Access
Immunoassay Systems

CORTISOL
REF 33600

Intended Use

The Access Cortisol assay is a paramagnetic particle, chemiluminescent immunoassay for the quantitative determination of cortisol levels in human serum, plasma (heparin, EDTA) and urine using the Access Immunoassay Systems.

Summary and Explanation

Cortisol is the major glucocorticoid produced and secreted by the adrenal cortex. It affects (a) the metabolism of protein, fat, and carbohydrates, (b) the maintenance of muscle and myocardial integrity, and (c) the suppression of inflammatory and allergic activities.[1]

Corticosteroid-binding globulin and albumin bind approximately 90% of the cortisol secreted by the adrenal cortex. Bound cortisol circulates in an available, but temporarily inactive state. The physiological activity of cortisol depends upon levels of the small fraction of circulating unbound cortisol.[2]

Adrenocorticotropic hormone (ACTH) activates the synthesis and release of cortisol from the adrenal cortex. The pituitary produces and releases ACTH upon stimulation by corticotropin-releasing hormone (CRH) secreted from the hypothalamus. Unbound cortisol acts in a negative feedback mechanism upon the hypothalamus-pituitary-adrenal cortex (HPA) axis at the levels of the pituitary and hypothalamus.[3,4] In addition, diurnal variation and stress such as pyrogenically induced fever, severe psychosis, or trauma influence the neuroendocrine regulation of the adrenal cortex.[1,3,5]

Abnormal changes in cortisol levels occur due to hypothalamic, pituitary, or adrenal malfunction. If undiagnosed and untreated, these disorders can lead to severe metabolic imbalance which may be life-threatening. The measurement of serum or plasma cortisol - utilizing morning and evening levels and/or stress tests such as ACTH stimulation or dexamethasone suppression - aids in the diagnosis of adrenal related disease. Excess cortisol levels are found in Cushing's syndrome (adrenal cortical hyperfunction) while decreased levels are found in Addison's Disease (adrenal cortical insufficiency).[6]

Cortisol bound to protein is protected from metabolism by the liver.[4] Unbound (or free) cortisol in serum is metabolized by the liver resulting in a wide variety of forms or metabolites. Many of these metabolites (conjugated, glucuronide and sulfate forms) are water–soluble and rapidly voided in the urine. A small amount (< 100 µg/24 hours) of cortisol and other extractable metabolites are also excreted in the urine. Urine cortisol can be measured by performing an extraction step which removes some of the water–soluble metabolites prior to analysis or by analyzing urine directly. Immunoassays measure urine cortisol as well as some immunoactive metabolites, therefore, representative expected values should be established for each immunoassay method. The measurement of urine cortisol reflects the amount of unbound (or free) serum cortisol and aids in the diagnosis of adrenal hyperactivity. An elevated level of urine cortisol is considered diagnostic for Cushing's syndrome (adrenal cortical hyperfunction).[4,7,8,9,10]

Principles of the Procedure

The Access Cortisol assay is a competitive binding immunoenzymatic assay. A sample is added to a reaction vessel with rabbit antibody to cortisol, cortisol-alkaline phosphatase conjugate, and paramagnetic particles coated with goat anti-rabbit capture antibody. Cortisol in the sample competes with the cortisol-alkaline phosphatase conjugate for binding sites on a limited amount of specific anti-cortisol antibody. Resulting antigen: antibody complexes bind to the capture antibody on the solid phase. After incubation in a reaction vessel, materials bound to

the solid phase are held in a magnetic field while unbound materials are washed away. Then, the chemiluminescent substrate Lumi-Phos* 530 is added to the vessel and light generated by the reaction is measured with a luminometer. The light production is inversely proportional to the concentration of cortisol in the sample. The amount of analyte in the sample is determined from a stored, multi-point calibration curve.

Product Information

Access Cortisol Reagent Pack

Cat. No. 33600: 100 determinations, 2 packs, 50 tests/pack

- Provided ready to use.
- Store upright and refrigerate at 2 to 10°C.
- Refrigerate at 2 to 10°C for a minimum of two hours before use on the instrument.
- Stable until the expiration date stated on the label when stored at 2 to 10°C.
- Stable at 2 to 10°C for 14 days after initial use.
- Signs of possible deterioration are a broken elastomeric layer on the pack or control values out of range.
- If the reagent pack is damaged (i.e., broken elastomer), discard the pack.
- All antisera are polyclonal unless otherwise indicated.

R1a:	Cortisol-alkaline phosphatase (bovine) conjugate and paramagnetic particles coated with goat anti-rabbit IgG in TRIS buffered saline, with surfactant, BSA matrix, and < 0.1% sodium azide.
R1b:	Rabbit antiserum to cortisol in TRIS buffered saline, with surfactant, BSA matrix, and < 0.1% sodium azide.

