

2010

Catalog | Specific Proteins



# Specific Proteins

## Table of Contents

**Alphabetical Index      3**

**Introduction      7**

**Products      11**

- 12** Overview Tables
- 15** Turbidimetry and Nephelometry Test Systems
- 15** Turbidimetry and Nephelometry Kits
- 16** Antibodies for Turbidimetry and Nephelometry
- 17** Dako Buffers for Turbidimetry and Nephelometry
- 18** Calibrators and Controls for Turbidimetry and Nephelometry
- 20** ELISA Kits and ELISA Kit Accessories
- 20** Chromogranin A ELISA Kit
- 20** Diabetes, ELISA Kits and Controls
- 21** Accessory Products for ELISA
- 22** Multipurpose Antibodies for Clinical Chemistry
- 26** Normal Animal Sera and Animal Immunoglobulins  
(Negative Controls and Blocking Sera)

**General Product Information      27**

**Product Code Index      31**



## **Alphabetical Index**

# Alphabetical Index

This index lists all products available from Dako. More detailed information appears on the pages mentioned for each individual product.

## Abbreviations:

<b>a</b>	<b>Anti-</b>
<b>HRP</b>	<b>Horseradish peroxidase</b>
<b>Hu</b>	<b>Human</b>
<b>Rb</b>	<b>Rabbit</b>

Code	Source	Product	See Page
<b>A</b>			
A0001	Rb a Hu	<b>Albumin</b>	22
Q0328	Rb a Hu	<b>Albumin</b> , for Turbidimetry/Nephelometry	16
		<b>Alpha-1-Acid Glycoprotein</b> , see: Orosomucoid	
A0012	Rb a Hu	<b>Alpha-1-Antitrypsin</b>	22
Q0363	Rb a Hu	<b>Alpha-1-Antitrypsin</b> , for Turbidimetry/Nephelometry	16
A0256	Rb a Hu	<b>Alpha-1-Microglobulin</b>	22
Q0495	Rb a Hu	<b>Alpha-1-Microglobulin</b> , for Turbidimetry/Nephelometry	16
Q0102	Rb a Hu	<b>Alpha-2-Macroglobulin</b> , for Turbidimetry/Nephelometry	16
Q0496	Rb a Hu	<b>Apolipoprotein A-I</b> , for Turbidimetry/Nephelometry	16
Q0497	Rb a Hu	<b>Apolipoprotein B</b> , for Turbidimetry/Nephelometry	16
		<b>Application Notes for Turbidimetry and Nephelometry</b>	
<b>B</b>			
A0072	Rb a Hu	<b>Beta-2-Microglobulin</b>	22
K0052		<b>Beta-2-Microglobulin PET Kit (80-150 Tests)</b>	15
S2005		<b>Buffer 1, Dilution</b> , for Turbidimetry/Nephelometry	17
S2007		<b>Buffer 1, Reaction</b> , for Turbidimetry/Nephelometry	17
S2008		<b>Buffer 2, Reaction</b> , for Turbidimetry/Nephelometry	17
S2006		<b>Buffer 3, Reaction</b> , for Turbidimetry/Nephelometry	17
S2011		<b>Buffer 4, Reaction</b> , for Turbidimetry/Nephelometry	17
S2307		<b>Buffer 7, Reaction</b> , for Turbidimetry	18
S2361		<b>Buffer 9, Reaction</b> , for Turbidimetry/Nephelometry	18
<b>C</b>			
A0136	Rb a Hu	<b>C1q Complement</b>	22
A0062	Rb a Hu	<b>C3c Complement</b>	22
Q0368	Rb a Hu	<b>C3c Complement</b> , for Turbidimetry/Nephelometry	16
A0063	Rb a Hu	<b>C3d Complement</b>	22
Q0369	Rb a Hu	<b>C4c Complement</b> , for Turbidimetry/Nephelometry	16
A0115	Rb a Hu	<b>Carcinoembryonic Antigen</b>	22
Q0121	Rb a Hu	<b>Ceruloplasmin</b> , for Turbidimetry/Nephelometry	16
K0025		<b>Chromogranin A ELISA Kit (96 Test Wells)</b>	20
A0136	Rb a Hu	<b>Complement C1q</b>	22
A0062	Rb a Hu	<b>Complement C3c</b>	22
Q0368	Rb a Hu	<b>Complement C3c</b> , for Turbidimetry/Nephelometry	16
A0063	Rb a Hu	<b>Complement C3d</b>	22
Q0369	Rb a Hu	<b>Complement C4c</b> , for Turbidimetry/Nephelometry	16
		<b>Control Reagents</b> , see: Negative Controls	
K6220		<b>C-Peptide ELISA Kit (96 Test Wells)</b>	20
Q0329	Rb a Hu	<b>C-Reactive Protein</b> , for Turbidimetry/Nephelometry	16
Q8329	Rb a Hu	<b>C-Reactive Protein</b> , for Turbidimetry, Ready-to-Use (400 Tests)	16
X0923		<b>C-Reactive Protein Calibrator</b>	18
X0926		<b>C-Reactive Protein High Control</b>	18
X0925		<b>C-Reactive Protein Low Control</b>	18
X0974		<b>Cystatin C Calibrator</b>	16 18
X0973		<b>Cystatin C Control Set</b>	16 18
LX002		<b>Cystatin C Immunoparticles</b> , Ready-to-Use (200 Tests)	15
<b>D</b>			
S6247		<b>Diabetes Immunoassay Control Set</b> , 3 Concentration Levels	20
S2005		<b>Dilution Buffer 1</b> , for Turbidimetry/Nephelometry	17
<b>F</b>			
		<b>Factor VIII-Related Antigen</b> , see: Von Willebrand Factor	
A0080	Rb a Hu	<b>Fibrinogen</b>	22

## Alphabetical Index (continued)

Code	Source	Product	See Page
Q0122	Rb a Hu	<b>Fibrinogen</b> , for Turbidimetry/Nephelometry	16
A0245	Rb a Hu	<b>Fibronectin</b>	22
Q0149	Rb a Hu	<b>Fibronectin</b> , for Turbidimetry/Nephelometry	16
		<b>G</b>	
		<b>Gamma Trace</b> , see: Cystatin C	
A0021	Rb a Hu	<b>Gc-Globulin</b> , for Turbidimetry/Nephelometry	16 23
A0146	Rb a Hu	<b>Gelsolin</b> , for Turbidimetry/Nephelometry	16 23
X0907		<b>Goat Serum</b> (Normal)	26
		<b>H</b>	
A0030	Rb a Hu	<b>Haptoglobin</b>	23
Q0330	Rb a Hu	<b>Haptoglobin</b> , for Turbidimetry/Nephelometry	16
		<b>HC Protein</b> , see: Alpha-1-Microglobulin	
		<b>I</b>	
A0092	Rb a Hu	<b>IgA</b>	23
P0216	Rb a Hu	<b>IgA/HRP</b>	23
Q0332	Rb a Hu	<b>IgA</b> , for Turbidimetry/Nephelometry	17
A0190	Rb a Hu	<b>IgA, IgG, IgM</b>	23
A0093	Rb a Hu	<b>IgD</b>	23
A0094	Rb a Hu	<b>IgE</b>	23
A0424	Rb a Hu	<b>IgG</b>	23
Q0331	Rb a Hu	<b>IgG</b> , for Turbidimetry/Nephelometry	17
A0426	Rb a Hu	<b>IgM</b>	23
Q0333	Rb a Hu	<b>IgM</b> , for Turbidimetry/Nephelometry	17
A0107	Rb a Hu	<b>Immunoglobulins</b>	23
K6219		<b>Insulin ELISA Kit</b> (96 Test Wells)	20
		<b>K</b>	
A0100	Rb a Hu	<b>Kappa Free Light Chains</b>	24
A0192	Rb a Hu	<b>Kappa Light Chains</b>	24
Q0498	Rb a Hu	<b>Kappa Light Chains</b> , for Turbidimetry/Nephelometry	17
		<b>L</b>	
A0101	Rb a Hu	<b>Lambda Free Light Chains</b>	24
A0194	Rb a Hu	<b>Lambda Light Chains</b>	24
Q0499	Rb a Hu	<b>Lambda Light Chains</b> , for Turbidimetry/Nephelometry	17
X0958		<b>Lipoprotein Calibrator</b> , Human Serum	18
X0962		<b>Lipoprotein High Control</b> , Human Serum	18
X0961		<b>Lipoprotein Low Control</b> , Human Serum	18
Q0023	Rb a Hu	<b>Lipoprotein(a)</b> , for Turbidimetry/Nephelometry	17
		<b>M</b>	
X0931		<b>Mouse IgG1</b> , Control Reagent	26
X0943		<b>Mouse IgG2a</b> , Control Reagent	26
X0944		<b>Mouse IgG2b</b> , Control Reagent	26
X0942		<b>Mouse IgM</b> , Control Reagent	26
X0910		<b>Mouse Serum</b> (Normal)	26
		<b>N</b>	
X0931		<b>Negative Control, Mouse IgG1</b>	26
X0943		<b>Negative Control, Mouse IgG2a</b>	26
X0944		<b>Negative Control, Mouse IgG2b</b>	26
X0942		<b>Negative Control, Mouse IgM</b>	26
X0903		<b>Negative Control, Rabbit Immunoglobulin Fraction</b> (Normal)	26
X0936		<b>Negative Control, Rabbit Immunoglobulin Fraction</b> (Solid-Phase Absorbed)	26
		<b>O</b>	
S2045		<b>OPD (Orthophenylenediamine) Tablets</b> , for ELISA	21
Q0326	Rb a Hu	<b>Orosomucoid</b> , for Turbidimetry/Nephelometry	17
S2045		<b>Orthophenylenediamine (OPD) Tablets</b> , for ELISA	21

## Alphabetical Index (continued)

Code	Source	Product	See Page
		<b>P</b>	
A0002	Rb a Hu	<b>Prealbumin</b>	24
Q0362	Rb a Hu	<b>Prealbumin</b> , for Turbidimetry/Nephelometry	17
A0230	Rb a Hu	<b>Pregnancy-Associated Plasma Protein A</b>	24
		<b>Protein HC</b> , see: Alpha-1-Microglobulin	
A0384	Rb a Hu	<b>Protein S</b>	24
		<b>R</b>	
X0903		<b>Rabbit Immunoglobulin Fraction</b> (Normal), Negative Control	26
X0936		<b>Rabbit Immunoglobulin Fraction</b> (Solid-Phase Absorbed), Negative Control	26
X0902		<b>Rabbit Serum</b> (Normal)	26
S2007		<b>Reaction Buffer 1</b> , for Turbidimetry/Nephelometry	17
S2008		<b>Reaction Buffer 2</b> , for Turbidimetry/Nephelometry	17
S2006		<b>Reaction Buffer 3</b> , for Turbidimetry/Nephelometry	17
S2011		<b>Reaction Buffer 4</b> , for Turbidimetry/Nephelometry	17
S2307		<b>Reaction Buffer 7</b> , for Turbidimetry	18
S2361		<b>Reaction Buffer 9</b> , for Turbidimetry/Nephelometry	18
A0040	Rb a Hu	<b>Retinol-Binding Protein</b> , for Turbidimetry/Nephelometry	17 24
		<b>S</b>	
X0908		<b>Serum Protein Calibrator, Human</b>	18
X0940		<b>Serum Protein High Control, Human</b>	18
X0939		<b>Serum Protein Low Control, Human</b>	19
A0206	Rb a Hu	<b>Serum</b>	24
		<b>T</b>	
S1599		<b>TMB+, One-Step Substrate System</b> , for ELISA	21
A0061	Rb a Hu	<b>Transferrin</b>	24
Q0327	Rb a Hu	<b>Transferrin</b> , for Turbidimetry/Nephelometry	17
		<b>Transthyretin</b> , see: Prealbumin	
		<b>U</b>	
X0975		<b>Urine Protein Calibrator, Human</b>	19
X0977		<b>Urine Protein High Control, Human</b>	19
X0976		<b>Urine Protein Low Control, Human</b>	19
		<b>V</b>	
P0226	Rb a Hu	<b>Von Willebrand Factor/HRP</b>	22 25

## Introduction



## Introduction to Specific Proteins

Within the field of clinical chemistry, Dako has a long experience in producing reagents for the measurement of proteins in body fluids. The reagents have been developed particularly for turbidimetry, nephelometry and ELISA. These techniques exploit the fast, specific reaction between antibody and antigen.

