Elecsys Cortisol II

cobas®

REF		Σ	SYSTEM
07027150190	07027150500	300	**cobas e** 402 **cobas e** 801

English

System information

Short name	ACN (application code number)
CORT 2	10042

Intended use

Immunoassay for the in vitro quantitative determination of cortisol in human serum, plasma and saliva. The determination of cortisol is used for the recognition and treatment of functional disorders of the adrenal gland.

The **e**lectro**c**hemi**l**uminescence **i**mmuno**a**ssay "ECLIA" is intended for use on **cobas e** immunoassay analyzers.

Summary

Cortisol is quantitatively the major glucocorticoid product of the adrenal cortex.[1] The main reason to measure cortisol is to diagnose Cushing's syndrome (CS) which is caused by the overproduction of cortisol, Addison's disease which is characterized by a deficiency of adrenal steroid excretion, and for therapy monitoring (e.g. dexamethasone suppression test in Cushing's syndrome and hormone replacement therapy in Addison's disease).[1] Cortisol plays an important role in the regulation of many essential physiological processes, including energy metabolism, maintenance of electrolyte balance and blood pressure, immunomodulation and stress responses, cell proliferation as well as cognitive functions. The major fraction of cortisol circulates bound to plasma proteins as corticosteroid binding globulin and albumin.[2] The biologically active free fraction comprises only 2-5 % of the total hormone concentration.[1,2]

Elevated serum levels can be found in stress responses, psychiatric diseases, obesity, diabetes, alcoholism and pregnancy, which may cause diagnostic problems in patients with Cushing's syndrome. Low levels of cortisol are seen in patients with rare adrenal enzyme defects and after long-lasting stress. For diagnostic purposes the following analyses are used: Total and free cortisol in serum and midnight saliva.[1]

The secretion of cortisol is mainly controlled by the hypothalamic-pituitary-adrenal axis (HPA). When cortisol levels in the blood are low, a group of cells in a region of the brain called the hypothalamus release corticotropin-releasing hormone (CRH) which causes the pituitary gland to secrete another hormone, adrenocorticotropic hormone (ACTH), into the bloodstream. High levels of ACTH are detected in the adrenal glands and stimulate the formation and secretion of cortisol, causing blood levels of cortisol to rise. As the cortisol levels rise, they start to block the release of CRH from the hypothalamus and ACTH from the pituitary.[2]

Normally, the highest cortisol secretion happens in the second half of the night with peak cortisol production occurring in the early morning. Following this, cortisol levels decline throughout the day with lowest levels during the first half of the night.[3] Therefore the circadian variations of cortisol secretion and the influence of stress have to be considered for the sampling conditions in serum, plasma and saliva.[4]

The Elecsys Cortisol II assay makes use of a competition test principle using a monoclonal antibody which is specifically directed against cortisol. Endogenous cortisol which has been liberated from binding proteins with danazol competes with exogenous cortisol derivative in the test which has been labeled with ruthenium complex[a)] for the binding sites on the biotinylated antibody.

a) Tris(2,2'-bipyridyl)ruthenium(II)-complex ($Ru(bpy)_3^{2+}$)

Test principle

Competition principle. Total duration of assay: 18 minutes.

- 1st incubation: 6 µL of sample is incubated with a cortisol-specific biotinylated antibody and a ruthenium complex labeled cortisol derivative. Depending on the concentration of the analyte in the sample and the formation of the respective immune complex, the labeled antibody binding site is occupied in part with sample analyte and in part with ruthenylated hapten.
- 2nd incubation: After addition of streptavidin-coated microparticles, the complex becomes bound to the solid phase via interaction of biotin and streptavidin.
- The reaction mixture is aspirated into the measuring cell where the microparticles are magnetically captured onto the surface of the electrode. Unbound substances are then removed with ProCell II M. Application of a voltage to the electrode then induces chemiluminescent emission which is measured by a photomultiplier.
- Results are determined via a calibration curve which is instrument-specifically generated by 2-point calibration and a master curve provided via the **cobas** link.

Reagents - working solutions

The **cobas e** pack is labeled as CORT 2.

M Streptavidin-coated microparticles, 1 bottle, 12.4 mL:
Streptavidin-coated microparticles 0.72 mg/mL; preservative.

