
M6159-10MG 10 mg

β₂-Microglobulin from human urine

≥98% (SDS-PAGE), lyophilized powder
β₂-microglobulin (β₂-M) is a polypeptide that associates with the heavy chain of class I major histocompatibility complex (MHC) antigens on the cell surface. The interaction is dynamic and plays a critical role in the stability of the MHC antigens and their ability to present peptide antigens in CD8+ cells. A transient complex of MHC heavy chain and β₂-M is known to be assembled into the TAP molecule (transporter associated with antigen processing) through interactions with a number of chaperones. Binding of processed peptide releases the Class I-β₂-M complex to the cell surface. Absence of binding leads to degradation in the proteasome.
Lyophilized powder containing phosphate buffered saline and sodium azide.
mol wt 11.6 kDa
Prepared by the method of Berggard and Bearn.
Package size based on protein content.

M4890-1MG 0.1 mg
M4890-250UG 250 μg
Plasma Derived Proteins and Enzymes

Miscellaneous Plasma Derived Proteins

**β₂-Microglobulin (continued)**

**Prealbumin from human plasma**

Thyroxine binding prealbumin; Transthyretin [87090-18-4]

>95% (nonreducing PAGE), salt-free, lyophilized powder

<table>
<thead>
<tr>
<th>Preparation</th>
<th>Concentration</th>
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</thead>
<tbody>
<tr>
<td>P7528</td>
<td>≥1 mg</td>
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</tbody>
</table>

Lyophilized powder

Lyophilized powder containing sodium phosphate and NaCl

<table>
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<th>Preparation</th>
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</thead>
<tbody>
<tr>
<td>P1742-5MG</td>
<td>0.5 mg</td>
</tr>
<tr>
<td>P1742-1MG</td>
<td>1 mg</td>
</tr>
<tr>
<td>P1742-5MG</td>
<td>5 mg</td>
</tr>
</tbody>
</table>

**Prostate Specific Antigen from human semen**

Cancer-associated PSA; PSA

Prostate Specific Antigen (PSA), a glycoprotein of the glandular kallikrein family, is a serine protease with chymotrypsin-like enzymatic activity. Circulating PSA exists in free and protease inhibitor-bound forms. Studying the ratios of free to inhibitor-bound forms may prove valuable in the diagnosis of prostate cancer.

>95% (SDS-PAGE), buffered aqueous solution

<table>
<thead>
<tr>
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<th>Concentration</th>
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<tbody>
<tr>
<td>P3338-5UG</td>
<td>5 μg</td>
</tr>
<tr>
<td>P2985-10UG</td>
<td>10 μg</td>
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</tbody>
</table>

**Retinol Binding Protein from human urine**

RBP

buffered aqueous solution

Solution in 10 mM sodium phosphate, pH 7.4, 150 mM NaCl, and 0.05% NaN₃

<table>
<thead>
<tr>
<th>Preparation</th>
<th>Concentration</th>
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</thead>
<tbody>
<tr>
<td>S1437-10UG</td>
<td>10 μg</td>
</tr>
</tbody>
</table>

**Sex Hormone-Binding Globulin from human serum**

SHBG; Testosterone-estradiol binding globulin

>95% (SDS-PAGE), buffered aqueous glycerol solution

Dimeric plasma glycoprotein with high affinity for the gonadal steroids, testosterone, and estradiol. Regulates the availability of sex steroid hormones and limits their access to target cells. Inhibits estradiol-induced proliferation of breast cancer cells.

Solution in 20 mM Tris-HCl, 10% Glycerol, pH 7.4

<table>
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<tbody>
<tr>
<td>S1437-10UG</td>
<td>10 μg</td>
</tr>
</tbody>
</table>

**Thyroglobulin**

[9010-34-8] EC No. 2327213

Iodine-containing protein that is stored in the thyroid gland. Converted into circulating thyroxines when the thyroid is stimulated by TSH (Thyroid Stimulating Hormone) from the pituitary. Often used as a carrier protein for the production of antibodies. Its advantage as a carrier protein comes from its large number of tyrosine residues that can be used for conjugation using the diazo reaction.

**Composition**

- Iodine ~1%
- mol wt ~670 kDa
- nitrogen analysis .............................................. ~14.5% total
- ash ........................................................................... ≤4%

<table>
<thead>
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<th>Preparation</th>
<th>Concentration</th>
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<tbody>
<tr>
<td>P3960-10UG</td>
<td>10 μg</td>
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</table>
Thyroglobulin from bovine thyroid

≥90% (agarose gel electrophoresis), powder

Bovine thyroglobulin is a large, tetrameric glycoprotein produced in the thyroid gland as a precursor to thyroid hormones. Its large size and absence from plasma under normal conditions makes it very immunogenic and reduces the chance that antibodies to this carrier protein will cross-react with plasma proteins in immunoassays. Haptens may be conjugated to thyroglobulin via accessible secondary amines.

**Solubility**

H₂O: 20 mg/mL

Color: white to tan

<table>
<thead>
<tr>
<th>Product Code</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1001-100MG</td>
<td>100 mg</td>
</tr>
<tr>
<td>T1001-500MG</td>
<td>500 mg</td>
</tr>
<tr>
<td>T1001-1G</td>
<td>1 g</td>
</tr>
<tr>
<td>T1001-5G</td>
<td>5 g</td>
</tr>
</tbody>
</table>

Thyroglobulin from porcine thyroid gland

powder

Electrophoretically heterogeneous.