For turbidimetry and nephelometry we provide a comprehensive range of conventional products as well as products designed for

particle-enhanced assays. The products can be used on a variety of different, fully-automated instruments.

Our ELISA range features a panel of kits for monitoring diabetes patients and for determination of the neuroendocrine tumor marker chromogranin A.

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### Turbidimetry and Nephelometry Test Systems

The Dako Turbidimetry and Nephelometry Test Systems for determination of specific proteins in serum, plasma, urine and cerebrospinal fluid are the result of several decades of dedicated research and development, and reflect our company's particular strengths within this area.

The Turbidimetry and Nephelometry Test Systems cover a large range of analytes and instruments, and reagents are available separately, making the implementation of turbidimetric and nephelometric assays flexible and economical. Batch-to-batch consistency of reagents is excellent, and the assays are characterized by a wide measuring range - giving the advantage of few re-runs, and a wide security zone - providing maximum security against antigen excess problems.

The Dako Turbidimetry and Nephelometry Test Systems comprise:

- High-quality antibodies tailored for turbidimetry and nephelometry.
- Stable and reliable calibrators, value assigned by turbidimetry using a meticulous protocol. The calibrators are traceable to internationally recognized reference preparations when such preparations are available.
- High and low controls with assigned protein values. For use in the daily routine as curve controls.
- Buffers developed for optimal performance and convenience. For enhancement of the reaction and for dilution of antibodies, calibrators, and samples.
- Dedicated Application Notes for determination of specific proteins on a variety of commonly used instruments. The Application Notes include information on reagents required, sample material, measuring range, reference interval, assay performance, and instrument programming.

For your convenience, a package insert with a thorough product description accompanies all Dako reagents and is also available on [www.dako.com](http://www.dako.com).

### Application Notes for Turbidimetry and Nephelometry

Dako CE-marked Application Notes for use with Concentrated Antibodies, Ready-to-Use CRP Antibody, and Immunoparticles are available for the automated turbidimeters listed in the overview table "CE-marked Application Notes for Turbidimetry and Nephelometry". For other instruments, General Application Notes are available which provide guidelines for working procedures.

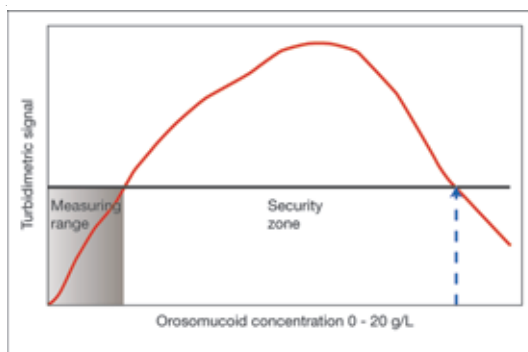
The development of the CE-marked Application Notes is based on experience generated in Dako on turbidimetric and nephelometric immunoassays over the past decades (1). The performance of assays conducted according to the Application Notes is tested and documented by a number of different parameters.

The Application Notes contain information on measuring range, reagents required, reference interval, sample material, assay performance and programming of instrument.

If you have any problems in setting up protein assays on your instrument, please do not hesitate to contact your local distributor for assistance.

#### Reference:

1. Blirup-Jensen S. Protein standardization III: Method optimisation. Basic principles for quantitative determination of human serum proteins on automated instruments based on turbidimetry or nephelometry. Clin Chem Lab Med 2001;39:1098-109



#### Performance Study

*Heidelberger-Kendall curve for Anti-Orosomucoid*



## **Products**

- 12** Overview Tables
- 15** Turbidimetry and Nephelometry Test Systems
- 15** Turbidimetry and Nephelometry Kits
- 16** Antibodies for Turbidimetry and Nephelometry
- 17** Dako Buffers for Turbidimetry and Nephelometry
- 18** Calibrators and Controls for Turbidimetry and Nephelometry
- 20** ELISA Kits and ELISA Kit Accessories
- 20** Chromogranin A ELISA Kit
- 20** Diabetes, ELISA Kits and Controls
- 21** Accessory Products for ELISA
- 22** Multipurpose Antibodies for Clinical Chemistry
- 26** Normal Animal Sera and Animal Immunoglobulins (Negative Controls and Blocking Sera)

# CE-Marked Application Notes for Turbidimetry and Nephelometry

Analyte	Sample*	Antibody/Kit	Instrument and Application Note Order No. <sup>▲</sup>					General Application Notes
			Cobas MIRA Plus	Hitachi 911	Hitachi 917	Modular P	Immage®/Immage® 800	
			30 133	30 124	30 190	30 194		30 134
<b>Albumin</b>	Serum/Plasma	Q0328	Q0328.01	Q0328.01	Q0328.01	Q0328.01		Q0328.01
<b>Albumin</b>	Urine	Q0328			Q0328.02	Q0328.02		Q0328.02
<b>Albumin</b>	CSF	Q0328	Q0328.03	Q0328.03	Q0328.03			Q0328.03
<b>Alpha-1-Antitrypsin</b>	Serum/Plasma	Q0363	Q0363.01	Q0363.01	Q0363.01	Q0363.01		Q0363.01
<b>Alpha-1-Microglobulin (Protein HC)</b>	Urine	Q0495			Q0495.01	Q0495.01	Q0495.01	Q0495.01
<b>Alpha-2-Macroglobulin</b>	Serum/Plasma	Q0102	Q0102.01	Q0102.01	Q0102.01	Q0102.01		Q0102.01
<b>Apolipoprotein A-I</b>	Serum/Plasma	Q0496	Q0496.01	Q0496.01		Q0496.01		Q0496.01
<b>Apolipoprotein B</b>	Serum/Plasma	Q0497	Q0497.01	Q0497.01	Q0497.01	Q0497.01		Q0497.01
<b>Beta-2-Microglobulin</b>	Serum/Plasma	K0052	***	***	***		K0052.01	K0052.01
<b>C3c Complement</b>	Serum/Plasma	Q0368	Q0368.01	Q0368.01	Q0368.01	Q0368.01		Q0368.01
<b>C4c Complement</b>	Serum/Plasma	Q0369	Q0369.01	Q0369.01	Q0369.01	Q0369.01		Q0369.01
<b>Ceruloplasmin</b>	Serum/Plasma	Q0121	Q0121.01	Q0121.01	Q0121.01	Q0121.01		Q0121.01
<b>C-Reactive Protein (CRP)</b>	Serum/Plasma	Q0329	Q0329.01	Q0329.01	Q0329.01	Q0329.01		Q0329.01
<b>C-Reactive Protein (CRP)</b>	Serum/Plasma	Q8329**	***	***	***	Q8329.01		Q8329.01
<b>Cystatin C</b>	Serum/Plasma	LX002§	LX002.01	LX002.01	***	LX002.01	***	LX002.01
<b>Fibrinogen</b>	Plasma	Q0122	Q0122.01	Q0122.01	Q0122.01			Q0122.01
<b>Fibronectin</b>	Serum/Plasma	Q0149	Q0149.01	Q0149.01	Q0149.01			Q0149.01
<b>Gc-Globulin</b>	Serum	A0021			A0021.01			
<b>Gelsolin</b>	Plasma	A0146			A0146.01			
<b>Haptoglobin</b>	Serum/Plasma	Q0330	Q0330.01	Q0330.01	Q0330.01	Q0330.01		Q0330.01
<b>IgA</b>	Serum/Plasma	Q0332	Q0332.01	Q0332.01	Q0332.01	Q0332.01		Q0332.01
<b>IgG</b>	Serum/Plasma	Q0331	Q0331.01	Q0331.01	Q0331.01	Q0331.01		Q0331.01
<b>IgG</b>	CSF	Q0331	Q0331.02	Q0331.02	Q0331.02			Q0331.02
<b>IgM</b>	Serum/Plasma	Q0333	Q0333.01	Q0333.01	Q0333.01	Q0333.01		Q0333.01
<b>Kappa Light Chains</b>	Serum/Plasma	Q0498	Q0498.01	Q0498.01	Q0498.01	Q0498.01		Q0498.01
<b>Lambda Light Chains</b>	Serum/Plasma	Q0499	Q0499.01	Q0499.01	Q0499.01	Q0499.01		Q0499.01
<b>Lipoprotein(a)</b>	Serum/Plasma	Q0023				Q0023.01		Q0023.01
<b>Orosomucoid (Alpha-1-Acid Glycoprotein)</b>	Serum/Plasma	Q0326	Q0326.01	Q0326.01	Q0326.01	Q0326.01		Q0326.01
<b>Prealbumin (Transferrin)</b>	Serum/Plasma	Q0362	Q0362.01	Q0362.01	Q0362.01	Q0362.01		Q0362.01
<b>Retinol-Binding Protein</b>	Serum	A0040			A0040.01			
<b>Transferrin</b>	Serum/Plasma	Q0327	Q0327.01	Q0327.01	Q0327.01	Q0327.01		Q0327.01

▲ Each order No. has 12 characters. The first 5 characters are in white print directly under the instrument name, and the next 7 characters are shown in the table.

\* Plasma refers to EDTA-plasma and/or heparin-plasma, please see individual Application Note for details

\*\* Ready-to-Use (RTU) Antibody

\*\*\* Application Note is included with the antibody/kit

§ Application Notes for Bayer Advia 1650 (30199. LX002.01) and Olympus AU640 (30198. LX002.01) are available on request

## Corresponding Calibrators, Controls and Antibodies for Assay of Individual Proteins by Turbidimetry and Nephelometry

Analyte	Sample*	Calibrator	Low Control	High Control	Antibody
<b>Albumin</b>	Serum/Plasma	X0908	X0939		Q0328
<b>Albumin</b>	Urine	X0975	X0976	X0977	Q0328
<b>Albumin</b>	CSF	X0908			Q0328
<b>Alpha-1-Antitrypsin</b>	Serum/Plasma	X0908	X0939	X0940	Q0363
<b>Alpha-1-Microglobulin</b> (Protein HC)	Urine	X0975	X0976	X0977	Q0495
<b>Alpha-2-Macroglobulin</b>	Serum/Plasma	X0908	X0939	X0940	Q0102
<b>Apolipoprotein A-I</b>	Serum/Plasma	X0958	X0961	X0962	Q0496
<b>Apolipoprotein B</b>	Serum/Plasma	X0958	X0961	X0962	Q0497
<b>C3c Complement</b>	Serum/Plasma	X0908	X0939	X0940	Q0368
<b>C4c Complement</b>	Serum/Plasma	X0908	X0939	X0940	Q0369
<b>Ceruloplasmin</b>	Serum/Plasma	X0908	X0939	X0940	Q0121
<b>C-Reactive Protein (CRP)</b>	Serum/Plasma	X0923	X0925	X0926	Q0329 or Q8329**
<b>Cystatin C</b>	Serum/Plasma	X0974	X0973	X0973	LX002
<b>Fibrinogen</b>	Plasma				Q0122
<b>Fibronectin</b>	Serum/Plasma				Q0149
<b>Gc-Globulin</b>	Serum	X0908	X0939		A0021
<b>Gelsolin</b>	Plasma	X0908	X0939	X0940	A0146
<b>Haptoglobin</b>	Serum/Plasma	X0908	X0939	X0940	Q0330
<b>IgA</b>	Serum/Plasma	X0908	X0939	X0940	Q0332
<b>IgG</b>	Serum/Plasma	X0908	X0939	X0940	Q0331
<b>IgG</b>	CSF	X0908			Q0331
<b>IgM</b>	Serum/Plasma	X0908	X0939	X0940	Q0333
<b>Kappa Light Chains</b>	Serum/Plasma	X0908	X0939	X0940	Q0498
<b>Lambda Light Chains</b>	Serum/Plasma	X0908	X0939	X0940	Q0499
<b>Lipoprotein(a)</b>	Serum/Plasma	X0958	X0961		Q0023
<b>Orosomuroid</b> (Alpha-1-Acid Glycoprotein)	Serum/Plasma	X0908	X0939	X0940	Q0326
<b>Prealbumin</b> (Transthyretin)	Serum/Plasma	X0908	X0939	X0940	Q0362
<b>Retinol-Binding Protein</b>	Serum	X0908	X0939	X0940	A0040
<b>Transferrin</b>	Serum/Plasma	X0908	X0939	X0940	Q0327