Warnings and Precautions

- For *in vitro* diagnostic use.
- Patient samples and blood-derived products may be routinely processed with minimum risk using the procedure described. However, handle these products as potentially infectious according to universal precautions and good clinical laboratory practices, regardless of their origin, treatment, or prior certification. Use an appropriate disinfectant for decontamination. Store and dispose of these materials and their containers in accordance with local regulations and guidelines.
- Sodium azide may react with lead and copper plumbing to form highly explosive metal azides. On disposal of liquids, flush with a large volume of water to prevent azide build-up.[11]
- The Material Safety Data Sheet (MSDS) is available upon request.

Specimen Collection and Preparation

1. Serum, plasma (heparin, EDTA) and urine are the recommended samples.
2. Observe the following recommendations for handling, processing, and storing blood samples:[12]
   - Collect all blood samples observing routine precautions for venipuncture.
   - Allow serum samples to clot completely before centrifugation.
   - Keep tubes stoppered at all times.
   - Within two hours after centrifugation, transfer at least 500 µL of cell-free sample to a storage tube. Tightly stopper the tube immediately.
   - Store samples tightly stoppered at room temperature (15 to 30°C) for no longer than eight hours.
   - If the assay will not be completed within eight hours, refrigerate the samples at 2 to 8°C.
   - If the assay will not be completed within 48 hours, or for shipment of samples, freeze at -20°C or colder.
   - Thaw samples only once.

3. Use the following guidelines when preparing specimens:
   - Ensure residual fibrin and cellular matter have been removed prior to analysis.
   - Follow blood collection tube manufacturer's recommendations for centrifugation.
4. Each laboratory should determine the acceptability of its own blood collection tubes and serum separation products. Variations in these products may exist between manufacturers and, at times, from lot-to-lot.
5. For urine samples, collect a 24-hour urine specimen into a container with 10 gm of boric acid added as a preservative. Record the total volume of urine. Remove a 10 mL aliquot of the well–mixed sample for the assay procedure. If the urine sample is cloudy or has a precipitate, centrifuge the sample at 700 xg for 5 minutes and use the supernate in the assay. Analyze urine samples directly or perform an extraction step prior to analysis. Refer to Procedure section "Materials Required But Not Provided for the Urine Extraction Procedure" and "Preparation of Extracted Urine Samples" for extraction procedure and materials needed.

Materials Provided

R1 Access Cortisol Reagent Packs

Materials Required But Not Provided

1. Access Cortisol Calibrators
   Provided at zero and approximately 2, 5, 10, 25 and 60 µg/dL (55, 138, 276, 690 and 1655 nmol/L)
   Cat. No. 33605
2. Quality Control (QC) materials: commercial control material
3. Access Substrate
   Cat. No. 81906
4. **Access, Access 2, SYNCHRON LXi:**
   Access Wash Buffer II, Cat. No. A16792
   UniCel DxI:
   UniCel DxI Wash Buffer II, Cat. No. A16793
5. Access Cortisol Calibrator S0
   Cat. No. 33606

Materials Required But Not Provided for the Urine Extraction Procedure

1. Ethyl acetate (HPLC grade)
2. 12 mm x 75 mm glass tubes
3. Vortex mixer
4. Pipettes capable of accurately delivering 200 and 1000 µL
5. Centrifuge
6. Drying apparatus (either nitrogen or air)

Procedural Comments

1. Refer to the appropriate system manuals and/or Help system for a specific description of installation, start-up, principles of operation, system performance characteristics, operating instructions, calibration procedures, operational limitations and precautions, hazards, maintenance, and troubleshooting.
2. Mix contents of new (unpunctured) reagent packs by gently inverting pack several times before loading on the instrument. Do not invert open (punctured) packs.
3. Use twenty-five (25) µL of sample for each determination in addition to the sample container and system dead volumes. Refer to the appropriate system manuals and/or Help system for the minimum sample volume required.
4. The system default unit of measure for sample results is µg/dL. To change sample reporting units to the International System of Units (SI units), nmol/L, refer to the appropriate system manuals and/or Help system. To manually convert concentrations to the International System, multiply µg/dL by multiplication factor 27.59.

Preparation of Extracted Urine Samples

1. Pipet 1.0 mL of a well-mixed 24-hour urine specimen into a glass tube.
2. Add 1.0 mL of ethyl acetate. Cap tube securely.
   CAUTION: DO NOT pipet by mouth.
3. Vortex vigorously for 30 seconds.
4. Centrifuge for 5 minutes at 700 xg.
5. Pipet 200 µL from the ethyl acetate layer (top) in the glass tube and deliver into a clean glass tube.
6. Evaporate contents until dry under a gentle stream of nitrogen or air at room temperature.
7. Add 200 µL of Access Cortisol Calibrator S0 (zero) which is also available as Access Cortisol Calibrator S0 cat. no. 33606. Mix by vortexing.
8. Transfer the well-mixed sample into a sample cup and proceed to the Procedure section.