R1 Anti-cortisol-Ab~biotin, 1 bottle, 21.0 mL:
Biotinylated monoclonal anti-cortisol antibody (ovine) 20 ng/mL; danazol 20 µg/mL; MES[b)] buffer 100 mmol/L, pH 6.0; preservative.

R2 Cortisol-peptide~$Ru(bpy)_3^{2+}$, 1 bottle, 21.0 mL:
Cortisol derivative (synthetic), labeled with ruthenium complex 20 ng/mL; danazol 20 µg/mL; MES buffer 100 mmol/L, pH 6.0; preservative.

b) MES = 2-morpholino-ethane sulfonic acid

Precautions and warnings

For in vitro diagnostic use for health care professionals. Exercise the normal precautions required for handling all laboratory reagents.

Infectious or microbial waste:
Warning: handle waste as potentially biohazardous material. Dispose of waste according to accepted laboratory instructions and procedures.

Environmental hazards:
Apply all relevant local disposal regulations to determine the safe disposal.

Safety data sheet available for professional user on request.

This kit contains components classified as follows in accordance with the Regulation (EC) No. 1272/2008:

Warning

H317 May cause an allergic skin reaction.

Prevention:

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P272 Contaminated work clothing should not be allowed out of the workplace.

P280 Wear protective gloves.

Response:

P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.

P362 + P364 Take off contaminated clothing and wash it before reuse.

Disposal:

P501 Dispose of contents/container to an approved waste disposal plant.

Product safety labeling follows EU GHS guidance.

Contact phone: all countries: +49-621-7590

Avoid foam formation in all reagents and sample types (specimens, calibrators and controls).

Reagent handling

The reagents in the kit have been assembled into a ready-for-use unit that cannot be separated.

All information required for correct operation is available via the **cobas** link.

Storage and stability

Store at 2-8 °C.

Do not freeze.

Store the **cobas e** pack **upright** in order to ensure complete availability of the microparticles during automatic mixing prior to use.

Stability:	
unopened at 2-8 °C	up to the stated expiration date
on the analyzers	16 weeks

Specimen collection and preparation

Only the specimens listed below were tested and found acceptable.

Serum and plasma:

Serum collected using standard sampling tubes or tubes containing separating gel.

Li-heparin, K_2-EDTA and K_3-EDTA plasma.

Plasma tubes containing separating gel can be used.

Criterion: Slope 0.9-1.1 + coefficient of correlation ≥ 0.95.

The sample types listed were tested with a selection of sample collection tubes that were commercially available at the time of testing, i.e. not all available tubes of all manufacturers were tested. Sample collection systems from various manufacturers may contain differing materials which could affect the test results in some cases. When processing samples in primary tubes (sample collection systems), follow the instructions of the tube manufacturer.

Please note: Due to the circadian rhythm of cortisol levels in serum and plasma, the sample collection time must be noted.

Stable for 24 hours at 20-25 °C, 4 days at 2-8 °C, 12 months at -20 °C (± 5 °C). Freeze only once.

Saliva:

Collect a saliva sample using a Sarstedt Salivette device.

Do not use vials containing citric acid.

Remove the swab from the suspended insert and gently chew for about 2 minutes to thoroughly saturate the swab with saliva. Replace the swab into the suspended insert and close the tube. Centrifuge the Salivette for 2 minutes at 1000 g to separate off the saliva into the outer tube. Use the clear supernatant for the Elecsys Cortisol II assay. Use saliva samples in the same way as serum or plasma specimens.

Please note: If no instructions have been given, saliva should be collected before brushing teeth in the morning. During the day, saliva should be collected no earlier than 30 minutes after eating or drinking.

The centrifuged saliva sample is stable for 24 hours at 20-25 °C, 4 days at 2-8 °C, 12 months at -20 °C (± 5 °C). Freeze only once.

Centrifuge samples containing precipitates before performing the assay.

Do not use heat-inactivated samples.

Do not use samples and controls stabilized with azide.

Ensure the samples and calibrators are at 20-25 °C prior to measurement.

Due to possible evaporation effects, samples and calibrators on the analyzers should be analyzed/measured within 2 hours.

Materials provided

See "Reagents – working solutions" section for reagents.