\* Plasma refers to EDTA-plasma and/or heparin-plasma, please see Application Note for details

\*\* Ready-to-Use (RTU) Antibody

## Guide to the Choice of Reaction Buffer for Turbidimetry and Nephelometry

Analyte	Antibody	Instrument and Reaction Buffer Code		
		Cobas MIRA Plus	Hitachi 911/917/ Modular P	Other Instruments*
Albumin in Serum	Q0328	S2007	S2006	S2007
Albumin in Urine	Q0328		S2007	S2007
Alpha-1-Antitrypsin	Q0363	S2007	S2006	S2007
Alpha-1-Microglobulin (Protein HC)	Q0495		S2007	S2007
Alpha-2-Macroglobulin	Q0102	S2007	S2006	S2007
Apolipoprotein A-I	Q0496	S2007	S2006	S2007
Apolipoprotein B	Q0497	S2007	S2006	S2007
C3c Complement	Q0368	S2007	S2006	S2007
C4c Complement	Q0369	S2008	S2006	S2007
Ceruloplasmin	Q0121	S2008	S2007	S2007
C-Reactive Protein (CRP)	Q0329	S2011	S2011	S2011
C-Reactive Protein (CRP)	Q8329**	S2011	S2307	S2307
Cystatin C	LX002▲	S2361	S2361	S2361
Fibrinogen	Q0122	S2007	S2006	S2007
Fibronectin	Q0149	S2007	S2006	S2007
Gc-Globulin	A0021		S2007	
Gelsolin	A0146		S2007	
Haptoglobin	Q0330	S2007	S2006	S2007
IgA	Q0332	S2007	S2006	S2007
IgG	Q0331	S2007	S2006	S2007
IgM	Q0333	S2007	S2006	S2007
Kappa Light Chains	Q0498	S2007	S2006	S2007
Lambda Light Chains	Q0499	S2007	S2006	S2007
Lipoprotein(a)	Q0023	S2011	S2011	S2011
Orosomucoid (Alpha-1-Acid Glycoprotein)	Q0326	S2008	S2007	S2007
Prealbumin (Transthyretin)	Q0362	S2008	S2007	S2007
Retinol-Binding Protein	A0040		S2007	
Transferrin	Q0327	S2007	S2006	S2007

\* Please refer to General Application Notes

\*\* Ready-to-Use (RTU) Antibody

▲ Antibody-coated particles

# Turbidimetry and Nephelometry Test Systems

## Introduction

The Dako Turbidimetry and Nephelometry Test Systems for determination of proteins in serum, plasma, urine and cerebrospinal fluid are the result of several decades of dedicated research and development, and reflect our company's particular strengths within this area.

The Turbidimetry and Nephelometry Test Systems cover a large range of analytes and instruments, and reagents are available separately, making the implementation of turbidimetric and nephelometric assays flexible and economical. Batch-to-batch consistency of reagents is excellent, and the assays are characterized by a wide measuring range - giving the advantage of few re-runs, and a wide security zone - providing maximum security against antigen excess problems.

The Dako Turbidimetry and Nephelometry Test Systems comprise:

- High-quality antibodies tailored for turbidimetry and nephelometry.
- Stable and reliable calibrators, value assigned by turbidimetry using a meticulous protocol. The calibrators are traceable to internationally recognized reference preparations when such preparations are available.
- High and low controls with assigned protein values. For use in the daily routine as curve controls.
- Buffers developed for optimal performance and convenience. For enhancement of the reaction and for dilution of antibodies, calibrators, and samples.
- Dedicated Application Notes for determination of specific proteins on a variety of commonly used instruments. The Application Notes include information on reagents required, sample material, measuring range, reference interval, assay performance, and instrument programming.

For your convenience, a package insert with a thorough product description accompanies all Dako reagents and is also available on [www.dako.com](http://www.dako.com).

## Turbidimetry and Nephelometry Kits

Dako particle-enhanced turbidimetry and nephelometry assays utilizing immunoparticles (antibody covalently coupled to polystyrene particles) provide increased sensitivity as compared

with conventional assays, and allow the determination of proteins present in low concentrations.

### Beta-2-Microglobulin PET Kit

☒ K0052 80-150 tests

Beta-2-Microglobulin PET Kit is for the quantitative determination of beta-2-microglobulin (B2M) in human plasma or serum. B2M is a low molecular mass protein of Mr 11 815. B2M is synthesized in all nucleated cells, and is associated with the heavy chain of the class I major histocompatibility complex. B2M is mainly catabolized by renal glomerular filtration followed by reabsorption in the proximal tubules and subsequent degradation. Upon activation of the immune system both B and T lymphocytes actively release B2M into circulation. In several disorders the B2M level has been found to be higher than expected when considering the glomerular filtration rate. These disorders are AIDS, rheumatoid arthritis, many lymphoproliferative and myeloproliferative diseases as well as several non-hematological malignancies (1). The B2M/cystatin C ratio has also been shown to be a promising marker of lymphoproliferation in patients with normal or mildly impaired renal function (2).

The kit can be used for measuring B2M in the range 0.5-20 mg/L. The kit contains immunoparticles, i.e. polyclonal rabbit antibody to B2M covalently coupled to polystyrene particles, and, in addition, calibrators, controls and buffers. All reagents are ready for use. A detailed working procedure and Application Notes for Cobas and Hitachi automated instruments are supplied with the kit.

#### References:

1. Martinez-Bru C, Cortes M, Planella T, Barrio J, Cadafalch J, Domingo P, et al.  $\beta_2$ -microglobulin and immunoglobulins are more useful markers of disease progression in HIV than neopterin and adenosine deaminase. *Ann Clin Biochem* 1999;36:601-8.
2. Bökenkamp A, Grabensee A, Stoffel-Wagner B, Hasan C, Henne T, Offner G, et al. The beta2-microglobulin/cystatin C ratio - a potential marker of post-transplant lymphoproliferative disease. *Clin Nephrol* 2002;58:417-22.

### Cystatin C Immunoparticles

☒ LX002 Ready-to-use 200 tests, 10 mL

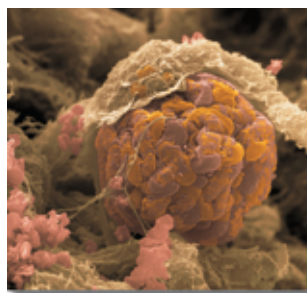
Cystatin C Immunoparticles is polyclonal rabbit antibody to cystatin C covalently coupled to polystyrene particles. In conjunction with Dako Cystatin C Calibrator (X0974), the Cystatin C Control Set (X0973), and Dako Turbidimetry/Nephelometry Reaction Buffer 9 (S2361), the Cystatin C Immunoparticles form a 'kit' intended for the quantitative determination of cystatin C in human serum and plasma by turbidimetry and nephelometry. Cystatin C is a small, 13 kDa, non-glycosylated basic protein belonging to the cystatin super-family of cysteine protease inhibitors. Cystatin C is produced

by virtually all nucleated cells, and is present in all body fluids investigated. The production rate is constant and is unaffected by inflammatory processes, gender, age and muscle mass (1). In the normal kidney, cystatin C is almost freely filtered through the glomerular membrane and then nearly completely reabsorbed and degraded by the proximal tubular cells. Therefore, the plasma concentration of cystatin C is almost exclusively determined by the glomerular filtration rate (GFR), making cystatin C an excellent indicator of GFR. Numerous studies and a meta-analysis incorporating 4492 subject samples have shown that serum cystatin C is clearly superior to serum creatinine as a marker for GFR (2). Measurement of the serum/plasma cystatin C concentration allows for estimation of GFR using one simple equation for patients from four months old to 93 years old.

Application Notes for the cystatin C determination on Cobas and Hitachi automated instruments are available on request and Application Notes for a number of other instruments have also been prepared.

#### References:

1. Grubb AO. Cystatin C - properties and use as diagnostic marker. *Adv Clin Chem* 2000;35:63-99.
2. Dharmidharka VR, Kwon C, Stevens G. Serum cystatin C is superior to serum creatinine as a marker of kidney function: a meta-analysis. *Am J Kidney Dis* 2002;40:221-6.
3. Grubb A, Nyman U, Björk J, Lindström V, Rippe B, Sterner G, et al. Simple cystatin C-based prediction equations for the glomerular disease prediction equation for adults and the Schwartz and the Counahan-Barratt prediction equations for children. *Clin Chem* 2005;51:1420-31.



#### Fast, easy and reliable estimation of renal function

- GFR results within 10 minutes, using only a serum/plasma sample
- 24-hour urine collection and adjustment for weight, height, gender and race no longer necessary
- Superior to GFR estimation based on creatinine



## Turbidimetry and Nephelometry Test Systems (continued)

### Cystatin C Calibrator

☒ X0974 Liquid form 1 mL

X0974 comprises recombinant human cystatin C in human serum. The cystatin C concentration in the calibrator is approximately 7.5 mg/L. The calibrator has been designed for use with Dako Cystatin C Immunoparticles (LX002) for the quantitative determination of cystatin C in human serum and plasma by turbidimetry and nephelometry.

### Cystatin C Control Set

☒ X0973 Liquid form 6 x 1 mL

A set of cystatin C controls comprising recombinant human cystatin C in human serum. Each Control Set contains 3 x 1 mL of control level 1 (approximately 4.5 mg/L cystatin C) and 3 x 1 mL of control level 2 (approximately 1.1 mg/L cystatin C). The Control Set has been designed for use with Dako Cystatin C Immunoparticles (LX002) for the quantitative determination of cystatin C in human serum and plasma by turbidimetry and nephelometry.

## Antibodies for Turbidimetry and Nephelometry

Dako Antibodies for turbidimetry and nephelometry have been tailored for convenient use on a number of commonly employed instruments such as Aeroset, Cobas MIRA Plus, Hitachi 911 and 917, and Modular P. Additionally, the antibodies are well-suited for a number of other instruments.

Application Notes providing guidelines on working procedures for different turbidimeters and nephelometers are available on request.

Polyclonal Rabbit Anti-Human

### Albumin

☒ Q0328 Ig fraction 5 mL

Polyclonal Rabbit Anti-Human

### Alpha-1-Antitrypsin

☒ Q0363 Ig fraction 5 mL

Polyclonal Rabbit Anti-Human

### Alpha-1-Microglobulin (Protein HC)

☒ Q0495 Ig fraction 5 mL

The antigen used for production of Q0495 has been isolated from pooled human pathological urine (tubular proteinuria).

References:

1. Grubb A. Diagnostic value of analysis of cystatin C and protein HC in biological fluids. Clin Nephrol 1992;38 Suppl 1:20-7.
2. Weber MH, Verwiebe R. Alpha 1-microglobulin (protein HC): features of a promising indicator of proximal tubular dysfunction. Eur J Clin Chem Clin Biochem 1992;30:683-91.

Polyclonal Rabbit Anti-Human

### Alpha-2-Macroglobulin

☒ Q0102 Ig fraction 5 mL

Polyclonal Rabbit Anti-Human

### Apolipoprotein A-I

☒ Q0496 Ig fraction 5 mL

Polyclonal Rabbit Anti-Human

### Apolipoprotein B

☒ Q0497 Ig fraction 5 mL

Polyclonal Rabbit Anti-Human

### C3c Complement

☒ Q0368 Ig fraction 5 mL

The antigen used for immunization is C3c. Thus, the antibody reacts with C3c as well as with the C3c part of native C3 and C3b. There is no reaction with C3a and C3d.

Polyclonal Rabbit Anti-Human

### C4c Complement

☒ Q0369 Ig fraction 5 mL

The antigen used for immunization is C4c. The antibody reacts with C4, C4b, C4c, and, in general, with breakdown products of C4 containing C4c.