<table>
<thead>
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<th>Product Code</th>
<th>Quantity</th>
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</thead>
<tbody>
<tr>
<td>T1126-100MG</td>
<td>100 mg</td>
</tr>
<tr>
<td>T1126-500MG</td>
<td>500 mg</td>
</tr>
<tr>
<td>T1126-1G</td>
<td>1 g</td>
</tr>
</tbody>
</table>

Thyroglobulin from human plasma

buffered aqueous solution

Solution in 0.05 M Tris, pH 8.6, containing 0.25 M NaCl, 0.3 M glycine, and 0.1% sodium azide

Glycoprotein (54 kDa) produced in the liver and is the primary carrier of thyroxine and triiodothyronine in serum.

Protein determined by Lowry.

<table>
<thead>
<tr>
<th>Product Code</th>
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</thead>
<tbody>
<tr>
<td>T2022-1MG</td>
<td>0.1 mg</td>
</tr>
</tbody>
</table>

Thyroxine-Binding Globulin from human plasma

buffered aqueous solution

Solution in 0.05 M Tris, pH 8.6, containing 0.25 M NaCl, 0.3 M glycine, and 0.1% sodium azide

Glycoprotein (54 kDa) produced in the liver and is the primary carrier of thyroxine and triiodothyronine in serum.

Protein determined by Lowry.

<table>
<thead>
<tr>
<th>Product Code</th>
<th>Quantity</th>
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<tbody>
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<td>T2252-100MG</td>
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</tr>
<tr>
<td>T2252-500MG</td>
<td>500 mg</td>
</tr>
<tr>
<td>T2252-1G</td>
<td>1 g</td>
</tr>
<tr>
<td>T2252-5G</td>
<td>5 g</td>
</tr>
</tbody>
</table>

Transferrin is a 76-81 kDa glycoprotein with homologous N-terminal and C-terminal iron-binding domains. Transferrin is related to several other iron-binding proteins including lactoferrin, melanotransferrin, and ovo transferrin. These molecules comprise the transferrin superfamily. All members of this superfamily have similar polypeptide folding patterns. The N-terminal and C-terminal domains of these proteins are globular moieties of ~330 amino acids. Each of these domains is divided into two sub-domains, with the iron- and anion-binding sites found within the intersubdomain cleft. Ferric iron couples to transferrin only in the presence of an anion (usually carbonate) that serves as a bridging ligand between metal and protein, excluding water from the two coordination sites. The binding cleft opens with iron release, and closes with iron binding. Radioactive tracer studies indicate that at least 80% of the iron bound to circulating transferrin is delivered to the bone marrow and incorporated into newly formed erythrocytes. Other major sites of iron delivery include the liver, which is a primary depot for stored iron, and the spleen. Hepatic iron is found in both reticuloendothelial cells and hepatocytes. Iron is taken into cells by receptor-mediated endocytosis of monoferric and diferric transferrin. The C-terminal domain of transferrin appears to mediate receptor binding. After binding to its receptor on the cell surface, transferrin is rapidly internalized by invagination of clathrin-coated pits with formation of endocytic vesicles. Following the release of iron, receptor-bound apo-transferrin recycles to the cell surface rather than being transported to lysosomes for degradation.

apo-Transferrin

EC No. 234.318-8

apo-Transferrin human

Human transferrin; Siderophilin

[11096-37-0] EC No. 2343188

Non-heme iron-transport protein.

mol wt 76-81 kDa

<table>
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<tbody>
<tr>
<td>T2252-100MG</td>
<td>100 mg</td>
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<tr>
<td>T2252-500MG</td>
<td>500 mg</td>
</tr>
<tr>
<td>T2252-1G</td>
<td>1 g</td>
</tr>
<tr>
<td>T2252-5G</td>
<td>5 g</td>
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</tbody>
</table>
All cells require iron for the proper uptake of oxygen from their environment. Transferrin, a protein isolated from serum, causes the uptake and transport of iron from culture medium to the cells. This allows proper oxygen uptake and also stimulates growth-related enzyme activity. Iron-saturated transferrin (holo transferrin) is continually recycled after releasing iron and becomes iron-deficient transferrin (apo-transferrin). Choosing which form to use depends upon the culture conditions. In media such as Dulbecco’s Modified Eagle’s Medium/Ham’s Nutrient Mixture F12 (DMEM/F12) that contain high levels of iron salt, using apo-transferrin is preferred.

- ≥98% solubility
  - H₂O: essentially free
  - T4382-500MG: 50 mg
  - T4382-1G: 1 g

- ≤30 μg/g powder
  - Similar to T 2252

- 1100-1600 μg/g protein
  - T4382-100MG: 100 mg
  - T4382-500MG: 500 mg
  - T4382-1G: 1 g
Transferrin-biotin labeled human

Lyophilized powder containing sodium citrate composition
Protein ~90% (biuret)
Prepared from human holo-transferrin, coupled to biotin by an amide bond through an aminocaproyl spacer.
extent of labeling ...................................... 4-8 mol d-biotin per mol transferrin
EC No. 234-318-8
T3915-5MG 5 mg

▼ Vitronectin

Serum spreading factor 83380-82-9
Antigenically unrelated to fibronectin.
Recommended as a cell culture substratum at 0.1 μg/cm². Optimal conditions for attachment must be determined for each cell line and application.
Lyophilized from buffered saline
Dissolve in water (1 ml/vial)
Vitronectin from human plasma
Lyophilized powder, cell culture tested
V8379-50UG 50 μg

Vitronectin from bovine plasma
Lyophilized powder, cell culture tested
V9881-50UG 50 μg

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Now there are two easy-to-use kits for quantitation of primary protease activity or detection or trace protease contaminants. Our fluorometric and colorimetric kits use the same methodologies utilized by Sigma's QC department.