Materials required (but not provided)

- REF 06687750190, Cortisol II CalSet, for 4 x 1.0 mL
- REF 11731416190, PreciControl Universal, for 4 x 3.0 mL or REF 06687768190, PreciControl Cortisol Saliva, for 4 x 1.0 mL
- REF 07299001190, Diluent Universal, 45.2 mL sample diluent
- General laboratory equipment
- **cobas e** analyzer

Additionally required for the determination of cortisol in saliva:

- Salivette, sample collection tube, Sarstedt, Nümbrecht, Germany, REF 51.1534

Additional materials for **cobas e** 402 and **cobas e** 801 analyzers:

- REF 06908799190, ProCell II M, 2 x 2 L system solution
- REF 04880293190, CleanCell M, 2 x 2 L measuring cell cleaning solution
- REF 07485409001, Reservoir Cup, 8 cups to supply ProCell II M and CleanCell M
- REF 06908853190, PreClean II M, 2 x 2 L wash solution
- REF 05694302001, Assay Tip/Assay Cup tray, 6 magazines x 6 magazine stacks x 105 assay tips and 105 assay cups, 3 wasteliners
- REF 07485425001, Liquid Flow Cleaning Cup, 2 adaptor cups to supply ISE Cleaning Solution/Elecsys SysClean for Liquid Flow Cleaning Detection Unit
- REF 07485433001, PreWash Liquid Flow Cleaning Cup, 1 adaptor cup to supply ISE Cleaning Solution/Elecsys SysClean for Liquid Flow Cleaning PreWash Unit
- REF 11298500316, ISE Cleaning Solution/Elecsys SysClean, 5 x 100 mL system cleaning solution

Assay

For optimum performance of the assay follow the directions given in this document for the analyzer concerned. Refer to the appropriate operator's manual for analyzer-specific assay instructions.

Resuspension of the microparticles takes place automatically prior to use.

Place the cooled (stored at 2-8 °C) **cobas e** pack on the reagent manager. Avoid foam formation. The system automatically regulates the temperature of the reagents and the opening/closing of the **cobas e** pack.

Calibration

Traceability: This method has been standardized against the IRMM (Institute for Reference Materials and Measurements)/IFCC-451 panel (ID-GC/MS, isotope dilution-gas chromatography/mass spectrometry).[5]

The predefined master curve is adapted to the analyzer using the relevant CalSet.

Calibration frequency: Calibration must be performed once per reagent lot using fresh reagent (i.e. not more than 24 hours since the **cobas e** pack was registered on the analyzer).

Calibration interval may be extended based on acceptable verification of calibration by the laboratory.

Renewed calibration is recommended as follows:

- after 12 weeks when using the same reagent lot
- after 28 days when using the same **cobas e** pack on the analyzer
- as required: e.g. quality control findings outside the defined limits

Quality control

For quality control, use PreciControl Universal or PreciControl Cortisol Saliva.

In addition, other suitable control material can be used.

Controls for the various concentration ranges should be run individually at least once every 24 hours when the test is in use, once per **cobas e** pack, and following each calibration.

The control intervals and limits should be adapted to each laboratory's individual requirements. Values obtained should fall within the defined limits. Each laboratory should establish corrective measures to be taken if values fall outside the defined limits.

If necessary, repeat the measurement of the samples concerned.

Follow the applicable government regulations and local guidelines for quality control.

Calculation

The analyzer automatically calculates the analyte concentration of each sample (either in nmol/L, µg/dL or µg/L).

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Conversion factors: nmol/L x 0.03625 = µg/dL
nmol/L x 0.3625 = µg/L
µg/dL x 27.586 = nmol/L
µg/L x 2.7586 = nmol/L

Limitations - interference

The effect of the following endogenous substances and pharmaceutical compounds on assay performance was tested. Interferences were tested up to the listed concentrations and no impact on results was observed.

Endogenous substances

Compound	Concentration tested
Bilirubin	≤ 428 µmol/L or ≤ 25 mg/dL
Hemoglobin	≤ 0.311 mmol/L or ≤ 500 mg/dL
Intralipid	≤ 1500 mg/dL
Biotin	≤ 287 nmol/L or ≤ 70 ng/mL
Rheumatoid factors	≤ 600 IU/mL
IgG	≤ 5 g/dL
IgA	≤ 1 g/dL
IgM	≤ 1 g/dL

Criterion: For concentrations of 1.5-50 nmol/L the deviation is ≤ 5 nmol/L. For concentrations > 50-1750 nmol/L the deviation is ≤ 10 %.