Polyclonal Rabbit Anti-Human

### Ceruloplasmin

☒ Q0121 Ig fraction 5 mL

Ceruloplasmin exists in two antigenic forms. The ratio between these two forms vary in serum and plasma. The antibody reacts with both forms, but serum is recommended as sample material.

Polyclonal Rabbit Anti-Human

### C-Reactive Protein (CRP)

☒ Q0329 Ig fraction 5 mL/10 mL

The measuring range is approximately 5-160 mg/L.

Polyclonal Rabbit Anti-Human

### C-Reactive Protein (CRP)

☒ Q8329 Ready-to-use 10 mL

The measuring range is approximately 5-320 mg/L.

Polyclonal Rabbit Anti-Human

### Fibrinogen

☒ Q0122 Ig fraction 5 mL

Reacts with fibrinogen, fibrin, and the fibrinogen fragments D and E.

Polyclonal Rabbit Anti-Human

### Fibronectin

☒ Q0149 Ig fraction 5 mL

Fibronectin is also called cold-insoluble globulin. The antigen used for immunization has been isolated from pooled human citrate plasma.

Polyclonal Rabbit Anti-Human

### Gc-Globulin

☒ A0021 Ig fraction 2 mL

Polyclonal Rabbit Anti-Human

### Gelsolin

☒ A0146 Ig fraction 1 mL

Polyclonal Rabbit Anti-Human

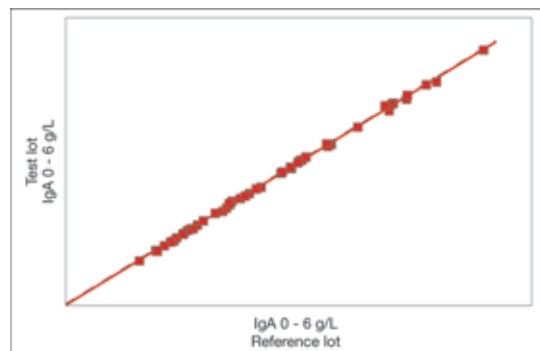
### Haptoglobin

☒ Q0330 Ig fraction 5 mL

## Turbidimetry and Nephelometry Test Systems (continued)

### Polyclonal Rabbit Anti-Human IgA, Specific for Alpha-Chains

☒ Q0332 Ig fraction 5 mL



#### Quality Control

Turbidimetric lot-to-lot comparison for Anti-IgA, Q 0332.

Linear regression

$$y = 0.991x + 0$$

$$r = 0.9997$$

### Polyclonal Rabbit Anti-Human IgG, Specific for Gamma-Chains

☒ Q0331 Ig fraction 5 mL

### Polyclonal Rabbit Anti-Human IgM, Specific for Mu-Chains

☒ Q0333 Ig fraction 5 mL

### Polyclonal Rabbit Anti-Human Kappa Light Chains

☒ Q0498 Ig fraction 5 mL

Has been produced in a manner that ensures a particularly wide specificity for kappa-chains. The antibody reacts with free kappa-chains as well as with kappa-chains in intact immunoglobulin molecules.

### Polyclonal Rabbit Anti-Human Lambda Light Chains

☒ Q0499 Ig fraction 5 mL

The antigen used for immunization is a pool of human lambda Bence Jones proteins. Therefore, a reagent with a particularly wide specificity for lambda-chains is obtained. The antibody reacts with free lambda-chains as well as with lambda-chains in intact immunoglobulin molecules.

### Polyclonal Rabbit Anti-Human

#### Lipoprotein(a)

☒ Q0023 Ig fraction 5 mL

The antibody reacts with human apolipoprotein(a), the apolipoprotein characteristic for lipoprotein(a) (Lp(a)). Antibodies against apolipoprotein B and plasminogen have been removed by solid-phase absorption.

### Polyclonal Rabbit Anti-Human

#### Orosomucoid (Alpha-1-Acid Glycoprotein)

☒ Q0326 Ig fraction 5 mL

### Polyclonal Rabbit Anti-Human

#### Prealbumin (Transthyretin)

☒ Q0362 Ig fraction 5 mL

A brief historical and clinical overview of transthyretin is presented in reference 1.

Reference:

1. Ingenbleek Y. Historical aspects and perspectives in transthyretin research (editorial). Clin Chem Lab Med 2002;40:1181-2.

### Polyclonal Rabbit Anti-Human

#### Retinol-Binding Protein

☒ A0040 Ig fraction 2 mL

### Polyclonal Rabbit Anti-Human

#### Transferrin

☒ Q0327 Ig fraction 5 mL

## Dako Buffers for Turbidimetry and Nephelometry

Dako Buffers for Turbidimetry and Nephelometry have been developed especially for use in the quantitative determination of proteins by turbidimetry and nephelometry using antibodies or immunoparticles.

The Reaction Buffer should be chosen according to the antibody and the turbidimeter or nephelometer applied.

### Dilution Buffer 1

☒ S2005 Ready-to-use 1 L

For the dilution of Concentrated Antibodies, calibrators and patient samples in turbidimetry and nephelometry. Dilution Buffer 1 is a phosphate-buffered saline solution, pH 7.1-7.3.

### Reaction Buffer 1

☒ S2007 Ready-to-use 1 L

For the enhancement of the reaction between analyte and antibody. Reaction Buffer 1 is a specially designed solution of polymers in phosphate-buffered saline, pH 7.1-7.3.

### Reaction Buffer 2

☒ S2008 Ready-to-use 1 L

For the enhancement of the reaction between analyte and antibody. Reaction Buffer 2 is a specially designed solution of polymers in phosphate-buffered saline, pH 7.1-7.3.

### Reaction Buffer 3

☒ S2006 Ready-to-use 1 L

For the enhancement of the reaction between analyte and antibody. Reaction Buffer 3 is a specially designed solution of polymers in phosphate-buffered saline, pH 7.1-7.3.

### Reaction Buffer 4

☒ S2011 Ready-to-use 1 L

For the enhancement of the reaction between analyte, e.g. C-reactive protein or lipoprotein(a), and antibody. Reaction Buffer 4 is a specially designed solution of polymers in phosphate-buffered saline, pH 7.4-7.6.

# Turbidimetry and Nephelometry Test Systems (continued)

## Reaction Buffer 7

☒ S2307 Ready-to-use 1 L

For the enhancement of the reaction between analyte, e.g. C-reactive protein, and a Dako Ready-to-Use or Concentrated Antibody. Reaction Buffer 7 is a specially designed solution of polymers in phosphate-buffered saline, pH 7.4-7.6.

## Reaction Buffer 9

☒ S2361 Ready-to-use 100 mL

For the enhancement of the reaction between analyte, e.g. cystatin C, and Dako Immunoparticles. Reaction Buffer 9 is a specially designed solution of polymers in MOPS-buffered saline, pH 7.1-7.4.

## Calibrators and Controls for Turbidimetry and Nephelometry

Dako Calibrators and Controls for turbidimetry and nephelometry have been especially prepared for the quantitative immunological determination of the stated proteins by turbidimetry and nephelometry.

For Calibrators, value assignment has been carried out by turbidimetry using a meticulous protocol (1). The protein concentrations with uncertainties are provided in the Analytical Value Sheet included with each product. For Controls, values have been determined by repeated measurements and are provided with a recommended range. Values assigned to Calibrators and Controls

are traceable to international reference preparations when such preparations are available.

For all Calibrators and Controls prepared from serum, each donor has been tested and found negative for hepatitis B virus surface antigen, anti-HIV 1 and 2, and anti-hepatitis C virus.

Reference:

1. Blirup-Jensen S, Johnson MA, Larsen M. Protein standardization IV: Value transfer procedure for the assignment of serum protein values from a reference preparation to a target material. Clin Chem Lab Med 2001;39:1110-22.

## Human Serum C-Reactive Protein (CRP) Calibrator

☒ X0923 Liquid form 1 mL

X0923 is delipidated, pooled human serum enriched in CRP. The CRP concentration is approximately 160 mg/L. The internationally recognized reference preparation, CRM 470, was used as reference (1, 2).

References:

1. Whicher JT, Ritchie RF, Johnson MA, Baudner S, Bienvenu J, Blirup-Jensen S, et al. New international reference preparation for proteins in human serum (RPPHS). Clin Chem 1994;40:934-8.
2. Dati F, Schumann G, Thomas L, Aguzzi F, Baudner S, Bienvenu J, et al. Consensus of a group of professional societies and diagnostic companies on guidelines for interim reference ranges for 14 proteins in serum based on the standardization against the IFCC/BCR/CAP reference material (CRM 470). Eur J Clin Chem Clin Biochem 1996;34:517-20.

## Human Serum Lipoprotein Calibrator

☒ X0958 Lyophilized form 1 mL

X0958 is prepared from a stabilized pool of human sera. X0958 is well-suited as calibrator for the quantitative immunological determination of human apolipoprotein A-I, apolipoprotein B and lipoprotein(a). The internationally recognized reference preparations, SP1-01 and SP3-07, have been used as reference for apolipoprotein A-I and B, respectively.

## Human Serum Lipoprotein High Control

☒ X0962 Lyophilized form 1 mL

X0962 is prepared from a stabilized pool of human sera. X0962 is well-suited as high control for the quantitative immunological determination of human apolipoprotein A-I, apolipoprotein B and lipoprotein(a).

## Human Serum Lipoprotein Low Control

☒ X0961 Lyophilized form 1 mL

X0961 is prepared from a stabilized pool of human sera. X0961 is well-suited as low control for the quantitative immunological determination of human apolipoprotein A-I, apolipoprotein B and lipoprotein(a).

## Human Serum C-Reactive Protein (CRP) High Control

☒ X0926 Liquid form 5 mL

X0926 is delipidated, pooled human serum enriched in CRP. The CRP concentration is approximately 100 mg/L.

## Human Serum C-Reactive Protein (CRP) Low Control

☒ X0925 Liquid form 5 mL

X0925 is delipidated, pooled human serum enriched in CRP. The CRP concentration is approximately 30 mg/L.

## Human Serum Protein Calibrator

☒ X0908 Liquid form 1 mL

X0908 is delipidated, pooled human serum. For the 16 proteins with assigned values, the international reference preparation, CRM 470, has been used as reference (1-3). Kappa and lambda values have been calculated according to reference 4.

References:

1. Whicher JT, Ritchie RF, Johnson MA, Baudner S, Bienvenu J, Blirup-Jensen S, et al. New international reference preparation for proteins in human serum (RPPHS). Clin Chem 1994;40:934-8.
2. Dati F, Schumann G, Thomas L, Aguzzi F, Baudner S, Bienvenu J, et al. Consensus of a group of professional societies and diagnostic companies on guidelines for interim reference ranges for 14 proteins in serum based on the standardization against the IFCC/BCR/CAP reference material (CRM 470). Eur J Clin Chem Clin Biochem 1996;34:517-20.
3. Baudner S, Bienvenu J, Blirup-Jensen S, Milford Ward A, Raeside A, Svendsen PJ, et al. The complementary certification of BCR CRM 470 for antichymotrypsin (CRM 470). EUR 16882 1996.
4. Lievens MM. Medical and technical usefulness of measurement of kappa and lambda immunoglobulin light chains in serum with an M-component. J Clin Chem Clin Biochem 1989;27:519-23.

## Human Serum Cystatin C Calibrator

☒ X0974 Liquid form 1 mL

X0974 comprises recombinant human cystatin C in human serum. The cystatin C concentration in the calibrator is approximately 7.5 mg/L. The calibrator has been designed for use with Dako Cystatin C Immunoparticles (LX002) for the quantitative determination of cystatin C in human serum and plasma by turbidimetry and nephelometry.

## Human Serum Cystatin C Control Set

☒ X0973 Liquid form 6 x 1 mL

A set of cystatin C controls comprising recombinant human cystatin C in human serum. Each Control Set contains 3 x 1 mL of control level 1 (approximately 4.5 mg/L cystatin C) and 3 x 1 mL of control level 2 (approximately 1.1 mg/L cystatin C). The Control Set has been designed for use with Dako Cystatin C Immunoparticles (LX002) for the quantitative determination of cystatin C in human serum and plasma by turbidimetry and nephelometry.

## Human Serum Protein High Control

☒ X0940 Liquid form 1 mL

X0940 is delipidated, pooled human serum. Values are stated for 16 proteins.

## Turbidimetry and Nephelometry Test Systems (continued)

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### Human Serum Protein Low Control

☒ X0939 Liquid form 1 mL  
X0939 is delipidated, pooled human serum. Values are stated for 16 proteins.

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### Human Urine Protein Calibrator

☒ X0975 Liquid form 1 mL  
X0975 is intended to be used as a calibrator for the quantitative determination of human albumin and human alpha-1-microglobulin in urine by turbidimetry. The concentration of albumin is approximately 200 mg/L and the concentration of alpha-1-microglobulin is approximately 100 mg/L.

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### Human Urine Protein High Control

☒ X0977 Liquid form 1 mL  
X0977 is intended to be used as a high control for the quantitative determination of human albumin and human alpha-1-microglobulin in urine by turbidimetry. The concentration of albumin is approximately 100 mg/L and the concentration of alpha-1-microglobulin is approximately 80 mg/L.

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### Human Urine Protein Low Control

☒ X0976 Liquid form 1 mL  
X0976 is intended to be used as a low control for the quantitative determination of human albumin and human alpha-1-microglobulin in urine by turbidimetry. The concentration of albumin is approximately 15 mg/L and the concentration of alpha-1-microglobulin is approximately 15 mg/L.

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# ELISA Kits and ELISA Kit Accessories

Dako is featuring a Chromogranin A ELISA Kit and ELISA kits and controls for diabetology. The ELISA format provides high sensitivity helping in the investigation and management of neuroendocrine tumors and of diabetes. Chromogens for ELISA are also provided as separate products.

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## Chromogranin A ELISA Kit

### Chromogranin A ELISA Kit

☒ K0025 96 test wells

Chromogranin A is a plasma and tissue marker for neuroendocrine tumors. Chromogranin A ELISA Kit is designed for the quantitative determination of chromogranin A in human plasma (EDTA or heparin). The kit can be used for measuring chromogranin A in the range 5 to 450 U/L. The ELISA is a double antibody sandwich assay where the sample and the conjugate are incubated simultaneously in antibody-coated wells. Results are obtained within 2½ hours. The imprecision of the assay is less than 9% over the whole measuring range.

In addition to a detailed working procedure, each kit contains peroxidase conjugate, 6 standards, control, buffers, chromogenic substrate, microwell strips for predilution of samples, and antibody-coated microwell strips.

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### References:

1. Berruti A, Dogliotti L, Mosca A, Bellina M, Mari M, Torta M, et al. Circulating neuroendocrine markers in patients with prostate carcinoma. *Cancer* 2000;88:2590-7.
  2. Eriksson B, Öberg K, Stridsberg M. Tumor markers in neuroendocrine tumors. *Digestion* 2000;62 Suppl 1:33-8.
  3. Pirker RA, Pont J, Pöhl R, Schütz W, Griesmacher A, Müller MM. Usefulness of chromogranin A as a marker for detection of relapses of carcinoid tumours. *Clin Chem Lab Med* 1998;36:837-40.
  4. Taupenot L, Harper KL, O'Connor DT. The chromogranin-secretogranin family (review). *New Eng J Med* 2003;348:1134-49.
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## Diabetes, ELISA Kits and Controls

Dako has developed highly sensitive ELISA kits for insulin and C-peptide to help in the diagnosis and monitoring of diabetes. The kits are supplemented with a Diabetes Immunoassay Control Set.

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### C-Peptide ELISA Kit

☒ K6220 96 test wells

C-Peptide ELISA Kit is an enzyme immunoassay for the quantitative determination of human C-peptide in serum or plasma. The assay shows excellent precision and sensitivity with a detection limit of less than 0.1 µg/L.

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### Insulin ELISA Kit

☒ K6219 96 test wells

Insulin ELISA Kit is an enzyme immunoassay for the quantitative determination of insulin in human serum and plasma. Each kit contains all necessary reagents and one microplate for 96 tests. The assay is based on a flexible microplate strip format (8 x 1) and the kit comprises two monoclonal mouse

antibodies. Total assay time is approximately 1½ hours for up to 86 samples. The kit shows excellent precision, sensitivity and specificity, is easy to use and requires only non-dedicated instrumentation.

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### Diabetes Immunoassay Control Set

☒ S6247 Lyophilized control set 3 x 2 mL

A set of serum-based, lyophilized tri-level controls, designed for use with Dako Insulin and C-Peptide ELISA kits. The controls cover the dynamic range of the assays. Each control set contains two vials of control level I, two vials of control level II and two vials of control level III. Reconstitution volume 1 mL/vial. The controls can also be used with insulin, C-peptide and proinsulin assays from other manufacturers.

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## Accessory Products for ELISA

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### OPD Tablets

☒ S2045 100 tablets of 2 mg

OPD is a sensitive chromogen for ELISA when **peroxidase** is the enzyme label. The peak absorbance of the golden brown acidified reaction product is at 492 nm. Each OPD tablet contains 3.52 mg of 1,2-phenylenediamine dihydrochloride, corresponding to 2 mg of OPD. The OPD tablets are effervescent and contain buffer salts. After dissolution in water (it takes only a few minutes), and the addition of hydrogen peroxide, the chromogenic substrate is ready for use. Enclosed with the tablets is a detailed working procedure for preparation of the chromogenic substrate solution for ELISA.

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### TMB One-Step Substrate System

☒ S1599 TMB+ 1 L

TMB One-Step Substrate System is a stabilized, ready-to-use chromogenic substrate solution for ELISA when **peroxidase** is the enzyme label. The TMB One-Step Substrate System contains 3,3'-5,5' tetramethylbenzidine (TMB) and hydrogen peroxide in an organic solvent/buffer solution. Upon oxidation, TMB forms a blue reaction product that can be measured at 605 nm. Upon acidification (to stop the enzymatic reaction) the reaction product turns yellow with an absorbance peak at 450 nm.

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# Multipurpose Antibodies for Clinical Chemistry

Owing to their high specificity and precipitating ability, a number of primary antibodies, notably polyclonal antibodies, are well-suited for a variety of applications. This section presents these antibodies, and

lists the techniques for which they have been tested and proven useful. Research reagents may also be well-suited for techniques that have not been mentioned.

Polyclonal Rabbit Anti-Human

## Albumin

■ Precipitation ■ Blot ■ ELISA ■ IHC

☼ A0001 Ig fraction 2 mL  
A0001 is well-suited for quantitation of albumin in biological fluids.

Polyclonal Rabbit Anti-Human

## Alpha-1-Antitrypsin

■ Precipitation ■ Blot ■ IHC

☼ A0012 Ig fraction 2 mL

Please see references 1 and 2 where the use of A0012 in immunohistochemistry is described. The antibody is also well-suited for immunoblotting (3).

References:

1. Clausen PP. Immunohistochemical demonstration of alpha-1-antitrypsin in liver tissue. A methodological investigation. *Acta path microbiol scand Sect A* 1980;88:299-306.
2. Krugliak L, Meyer PR, Taylor CR. The distribution of lysozyme, alpha-1-antitrypsin and alpha-1-antichymotrypsin in normal hematopoietic cells and in myeloid leukaemias: an immunoperoxidase study on cyto-centrifuge preparations, smears and paraffin sections. *Am J Hematol* 1986;21:99-109.
3. Kalsheker NA, Warner JT, Watkins GL. Phenotyping alpha-1-antitrypsin ( $\alpha_1$ -AT) variants by isoelectric focusing in agarose and immunoblotting. *Clin Chim Acta* 1985;148:157-60.

Polyclonal Rabbit Anti-Human

## Alpha-1-Microglobulin (Protein HC)

■ Precipitation ■ RIA ■ ELISA

☼ A0256 Ig fraction 2 mL

The antigen used for production of A0256 has been isolated from pooled human pathological urine (tubular proteinuria). Alpha-1-microglobulin was first isolated by Ekström et al. (1).

References:

1. Ekström B, Peterson PA, Berggård I. A urinary and plasma  $\alpha_1$ -glycoprotein of low molecular weight: isolation and some properties. *Biochem Biophys Res Commun* 1975;65:1427-33.
2. Grubb A. Diagnostic value of analysis of cystatin C and protein HC in biological fluids. *Clin Nephrol* 1992;38 Suppl 1:20-7.

Polyclonal Rabbit Anti-Human

## Beta-2-Microglobulin

■ Precipitation ■ Blot ■ ELISA ■ IHC

☼ A0072 Ig fraction 2 mL

For quantitation of beta-2-microglobulin by ELISA using A0072, please see references 1 and 2. The use of A0072 in a gel precipitation technique has been described by Wu et al. (3).

References:

1. Hemmingsen L, Skaarup P.  $\beta_2$ -microglobulin in urine and serum determined by ELISA technique. *Scand J Clin Lab Invest* 1985;45:367-71.
2. Bjerrum OW, Birgens HS. Measurement of beta-2-microglobulin in serum and plasma by an enzyme-linked immunosorbent assay (ELISA). *Clin Chim Acta* 1986;155:69-76.
3. Wu JT, Clayton F, Myers S, Knight J. A simple radial immunodiffusion method for assay of  $\beta_2$ -micro-globulin in serum. *Clin Chem* 1986;32:2070-3.

Polyclonal Rabbit Anti-Human

## C1q Complement

■ Precipitation ■ IHC

☼ A0136 Ig fraction 2 mL

Polyclonal Rabbit Anti-Human

## C3c Complement

■ Precipitation ■ IHC

☼ A0062 Ig fraction 2 mL

The antigen used for immunization is C3c. Thus, the antibodies react both with C3c as well as with the C3c part of native C3 and C3b. There is no

reaction with C3d and C3a. Please see reference 1 where the use of A0062 for immunofixation is described. A0062 can also be used for immunohistochemistry (2).

References:

1. Whicher JT, Higginson J, Riches PG, Radford S. Clinical applications of immunofixation: detection and quantitation of complement. *J Clin Pathol* 1980;33:791-5.
2. Sinclair RA, Burns J, Dunnill MS. Immunoperoxidase staining of formalin-fixed, paraffin-embedded, human renal biopsies with a comparison of the peroxidase anti-peroxidase (PAP) and indirect methods. *J Clin Pathol* 1981;34:859-65.

Polyclonal Rabbit Anti-Human

## C3d Complement

■ Precipitation ■ IHC

☼ A0063 Ig fraction 2 mL

Polyclonal Rabbit Anti-Human

## Carcinoembryonic Antigen (CEA)

■ Precipitation ■ IHC

☼ A0115 Ig fraction 2 mL

A0115 has been absorbed with blood group antigens A and B and insolubilized normal human plasma. The antibody shows a strong reaction with CEA and CEA-related glycoproteins such as non-specific cross-reacting antigens (NCA and NCA-2) and biliary glycoprotein (BGP).

Reference:

1. Sheahan K, O'Brien MJ, Burke B, Dervan PA, O'Keane JC, Gottlieb LS, et al. Differential reactivities of carcinoembryonic antigen (CEA) and CEA-related monoclonal and polyclonal antibodies in common epithelial malignancies. *Am J Clin Pathol* 1990;94:157-64.

Polyclonal Rabbit Anti-Human

## Factor VIII-Related Antigen

■ Precipitation ■ ELISA ■ IHC

☼ P0226 HRP. Ig fraction 2 mL

The term 'Factor VIII-related antigen' has been replaced by the more precise designation 'von Willebrand factor'. Therefore, P0226 has been described under the heading von Willebrand factor. A reference to the nomenclature is given below.

Reference:

1. Marder VJ, Mannucci PM, Firkin BG, Hoyer LW, Meyer D. Standard nomenclature for factor VIII and von Willebrand factor: a recommendation by the International Committee on Thrombosis and Haemostasis. *Thromb Haemostas* 1985;54:871-2.