Samples should not be taken from patients receiving therapy with high biotin doses (i.e. > 5 mg/day) until at least 8 hours following the last biotin administration.

Pharmaceutical substances
In vitro tests were performed on 16 commonly used pharmaceuticals. No interference with the assay was found.

In rare cases, interference due to extremely high titers of antibodies to analyte-specific antibodies, streptavidin or ruthenium can occur. These effects are minimized by suitable test design.

Pregnancy, contraceptives and estrogen therapy give rise to elevated cortisol concentrations.

In samples from patients who have been treated with prednisolone, 6-α-Methylprednisolone or prednisone, falsely elevated concentrations of cortisol may be determined.

During metyrapon tests, 11-deoxycortisol levels are elevated. Falsely elevated cortisol values may be determined due to cross reactions (see section on analytical specificity).

Patients suffering from 21-hydroxylase deficiency exhibit elevated 21-deoxycortisol levels and this can also give rise to falsely elevated cortisol results.

The time of sample collection must be taken into account when interpreting results due to the cortisol secretion circadian rhythm. Severe stress can also give rise to elevated cortisol levels.

Saliva samples contaminated with blood have to be discarded.

For diagnostic purposes, the results should always be assessed in conjunction with the patient's medical history, clinical examination and other findings.

Limits and ranges

Measuring range

1.5-1750 nmol/L or 0.054-63.4 µg/dL (defined by the Limit of Detection and the maximum of the master curve). Values below the Limit of Detection are reported as < 1.5 nmol/L (< 0.054 µg/dL). Values above the measuring range are reported as > 1750 nmol/L (> 63.4 µg/dL) (or up to 17500 nmol/L or 634 µg/dL for 10-fold diluted samples).

Lower limits of measurement

Limit of Blank, Limit of Detection and Limit of Quantitation

Limit of Blank = 1.0 nmol/L (0.036 µg/dL)

Limit of Detection = 1.5 nmol/L (0.054 µg/dL)

Limit of Quantitation = 3.0 nmol/L (0.109 µg/dL)

The Limit of Blank, Limit of Detection and Limit of Quantitation were determined in accordance with the CLSI (Clinical and Laboratory Standards Institute) EP17-A2 requirements.

The Limit of Blank is the 95th percentile value from n ≥ 60 measurements of analyte-free samples over several independent series. The Limit of Blank corresponds to the concentration below which analyte-free samples are found with a probability of 95 %.

The Limit of Detection is determined based on the Limit of Blank and the standard deviation of low concentration samples. The Limit of Detection corresponds to the lowest analyte concentration which can be detected (value above the Limit of Blank with a probability of 95 %).

The Limit of Quantitation is defined as the lowest amount of analyte in a sample that can be accurately quantitated with a total allowable error of ≤ 30 %.

Dilution

Serum and plasma samples with cortisol concentrations above the measuring range can be diluted with Diluent Universal. The recommended dilution is 1:10 (either automatically by the analyzer or manually). The concentration of the diluted sample must be > 150 nmol/L or > 5 µg/dL.

After manual dilution, multiply the result by the dilution factor.

After dilution by the analyzers, the software automatically takes the dilution into account when calculating the sample concentration.

Expected values

In studies with the Elecsys Cortisol II assay, the following values were determined using samples from 300 self-reported healthy individuals, aged 21 years and older. Exclusion criteria were pregnancy, lactation, use of oral contraceptives and medication with cortisone/cortisol. No statistical difference was observed between males and females.

Cortisol in serum and plasma

5th-95th percentile:

Morning hours 6-10 a.m.: 166-507 nmol/L (6.02-18.4 µg/dL), n = 296

Afternoon hours 4-8 p.m.: 73.8-291 nmol/L (2.68-10.5 µg/dL), n = 300

2.5th-97.5th percentile:

Morning hours 6-10 a.m.: 133-537 nmol/L (4.82-19.5 µg/dL), n = 296

Afternoon hours 4-8 p.m.: 68.2-327 nmol/L (2.47-11.9 µg/dL), n = 300

Cortisol in saliva

In studies with the Elecsys Cortisol II assay, the following values were determined using saliva samples from the same 300 self-reported healthy individuals (95th/97.5th percentile) described above.