Polyclonal Rabbit Anti-Human

## Fibrinogen

■ Precipitation ■ ELISA ■ IHC

☼ A0080 Ig fraction 2 mL

A0080 reacts with fibrinogen, fibrin and the fibrinogen fragments D and E.

Polyclonal Rabbit Anti-Human

## Fibronectin

■ Precipitation ■ ELISA ■ IHC ■ Neph

☼ A0245 Ig fraction 2 mL

Fibronectin is also called cold-insoluble globulin. The antigen used for immunization has been isolated from pooled human citrate plasma. For the quantitation of fibronectin, citrate, heparin or EDTA-plasma should be used. Serum is not suited as the amount of fibronectin left in serum after the blood coagulation, is variable. Nephelometry, turbidimetry and rocket immunoelectrophoresis are the recommended quantitative methods for fibronectin. Single radial immunodiffusion tends to give erroneous results. If plasma samples have been frozen, they must be thawed at 37 °C before performing quantitative analysis. More details on quantitation of fibronectin are found in references 1 and 2.

References:

1. Eriksen HO, Clemmensen I, Hansen MS, Ibsen KK. Plasma fibronectin concentration in normal subjects. *Scand J Clin Lab Invest* 1982;42:291-5.

## Multipurpose Antibodies for Clinical Chemistry (continued)

2. Van Helden WCH, Kok-Verspuy A, Harff GA, van Kamp GJ. Rate-nephelometric determination of fibronectin in plasma. *Clin Chem* 1985;31:1182-4.

Polyclonal Rabbit Anti-Human

### Gc-Globulin

■ Precipitation ■ Turb/Neph

€ A0021 Ig fraction 2 mL

Gc-globulin is also called vitamin D-binding protein. A0021 is ideal for phenotyping of Gc-globulin by immunofixation (1, 2). The concentration of Gc-globulin in serum can be measured by rocket immunoelectrophoresis using A0021.

References:

1. Johnson AM. Immunofixation following electrophoresis or isoelectric focusing for identification and phenotyping of proteins. *Ann Clin Lab Sci* 1978;8:195-200.
2. Thymann M. Gc subtypes determined by agarose isoelectrofocusing. *Human Hered* 1981;31:214-21.

Polyclonal Rabbit Anti-Human

### Gelsolin

■ Precipitation ■ Blot ■ ELISA ■ Turb/Neph

€ A0146 Ig fraction 1 mL

The antigen used for immunization is full-length recombinant human gelsolin. The antibody reacts with free gelsolin and with gelsolin-actin complexes. Plasma gelsolin functions as a scavenger of actin. After binding of actin, the gelsolin-actin complexes are rapidly cleared from the circulation, thus protecting the host from the injurious potential of free actin (1). In pathological conditions where actin is released from necrotic cells, such as in acute liver failure, myocardial infarction, septic shock, myonecrosis and after major trauma, the plasma concentration of gelsolin is reduced (2, 3). Immunodetection of a 65 kDa gelsolin fragment in plasma provides a useful means for diagnosing familial amyloidosis (Finnish type), which is caused by a single amino acid substitution in gelsolin (4).

References:

1. Lee WM, Galbraith RM. The extracellular actin-scavenger system and actin toxicity. *New Engl J Med* 1992;326:1335-41.
2. Suhler E, Lin W, Yin HL, Lee WM. Decreased plasma gelsolin concentrations in acute liver failure, myocardial infarction, septic shock and myonecrosis. *Crit Care Med* 1997;25:594-8.
3. Mounzer KC, Moncure M, Smith YR, DiNubile MJ. Relationship of admission plasma gelsolin levels to clinical outcomes in patients after major trauma. *Am J Respir Crit Care Med* 1999;160:1673-81.
4. Maury CPJ, Sletten K, Totty N, Kangas H, Liljeström M. Identification of the circulating amyloid precursor and other gelsolin metabolites in patients with G654A mutation in the gelsolin gene (Finnish familial amyloidosis): pathogenetic and diagnostic implications. *Lab Invest* 1997;77:299-304.

Polyclonal Rabbit Anti-Human

### Haptoglobin

■ Precipitation ■ Blot

€ A0030 Ig fraction 2 mL

A reference to the use of A0030 for Western blotting is given below.

Reference:

1. Thymann M, Svensmark O, Masumba G, Broksø H, Skibsby LB. Haptoglobin subtype determination by isoelectric focusing in agarose gel: application to paternity testing and presentation of a new  $\alpha_2$ -variant. *Electrophoresis* 1990;11:61-5.

Polyclonal Rabbit Anti-Human

### IgA, Specific for Alpha-Chains

■ Precipitation

€ A0092 Ig fraction 2 mL

This antibody has been developed especially for gel immunoprecipitation. The specificity has been ascertained by crossed immunoelectrophoresis using 12.5 microlitre antibody per square cm gel area against 2 microlitre human plasma. Thus, the specificity control is performed at an antibody concentration 12.5 times higher than the concentration generally used for rocket immunoelectrophoresis and single radial immunodiffusion. The antigen used for immunization is serum IgA.

Polyclonal Rabbit Anti-Human

### IgA, Specific for Alpha-Chains

■ Blot ■ ELISA ■ IHC

€ P0216 HRP. Ig fraction 2 mL

For use in methods demanding a very high specificity. The specificity and performance of the antibody have been ascertained in immunohistochemistry and ELISA. The antigen used for immunization is serum IgA.

Polyclonal Rabbit Anti-Human

### IgA, IgG, IgM, Specific for Alpha, Gamma and Mu-Chains

■ Precipitation

€ A0190 Ig fraction 2 mL

It has been shown that A0190 in combination with a mixture of anti-kappa and anti-lambda is very useful for routine screening of sera for M-components by immunofixation. Immunofixation detected more M-components than agarose electrophoresis or classical immunoelectrophoresis (1).

Reference:

1. Pedersen NS, Axelsen NH. Detection of M-components by an easy immunofixation procedure: comparison with agarose gel electrophoresis and classical immunoelectrophoresis. *J Immunol Methods* 1979;30:257-62.

Polyclonal Rabbit Anti-Human

### IgD, Specific for Delta-Chains

■ Precipitation ■ Blot ■ ELISA ■ IHC

€ A0093 Ig fraction 2 mL

The specificity and performance of the antibody have been ascertained in immunohistochemistry and ELISA. Additionally, the specificity has been tested by crossed immunoelectrophoresis using 12.5 microlitre antibody per square cm gel area against 2 microlitre human plasma.

Polyclonal Rabbit Anti-Human

### IgE, Specific for Epsilon-Chains

■ Precipitation ■ Blot ■ ELISA ■ IHC

€ A0094 Ig fraction 2 mL

The specificity of A0094 is confirmed in ELISA and crossed immunoelectrophoresis. In gel precipitation techniques A0094 gives a distinct precipitation line with IgE.

Polyclonal Rabbit Anti-Human

### IgG, Specific for Gamma-Chains

■ Precipitation

€ A0424 Ig fraction 2 mL

This antibody has been developed especially for gel immunoprecipitation. The specificity has been ascertained by crossed immunoelectrophoresis using 12.5 microlitre antibody per square cm gel area against 2 microlitre human plasma. Thus, the specificity control is performed at an antibody concentration 25 times higher than the concentration generally used for rocket immunoelectrophoresis and single radial immunodiffusion.

Polyclonal Rabbit Anti-Human

### IgM, Specific for Mu-Chains

■ Precipitation

€ A0426 Ig fraction 2 mL

This antibody has been developed especially for gel immunoprecipitation. The specificity has been ascertained by crossed immunoelectrophoresis using 12.5 microlitre antibody per square cm gel area against 2 microlitre human plasma. Thus, the specificity control is performed at an antibody concentration more than 16 times higher than the concentration generally used for rocket immunoelectrophoresis and single radial immunodiffusion.

Polyclonal Rabbit Anti-Human

### Immunoglobulins

■ Precipitation

€ A0107 Ig fraction 10 mL

The antigen used for production of A0107 is human IgG. The antibody has not been absorbed. Reacts mainly with gamma, kappa and lambda-chains.



Polyclonal Rabbit Anti-Human  
**Kappa Free Light Chains**

■ Precipitation

☒ A0100 Ig fraction 2 mL

The antigen used for production of A0100 is polyclonal free kappa-chains prepared from pooled normal human immunoglobulin. The specificity is directed against the hidden determinants of the kappa-chain, thus, A0100 reacts with free kappa-chains (monoclonal as well as polyclonal), but not with the kappa-chains in intact immunoglobulin molecules.

A0100 is useful for screening unconcentrated urine samples for the presence of free kappa-chains. However, it is important to note that a negative reaction does not prove the absence of free kappa-chains as these proteins from some patients do not precipitate with A0100, possibly because they do not expose free light chain determinants. A positive reaction with A0100 must not be considered as definite proof of the presence of monoclonal free kappa-chains, but should rather lead to further investigation by immunofixation or immunoelectrophoresis in order to establish the monoclonal nature of the reacting kappa-chain. This is necessary because polyclonal light chain excretion is not uncommon in proteinuria of various types. Concentrated urine samples from normal subjects may also contain detectable levels of polyclonal free light chains.

For gel precipitation techniques like double immunodiffusion, immunoelectrophoresis and immunofixation, it is useful to incorporate 4% freshly prepared polyethylene glycol, MW 6000, in the agarose gel to improve the sensitivity of free light chain detection.

Polyclonal Rabbit Anti-Human  
**Kappa Light Chains**

■ Precipitation ■ Blot ■ ELISA ■ IHC

☒ A0192 Ig fraction 2 mL

This reagent has been produced in a manner that ensures a particularly wide specificity for kappa-chains. The specificity is directed against surface as well as hidden determinants and has been ascertained by gel precipitation techniques and immunohistochemistry.

**A0192 is excellent for the typing of free and bound monoclonal kappa-chains by immunoelectrophoresis and immunofixation.**

Polyclonal Rabbit Anti-Human  
**Lambda Free Light Chains**

■ Precipitation

☒ A0101 Ig fraction 2 mL

The antigen used for production of A0101 is a pool of human free lambda-chains. The specificity is directed against the hidden determinants of the lambda-chain, thus, A0101 reacts with free lambda-chains (monoclonal as well as polyclonal), but not with the lambda-chains in intact immunoglobulin molecules.

A0101 is useful for screening unconcentrated urine samples for the presence of free lambda-chains. However, it is important to note that a negative reaction does not prove the absence of free lambda-chains as these proteins from some patients do not precipitate with A0101, possibly because they do not expose free light chain determinants. A positive reaction with A0101 must not be considered as definite proof of the presence of monoclonal free lambda-chains, but should rather lead to further investigation by immunofixation or immunoelectrophoresis in order to establish the monoclonal nature of the reacting lambda-chain. This is necessary because polyclonal light chain excretion is not uncommon in proteinuria of various types. Concentrated urine samples from normal subjects may also contain detectable levels of polyclonal free light chains.

For gel precipitation techniques like double immunodiffusion, immunoelectrophoresis and immunofixation, it is useful to incorporate 4% freshly prepared polyethylene glycol, MW 6000, in the agarose gel to improve the sensitivity of free light chain detection.

Polyclonal Rabbit Anti-Human  
**Lambda Light Chains**

■ Precipitation ■ Blot ■ ELISA ■ IHC

☒ A0194 Ig fraction 2 mL

The antigen used for immunization is a pool of human lambda Bence Jones proteins. Therefore, a reagent with a particularly wide specificity for lambda-chains is obtained. The specificity is directed against surface as well as hidden determinants and has been ascertained by gel precipitation techniques and immunohistochemistry.

**A0194 is excellent for the typing of free and bound monoclonal lambda-chains by immunoelectrophoresis and immunofixation.**

Polyclonal Rabbit Anti-Human  
**Prealbumin (Transthyretin)**

■ Precipitation ■ IHC

☒ A0002 Ig fraction 2 mL

Polyclonal Rabbit Anti-Human  
**Pregnancy-Associated Plasma Protein A (PAPP-A)**

■ Precipitation ■ ELISA ■ IHC

RU0 A0230 Ig fraction 2 mL

PAPP-A isolated from a pool of human pregnancy sera has been used for immunization.