Morning hours 6-10 a.m.: < 20.3 nmol/L/< 24.1 nmol/L
(< 0.736 µg/dL/< 0.874 µg/dL), n = 297
1.7 % < 1.5 nmol/L, n = 5

Afternoon hours 4-8 p.m.: < 6.94 nmol/L/< 9.65 nmol/L
(< 0.252 µg/dL/< 0.350 µg/dL), n = 298
25.2 % < 1.5 nmol/L, n = 75

Midnight ± 30 minutes: < 7.56 nmol/L/< 11.3 nmol/L
(< 0.274 µg/dL/< 0.410 µg/dL), n = 299
61.5 % < 1.5 nmol/L, n = 184

Each laboratory should investigate the transferability of the expected values to its own patient population and if necessary determine its own reference ranges.

Specific performance data

Representative performance data on the analyzers are given below. Results obtained in individual laboratories may differ.

Precision

Precision was determined using Elecsys reagents, pooled human sera and controls in a protocol (EP05-A3) of the CLSI (Clinical and Laboratory Standards Institute): 2 runs per day in duplicate each for 21 days (n = 84). The following results were obtained:

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cobas e 402 and **cobas e** 801 analyzers					
		Repeatability		**Intermediate precision**	
Sample	Mean nmol/L	SD nmol/L	CV %	SD nmol/L	CV %
Human serum 1	2.24	0.123	5.5	0.163	7.3
Human serum 2	31.8	0.366	1.2	0.581	1.8
Human serum 3	273	2.90	1.1	4.80	1.8
Human serum 4	788	12.4	1.6	16.3	2.1
Human serum 5	1489	21.3	1.4	31.4	2.1
PC[c)] Universal 1	316	3.77	1.2	5.38	1.7
PC Universal 2	710	9.75	1.4	13.2	1.9

c) PC = PreciControl

cobas e 402 and **cobas e** 801 analyzers					
		Repeatability		**Intermediate precision**	
Sample	Mean µg/dL	SD µg/dL	CV %	SD µg/dL	CV %
Human serum 1	0.081	0.004	5.5	0.006	7.3
Human serum 2	1.15	0.013	1.2	0.021	1.8
Human serum 3	9.90	0.105	1.1	0.174	1.8
Human serum 4	28.6	0.450	1.6	0.591	2.1
Human serum 5	54.0	0.772	1.4	1.14	2.1
PC Universal 1	11.5	0.137	1.2	0.195	1.7
PC Universal 2	25.7	0.353	1.4	0.479	1.9

Precision was determined using Elecsys reagents, saliva samples and saliva controls in accordance with a protocol (EP05-A3) of the CLSI (Clinical and Laboratory Standards Institute): 2 runs per day in duplicate each for 21 days (n = 84). The following results were obtained:

cobas e 402 and **cobas e** 801 analyzers					
		Repeatability		**Intermediate precision**	
Sample	Mean nmol/L	SD nmol/L	CV %	SD nmol/L	CV %
Human saliva 1	1.92	0.094	4.9	0.149	7.8
Human saliva 2	3.22	0.145	4.5	0.202	6.3
Human saliva 3	9.74	0.219	2.2	0.350	3.6
Human saliva 4	29.9	0.408	1.4	0.630	2.1
Human saliva 5	89.1	1.19	1.3	1.73	1.9
PC Cortisol Saliva 1	10.2	0.227	2.2	0.414	4.0
PC Cortisol Saliva 2	28.4	0.416	1.5	0.795	2.8

cobas e 402 and **cobas e** 801 analyzers					
		Repeatability		**Intermediate precision**	
Sample	Mean µg/dL	SD µg/dL	CV %	SD µg/dL	CV %
Human saliva 1	0.070	0.003	4.9	0.005	7.8
Human saliva 2	0.117	0.005	4.5	0.007	6.3
Human saliva 3	0.353	0.008	2.2	0.013	3.6
Human saliva 4	1.08	0.015	1.4	0.023	2.1
Human saliva 5	3.23	0.043	1.3	0.063	1.9

cobas e 402 and **cobas e** 801 analyzers					
		Repeatability		**Intermediate precision**	
Sample	Mean µg/dL	SD µg/dL	CV %	SD µg/dL	CV %
PC Cortisol Saliva 1	0.370	0.008	2.2	0.015	4.0
PC Cortisol Saliva 2	1.03	0.015	1.5	0.029	2.8