Polyclonal Rabbit Anti-Human  
**Protein S**

■ Precipitation ■ ELISA

☒ A0384 Ig fraction 1 mL

Protein S is a natural anticoagulant present in plasma. Patients deficient in protein S are subject to recurrent venous thrombotic disease. Protein S occurs in a functional, free form and in a non-functional complex with C4b-binding protein. A0384 reacts in gel precipitation techniques with both forms. These can be quantitated separately (1).

Reference:

1. Comp P, Doray D, Patton D, Esmon CT. An abnormal plasma distribution of protein S occurs in functional protein S deficiency. *Blood* 1986;67:504-8.

Polyclonal Rabbit Anti-Human  
**Retinol-Binding Protein**

■ Precipitation ■ ELISA ■ Turb/Neph

☒ A0040 Ig fraction 2 mL

The antigen used for immunization has been purified from pathological urine. A0040 is well-suited for the determination of retinol-binding protein by ELISA (1).

Reference:

1. Topping MD, Forster HW, Dolman C, Luczynska CM, Bernard AM. Measurement of urinary retinol-binding protein by enzyme-linked immunosorbent assay, and its application to detection of tubular proteinuria. *Clin Chem* 1986;32:1863-6.

Polyclonal Rabbit Anti-Human  
**Serum**

■ Precipitation

☒ A0206 Ig fraction 2 mL

A0206 is especially produced for use in crossed immunoelectrophoresis as the antibody titres have been balanced with the concentrations of the major serum proteins. More than 25 serum proteins will react with A0206.

Polyclonal Rabbit Anti-Human  
**Transferrin**

■ Precipitation ■ IHC

☒ A0061 Ig fraction 2 mL

The antibody is well-suited for gel precipitation techniques and also for immunofixation (1). Please see references 2 and 3 where the use of A0061 in immunohistochemistry is described.

References:

1. Johnson AM. Immunofixation electrophoresis and electrofocusing. *Clin Chem* 1982;28:1797-800.
2. Mason DY, Taylor CR. Distribution of transferrin, ferritin and lactoferrin in human tissues. *J Clin Pathol* 1978;31:316-27.
3. Massi G, Coli A, De Carolis S. Serum protein distribution in hydatidiform mole. An immunohistochemical study. *Arch Pathol Lab Med* 1987;111:723-5.

## Multipurpose Antibodies for Clinical Chemistry (continued)

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Polyclonal Rabbit Anti-Human

### Von Willebrand Factor

■ Blot ■ ELISA

☞ P0226 HRP. Ig fraction 2 mL

The former designation for von Willebrand factor was factor VIII-related antigen.

For the use of P0226 in ELISA, please see reference 1. For the study of von Willebrand factor multimers in plasma using P0226, please see reference 2.

### References:

1. Cejka J. Enzyme immunoassay for factor VIII-related antigen. Clin Chem 1982;28:1356-8.
  2. Bukh A, Ingerslev J, Stenbjerg S, Møller NPH. The multimeric structure of plasma F VIII: RAg studied by electroelution and immunoperoxidase detection. Thromb Res 1986;43:579-84.
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## Normal Animal Sera and Animal Immunoglobulins (Negative Controls and Blocking Sera)

The normal animal sera and animal immunoglobulins listed are well-suited as qualitative negative controls for Dako antibodies. The products are in liquid form and contain an antimicrobial agent. Negative controls should always be diluted to match the concentration of the corresponding antibody.

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### Goat Serum (Normal)

RU0 X0907 Whole serum 10 mL

### Mouse IgG1

☐ X0931 Culture supernatant 1 mL

X0931 is a cell culture supernatant containing monoclonal mouse IgG1 antibody to *Aspergillus niger* glucose oxidase, an enzyme which is neither present nor inducible in mammalian tissues. X0931 is well-suited as a negative control in all techniques utilizing monoclonal mouse antibodies of isotype IgG1.

### Mouse IgG2a

☐ X0943 Culture supernatant 1 mL

X0943 is a cell culture supernatant containing monoclonal mouse IgG2a antibody to *Aspergillus niger* glucose oxidase, an enzyme which is neither present nor inducible in mammalian tissues. X0943 is well-suited as a negative control in all techniques utilizing monoclonal mouse antibodies of isotype IgG2a.

### Mouse IgG2b

☐ X0944 Culture supernatant 1 mL

X0944 is a cell culture supernatant containing monoclonal mouse IgG2b antibody to *Aspergillus niger* glucose oxidase, an enzyme which is neither present nor inducible in mammalian tissues. X0944 is well-suited as a negative control in all techniques utilizing monoclonal mouse antibodies of isotype IgG2b.

### Mouse IgM

☐ X0942 Culture supernatant 1 mL

X0942 is a cell culture supernatant containing monoclonal mouse IgM antibody to *Aspergillus niger* glucose oxidase, an enzyme which is neither present nor inducible in mammalian tissues. X0942 is well-suited as a negative control in all techniques utilizing monoclonal mouse antibodies of isotype IgM.

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### Mouse Serum (Normal)

RU0 X0910 Whole serum 1 mL

The serum is from healthy mice of SPF standard (specific pathogen-free animals). X0910 is useful as a negative control for antibodies that are in the form of unfractionated whole mouse serum.

### Rabbit Immunoglobulin Fraction (Normal)

RU0 X0903 Ig fraction 2 mL/10 mL

This product has been prepared from sera of non-immunized rabbits. The immunoglobulin fraction has been isolated in the same way as the immunoglobulin fraction of Dako rabbit antibodies. The protein concentration of X0903 is 20 g/L. X0903 is well-suited as negative control, for example, in immunohistochemistry, ELISA and immunoblotting.

### Rabbit Immunoglobulin Fraction (Solid-Phase Absorbed)

☐ X0936 Ig fraction 2 mL

This product has been prepared from sera of non-immunized rabbits. The immunoglobulin fraction has been isolated in the same way as the immunoglobulin fraction of Dako rabbit antibodies. In addition, the product has been passed through a column containing immobilized human plasma proteins. This reduces the non-specific background and makes X0936 particularly well-suited as a negative control for Dako solid-phase absorbed rabbit antibodies. Especially when the primary antibody is used for immunohistochemistry at a relatively high concentration, above 0.1 g/L, X0936 should be preferred to Dako Rabbit Immunoglobulin Fraction (Normal), Code X0903. The protein concentration of X0936 is 15 g/L.

### Rabbit Serum (Normal)

RU0 X0902 Whole serum 10 mL

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## **General Product Information**

# General Product Information

## Polyclonal Antibodies

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Since 1966 Dako has produced a continually widening range of polyclonal antibodies. An extensive knowledge of protein chemistry and immunochemistry, careful selection of animals for immunization, and optimal, long-term immunization schemes have formed the basis of the high quality of our products.

Most of the polyclonal antibodies are *produced in rabbits*. This provides several advantages:

Human antibodies reacting with rabbit immunoglobulins occur rarely. Therefore, rabbit antibodies can be used without risk of non-specific reactions even in sensitive techniques.

A batch of antibody will always consist of the pooled sera from a large number of animals. This eliminates the possibility of a single atypical antibody predominating and gives minimal batch-to-batch variation. Rabbit antibodies exhibit very broad precipitation curves, so precipitation will occur even at high antigen or antibody excess.

**Immunoglobulin Fractions.** All Dako polyclonal antibodies are offered in the form of immunoglobulin fractions with a few exceptions mentioned under the individual product. The immunoglobulin fraction is prepared by salting out and ion exchange chromatography. The elimination of bulk proteins gives a stable product with reduced background in gel precipitation techniques, and minimal non-specific reactions in other applications.

**Affinity-Isolated Antibodies.** Dako affinity-isolated antibodies are prepared by immunoaffinity chromatography, using antigens coupled to a solid matrix. The elution and adsorption techniques used, guarantee antibodies of high affinity.

**Specificity.** Monospecificity of Dako polyclonal antibodies is obtained by the use of highly purified antigens for immunization. Traces of sometimes unavoidable, unwanted antibodies are removed by liquid or, in the majority of cases, solid-phase absorption. Crossed immunoelectrophoresis, with its high sensitivity and resolving power, is included in our specificity controls. For this test, antibody is used at a very high concentration (12.5 microliters per square cm of gel). For a steadily increasing number of antibodies the specificity is also ascertained by ELISA. Antibodies which are specified "for immunohistochemistry only" have not necessarily been subjected to the above specificity tests.

**Antibody Titre.** The titre variation between batches of unconjugated polyclonal antibodies is less than 10%. The titre of most antibodies is measured by single radial immunodiffusion (SRI) (1). The SRI titre states how many milligrams of antigen which is precipitated in an agarose gel by 1 L of antibody.

**Application.** Because of their high purity and avidity, Dako unconjugated polyclonal antibodies are generally well-suited for a variety of techniques, including *nephelometry*, *turbidimetry*, *immunofixation*, *immunoblotting* and qualitative as well as quantitative gel precipitation techniques. Most of our antibodies have proven to be well-suited for use in enzyme-linked immunosorbent assays (ELISA).

In addition, our immunohistochemistry laboratory as well as numerous investigators have shown for a large number of Dako unconjugated polyclonal antibodies, that they give highly specific immunohistochemical reactions when used as primary antibodies in immunofluorescence or immunoenzymatic techniques. The intended/recommended use of each antibody is stated in the package insert.

**Protein Concentration.** For Dako concentrated, unconjugated polyclonal rabbit antibodies (immunoglobulin fractions) the protein concentration is usually in the range of 3-10 g/L.

The protein concentration of individual antibodies is stated on the label of each vial.

**Solvent.** All antibodies are offered in liquid form. For unconjugated antibodies in the form of immunoglobulin fractions, the solvent is 0.1 mol/L sodium chloride, 15 mmol/L sodium azide.

**Storage.** We recommend that our antibodies be stored at 2-8 °C. When stored in this manner, loss of antibody activity for unconjugated antibodies is approximately 2% per year.

**Bulk Sales.** Dako supplies bulk quantities of unconjugated as well as conjugated antibodies as OEM products for further manufacturing, processing or repackaging.

**Further Information.** A package insert is supplied with each vial of polyclonal antibody. It states immunogen and specificity, and gives additional product-specific information. Package inserts are also available on [www.dako.com](http://www.dako.com).

The products require no hazard labeling.

### Reference

1. Becker W. Determination of antisera titres using the single radial immunodiffusion method. *Immunochem* 1969;6:539-46.

### Peroxidase-Conjugated Antibodies

**Characterization.** Dako peroxidase-conjugated antibodies have been prepared from the chromatographically purified immunoglobulin fraction of antisera or affinity-isolated antibodies and horseradish peroxidase (HRP) of the highest specific enzymatic activity available. The coupling reaction is a modification, developed at Dako, of the two-step glutaraldehyde method of Avrameas and Ternynck (1). The reaction is gentle, efficient, highly reproducible and gives conjugate molecules of molecular weight predominantly 200 000-240 000.

**Specificity.** The specificity of the antibodies is ascertained by crossed immunoelectrophoresis and, when applicable, by ELISA.

**Application.** Dako peroxidase conjugates are generally used for light and electron microscopy, enzyme-linked immunosorbent assays (ELISA), immunoblotting techniques, and amplification of immunoprecipitates in agarose gels. Working dilutions should be optimized for each individual system, but are usually for histological work in the range 1:20-1:200, for ELISA 1:500-1:2000, and for enzymatic amplification of immunoprecipitates and immunoblotting about 1:100-1:1000. Intended/ recommended use and recommended dilutions are stated in the package insert.

**Solvent.** Peroxidase conjugates are sold in liquid form with preservative added.

**Storage.** Shelf life stated for Dako peroxidase-conjugated antibodies is for undiluted antibodies at 2-8 °C.

**Chromogens for Peroxidase Staining.** For light and electron microscopy, diaminobenzidine (DAB) is recommended. Considerable enhancement of staining intensity can be obtained very simply by using DAB in conjunction with imidazole and heavy metal salts (2,3). For immunoblotting, tetramethylbenzidine (TMB) used as described by McKimm-Breschkin (4) produces a stable color of high intensity. The most sensitive stain for amplification of immunoprecipitates in agarose gels is 3-amino-9-ethylcarbazole (AEC) (5,6). DAB (7), TMB (4) and AEC can with advantage be prepared as stock solutions, thus easing the work, and especially for DAB, eliminating possible staining variations due to variable amounts of impurities present in small aliquots of DAB powder. Hydrogen peroxide should not be added to the staining solution until shortly before use.

DAB was formerly listed, erroneously, by the American National Institute for Occupational Safety and Health, as a carcinogen. However, it has been demonstrated that even at very high dose levels - 4-8 g/kg - DAB produces only minimal toxic effects in male rats and male mice, and has no effects in female mice (8).

For ELISA, orthophenylenediamine (OPD) and 3,3'-5,5'- tetramethylbenzidine (TMB) are good and very sensitive chromogens. DAB as well as OPD and TMB are available from Dako.

**Further Information.** A package insert is supplied with each vial of conjugate. It provides product-specific details. Package inserts are also available on [www.dako.com](http://www.dako.com).

The products require no hazard labeling.

#### References

1. Avrameas S, Ternynck T. Peroxidase labelled antibody and Fab conjugates with enhanced intracellular penetration. *Immunochemistry* 1971;8:1175-9.
2. Trojanowski JQ, Obrocka MA, Lee VMY. A comparison of eight different chromogen protocols for the demonstration of immunoreactive neurofilaments or glial filaments in rat cerebellum using the peroxidase-antiperoxidase method and monoclonal antibodies. *J Histochem Cytochem* 1983;31:1217-23.
3. Scopsi L, Larsson LI. Increased sensitivity in peroxidase immunocytochemistry. A comparative study of a number of peroxidase visualization methods employing a model system. *Histochemistry* 1986;84:221-30.
4. McKimm-Breschkin JL. The use of tetramethylbenzidine for solid phase immunoassays. *J Immunol Methods* 1990;135: 277-80.
5. Graham RC, Lundholm U, Karnovsky MJ. Cytochemical demonstration of peroxidase activity with 3-amino-9-ethyl-carbazole. *J Histochem Cytochem* 1965;13:150-2.
6. Broe MK, Ingild A. Amplification of immunoprecipitates in agarose gels by horseradish peroxidase-labelled antibody. *Scand J Immunol* 1983;17:255-8.
7. Pelliniemi LJ, Dym M, Karnovsky MJ. Peroxidase histochemistry using diaminobenzidine tetrahydrochloride stored as a frozen solution. *J Histochem Cytochem* 1980;28:191-2.
8. Weisburger EK, Russfield AB, Homburger F, Weisburger JH, Boger E, Van Dongen CG, et al. Testing of twenty-one environmental aromatic amines or derivatives for long-term toxicity or carcinogenicity. *J Environ Pathol Toxicol* 1978;2:325-56.



## Product Code Index





# Product Code Index

Code	Product	Package Size	Order No.	See Page
<b>A</b>				
A0001	Polyclonal Rabbit Anti-Human Albumin	2 mL	A000102	22
A0002	Polyclonal Rabbit Anti-Human Prealbumin	2 mL	A000202	24
A0012	Polyclonal Rabbit Anti-Human Alpha-1-Antitrypsin	2 mL	A001202	22
A0021	Polyclonal Rabbit Anti-Human Gc-Globulin	2 mL	A002102	16 23
A0030	Polyclonal Rabbit Anti-Human Haptoglobin	2 mL	A003002	23
A0040	Polyclonal Rabbit Anti-Human Retinol-Binding Protein	2 mL	A004002	17 24
A0061	Polyclonal Rabbit Anti-Human Transferrin	2 mL	A006102	24
A0062	Polyclonal Rabbit Anti-Human C3c Complement	2 mL	A006202	22
A0063	Polyclonal Rabbit Anti-Human C3d Complement	2 mL	A006302	22
A0072	Polyclonal Rabbit Anti-Human Beta-2-Microglobulin	2 mL	A007202	22
A0080	Polyclonal Rabbit Anti-Human Fibrinogen	2 mL	A008002	22
A0092	Polyclonal Rabbit Anti-Human IgA	2 mL	A009202	23
A0093	Polyclonal Rabbit Anti-Human IgD	2 mL	A009302	23
A0094	Polyclonal Rabbit Anti-Human IgE	2 mL	A009402	23
A0100	Polyclonal Rabbit Anti-Human Kappa Free Light Chains	2 mL	A010002	24
A0101	Polyclonal Rabbit Anti-Human Lambda Free Light Chains	2 mL	A010102	24
A0107	Polyclonal Rabbit Anti-Human Immunoglobulins	10 mL	A010710	23
A0115	Polyclonal Rabbit Anti-Human Carcinoembryonic Antigen	2 mL	A011502	22
A0136	Polyclonal Rabbit Anti-Human C1q Complement	2 mL	A013602	22
A0146	Polyclonal Rabbit Anti-Human Gelsolin	1 mL	A014601	16 23
A0190	Polyclonal Rabbit Anti-Human IgA, IgG, IgM	2 mL	A019002	23
A0192	Polyclonal Rabbit Anti-Human Kappa Light Chains	2 mL	A019202	24
A0194	Polyclonal Rabbit Anti-Human Lambda Light Chains	2 mL	A019402	24
A0206	Polyclonal Rabbit Anti-Human Serum	2 mL	A020602	24
A0230	Polyclonal Rabbit Anti-Human Pregnancy-Associated Plasma Protein A	2 mL	A023002	24
A0245	Polyclonal Rabbit Anti-Human Fibronectin	2 mL	A024502	22
A0256	Polyclonal Rabbit Anti-Human Alpha-1-Microglobulin	2 mL	A025602	22
A0384	Polyclonal Rabbit Anti-Human Protein S	1 mL	A038401	24
A0424	Polyclonal Rabbit Anti-Human IgG	2 mL	A042402	23
A0426	Polyclonal Rabbit Anti-Human IgM	2 mL	A042602	23
<b>K</b>				
K0025	Chromogranin A ELISA Kit	96 wells	K002511	20
K0052	Beta-2-Microglobulin PET Kit	80-150 tests	K005211	15
K6219	Insulin ELISA Kit	96 wells	K621911	20
K6220	C-Peptide ELISA Kit	96 wells	K622011	20
<b>L</b>				
LX002	Cystatin C Immunoparticles	200 tests, 10 mL	LX00210	15
<b>P</b>				
P0216	Polyclonal Rabbit Anti-Human IgA/HRP	2 mL	P021602	23
P0226	Polyclonal Rabbit Anti-Human Von Willebrand Factor/HRP	2 mL	P022602	22 25
<b>Q</b>				
Q0023	Polyclonal Rabbit Anti-Human Lipoprotein(a)	5 mL	Q002305	17
Q0102	Polyclonal Rabbit Anti-Human Alpha-2-Macroglobulin	5 mL	Q010205	16
Q0121	Polyclonal Rabbit Anti-Human Ceruloplasmin	5 mL	Q012105	16
Q0122	Polyclonal Rabbit Anti-Human Fibrinogen	5 mL	Q012205	16
Q0149	Polyclonal Rabbit Anti-Human Fibronectin	5 mL	Q014905	16
Q0326	Polyclonal Rabbit Anti-Human Orosomuroid (Alpha-1-Acid Glycoprotein)	5 mL	Q032605	17
Q0327	Polyclonal Rabbit Anti-Human Transferrin	5 mL	Q032705	17
Q0328	Polyclonal Rabbit Anti-Human Albumin	5 mL	Q032805	16
Q0329	Polyclonal Rabbit Anti-Human C-Reactive Protein	5 mL 10 mL	Q032905 Q032910	16
Q0330	Polyclonal Rabbit Anti-Human Haptoglobin	5 mL	Q033005	16
Q0331	Polyclonal Rabbit Anti-Human IgG	5 mL	Q033105	17
Q0332	Polyclonal Rabbit Anti-Human IgA	5 mL	Q033205	17
Q0333	Polyclonal Rabbit Anti-Human IgM	5 mL	Q033305	17
Q0362	Polyclonal Rabbit Anti-Human Prealbumin (Transthyretin)	5 mL	Q036205	17
Q0363	Polyclonal Rabbit Anti-Human Alpha-1-Antitrypsin	5 mL	Q036305	16

## Product Code Index (continued)

Code	Product	Package Size	Order No.	See Page
Q0368	Polyclonal Rabbit Anti-Human C3c Complement	5 mL	Q036805	16
Q0369	Polyclonal Rabbit Anti-Human C4c Complement	5 mL	Q036905	16
Q0495	Polyclonal Rabbit Anti-Human Alpha-1-Microglobulin	5 mL	Q049505	16
Q0496	Polyclonal Rabbit Anti-Human Apolipoprotein A-I	5 mL	Q049605	16
Q0497	Polyclonal Rabbit Anti-Human Apolipoprotein B	5 mL	Q049705	16
Q0498	Polyclonal Rabbit Anti-Human Kappa Light Chains	5 mL	Q049805	17
Q0499	Polyclonal Rabbit Anti-Human Lambda Light Chains	5 mL	Q049905	17
Q8329	Polyclonal Rabbit Anti-Human C-Reactive Protein, Ready-to-Use	400 tests, 10 mL	Q832910	16
<b>S</b>				
S1599	Dako TMB+	100 mL 500 mL 1 L	S159982 S159984 S159985	21
S2005	Dako Turbidimetry/Nephelometry Dilution Buffer 1	1 L	S200530	17
S2006	Dako Turbidimetry/Nephelometry Reaction Buffer 3	1 L	S200630	17
S2007	Dako Turbidimetry/Nephelometry Reaction Buffer 1	1 L	S200730	17
S2008	Dako Turbidimetry/Nephelometry Reaction Buffer 2	1 L	S200830	17
S2011	Dako Turbidimetry/Nephelometry Reaction Buffer 4	1 L	S201130	17
S2045	Dako OPD Tablets, 2 mg, For ELISA	100 tablets	S204530	21
S2307	Dako Turbidimetry Reaction Buffer 7	1 L	S230730	18
S2361	Dako Turbidimetry/Nephelometry Reaction Buffer 9	100 mL	S236130	18
S6247	Diabetes Immunoassay Control Set	3 x 2 mL	S624730	20
<b>X</b>				
X0902	Rabbit Serum (Normal)	10 mL	X090210	26
X0903	Negative Control, Rabbit Immunoglobulin Fraction (Normal)	2 mL 10 mL	X090302 X090310	26
X0907	Goat Serum (Normal)	10 mL	X090710	26
X0908	Human Serum Protein Calibrator	1 mL	X090801	18
X0910	Mouse Serum (Normal)	1 mL	X091001	26
X0923	Human Serum C-Reactive Protein Calibrator	1 mL	X092301	18
X0925	Human Serum C-Reactive Protein Low Control	5 mL	X092505	18
X0926	Human Serum C-Reactive Protein High Control	5 mL	X092605	18
X0931	Negative Control, Mouse IgG1	1 mL	X093101	26
X0936	Negative Control, Rabbit Immunoglobulin Fraction (Solid-Phase Absorbed)	2 mL	X093602	26
X0939	Human Serum Protein Low Control	1 mL	X093901	19
X0940	Human Serum Protein High Control	1 mL	X094001	18
X0942	Negative Control, Mouse IgM	1 mL	X094201	26
X0943	Negative Control, Mouse IgG2a	1 mL	X094301	26
X0944	Negative Control, Mouse IgG2b	1 mL	X094401	26
X0958	Human Serum Lipoprotein Calibrator	1 mL	X095801	18
X0961	Human Serum Lipoprotein Low Control	1 mL	X096101	18
X0962	Human Serum Lipoprotein High Control	1 mL	X096201	18
X0973	Cystatin C Control Set	6 x 1 mL	X097330	16 18
X0974	Cystatin C Calibrator	1 mL	X097401	16 18
X0975	Human Urine Protein Calibrator	1 mL	X097501	19
X0976	Human Urine Protein Low Control	1 mL	X097601	19
X0977	Human Urine Protein High Control	1 mL	X097701	19