Method comparison

Serum:

a) A comparison of the Elecsys Cortisol II assay, REF 06687733190 (y) with ID-GC/MS (x) using the IRMM/IFCC-451 panel gave the following correlations (nmol/L):

Number of samples measured: 34

Passing/Bablok[6]	Linear regression
y = 1.00x + 4.96	y = 1.02x + 1.38
τ = 0.975	r = 0.998

The sample concentrations were between 83.0 and 764 nmol/L or 3.01 and 27.7 µg/dL (ID-GC/MS).

b) A comparison of the Elecsys Cortisol II assay, REF 07027150190 (**cobas e** 801 analyzer; y) with the Elecsys Cortisol II assay, REF 06687733190 (**cobas e** 601 analyzer; x) gave the following correlations (nmol/L):

Number of serum samples measured: 145

Passing/Bablok[6]	Linear regression
y = 0.930x + 0.963	y = 0.937x + 0.221
τ = 0.959	r = 0.998

The sample concentrations were between 6.95 and 1640 nmol/L.

c) A comparison of the Elecsys Cortisol II assay, REF 07027150190 (**cobas e** 402 analyzer; y) with the Elecsys Cortisol II assay, REF 07027150190 (**cobas e** 801 analyzer; x) gave the following correlations (nmol/L):

Number of serum samples measured: 198

Passing/Bablok[6]	Linear regression
y = 1.03x - 0.430	y = 1.03x + 1.14
τ = 0.977	r = 0.999

The sample concentrations were between 2.94 and 1741 nmol/L.

Analytical specificity

For the Elecsys Cortisol II assay, the following cross-reactivities were found:

Cross-reactant	**Concentration tested µg/mL**	**Cross-reactivity %**
11-Deoxycorticosterone	10	0.227
11-Deoxycortisol	10	3.62
17α-Hydroxyprogesterone	10	n. d.[d)]
Corticosterone	10	1.29
Cortisone	10	4.68
Dexamethasone	10	n. d.
Fludrocortisone	10	n. d.
Prednisone	10	2.33
Progesterone	10	n. d.
21-Deoxycortisol	1	0.515
Prednisolone	1	7.32
6α-Methylprednisolone	0.1	14.7

d) n. d. = not detectable

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References

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2 Gatti R, Antonelli G, Prearo M, et al. Cortisol assays and diagnostic laboratory procedures in human biological fluids. Clin Biochem 2009;42(12):1205-1217.

3 Tsigos C, Chrousos GP. Hypothalamic–pituitary–adrenal axis, neuroendocrine factors and stress. Journal of Psychosomatic Research 2002;53:865-871.

4 Nieman LK, Biller BMK, Findling JW, et al. The Diagnosis of Cushing's Syndrome: An Endocrine Society Clinical Practice Guideline. J Clin Endocrinol Metab 2008;93(5):1526-1540.

5 Thienpont LM. The characterisation of cortisol concentrations in a reference serum panel: IRMM/IFCC-451. [Geel, Belgium]: Directorate General Joint Research Centre; 1999.

6 Bablok W, Passing H, Bender R, et al. A general regression procedure for method transformation. Application of linear regression procedures for method comparison studies in clinical chemistry, Part III. J Clin Chem Clin Biochem 1988 Nov;26(11):783-790.

For further information, please refer to the appropriate operator's manual for the analyzer concerned, the respective application sheets, the product information and the Method Sheets of all necessary components (if available in your country).

A point (period/stop) is always used in this Method Sheet as the decimal separator to mark the border between the integral and the fractional parts of a decimal numeral. Separators for thousands are not used.

Any serious incident that has occurred in relation to the device shall be reported to the manufacturer and the competent authority of the Member State in which the user and/or the patient is established.

Symbols

Roche Diagnostics uses the following symbols and signs in addition to those listed in the ISO 15223-1 standard (for USA: see dialog.roche.com for definition of symbols used):

CONTENT	Contents of kit
SYSTEM	Analyzers/Instruments on which reagents can be used
REAGENT	Reagent
CALIBRATOR	Calibrator
→	Volume after reconstitution or mixing
GTIN	Global Trade Item Number

CE 0123

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