Procedure

Refer to the appropriate system manuals and/or Help system for information on managing samples, configuring tests, requesting tests, and reviewing test results.

Calibration Details

An active calibration curve is required for all tests. For the Access Cortisol assay, calibration is required every 28 days. Refer to the appropriate system manuals and/or Help system for information on calibration theory, configuring calibrators, calibrator test request entry, and reviewing calibration data.

Quality Control

Quality control materials simulate the characteristics of patient samples and are essential for monitoring the system performance of immunochemical assays. Because samples can be processed at any time in a "random access" format rather than a "batch" format, quality control materials should be included in each 24-hour time period.[13] Include commercially available quality control materials that cover at least two levels of analyte. More frequent use of controls or the use of additional controls is left to the discretion of the user based on good laboratory practices or laboratory accreditation requirements and applicable laws. Follow manufacturer's instructions for reconstitution and storage. Each laboratory should establish mean values and acceptable ranges to assure proper performance. Quality control results that do not fall within acceptable ranges may indicate invalid test results. Examine all test results generated since obtaining the last acceptable quality control test point for this analyte. Refer to the appropriate system manuals and/or Help system for information about reviewing quality control results.

Results

Patient test results are determined automatically by the system software. The amount of analyte in the sample is determined from the measured light production by means of the stored calibration data. Patient test results can be reviewed using the appropriate screen. Refer to the appropriate system manuals and/or Help system for complete instructions on reviewing sample results.

Calculation of 24-Hour Urine Results

To calculate 24-hour urine cortisol for extracted or unextracted samples, use the urine cortisol value in µg/dL reported by the Access instrument in the following equation:

$$\text{Urine Cortisol } (\mu g/24 \text{ hours}) = \frac{\text{Urine Cortisol } (\mu g/dL)}{100^*} \times \text{total 24-hour urine volume (mL)}$$

* The factor 100 converts µg/dL to µg/mL.

NOTE: Extractions done with HPLC grade ethyl acetate show greater than 95% efficiency, eliminating the need to correct for extraction efficiencies when calculating results.

Limitations of the Procedure

1. Samples can be accurately measured within the analytical range of the lower limit of detection and the highest calibrator value (approximately 0.4–60.0 µg/dL [11–1655 nmol/L]).
   - If a sample contains less than the lower limit of detection for the assay, report the results as less than that value (i.e., < 0.4 µg/dL [< 11 nmol/L]).
   - If a sample contains more than the stated value of the highest Access Cortisol Calibrator (S5), report the result as greater than that value (i.e., > 60.0 µg/dL [> 1655 nmol/L]). Alternatively, dilute one volume of sample with one volume of Access Cortisol Calibrator S0 (zero) which is also available as Access Cortisol Calibrator S0 cat. no. 33606. Refer to the appropriate system manuals and/or Help system for instructions on entering a sample dilution in a test request. The system reports the results adjusted for the dilution.
2. For assays employing antibodies, the possibility exists for interference by heterophile antibodies in the patient sample. Patients who have been regularly exposed to animals or have received immunotherapy or diagnostic procedures utilizing immunoglobulins or immunoglobulin fragments may produce antibodies, e.g. HAMA, that interfere with immunoassays. Additionally, other heterophile antibodies such as human anti-goat antibodies may be present in patient samples.[14,15]
   Such interfering antibodies may cause erroneous results. Carefully evaluate the results of patients suspected of having these antibodies.
3. The Access Cortisol results should be interpreted in light of the total clinical presentation of the patient, including: symptoms, clinical history, data from additional tests and other appropriate information.
   - Serum cortisol levels may appear depressed in patients that are pregnant or undergoing hormone therapy (e.g. oral/vaginal contraceptives).[16,17,18,19] If the result does not match the clinical picture, perform a urinary (free) cortisol to confirm.
4. Elevated cortisol levels may occur in patients receiving prednisolone or prednisone (which is converted to prednisolone in vivo) due to cross-reactivity to prednisolone.

Expected Values

1. Each laboratory should establish its own reference ranges to assure proper representation of specific populations.
2. Single serum AM cortisol concentrations were measured in 130 human serum samples from apparently healthy adult male and female subjects using the Access Cortisol assay. The 95% confidence range of single serum AM cortisol concentrations was 6.7–22.6 µg/dL (185–624 nmol/L).
3. Single serum PM Cortisol concentrations reported in the literature are generally < 10 µg/dL (< 276 nmol/L).[10]
4. Urine cortisol concentrations were measured in 24-hour urine samples from 140 apparently healthy adult male and female subjects (ranging in age from 22 to 65) using the Access Cortisol Assay. Using the extracted method, the 95% confidence range of 24-hour urine cortisol values was 21 to 111 µg/24 hours (58 to 306 nmol/24 hours). Using the unextracted method, the 95% confidence range of 24-hour urine cortisol values was 58 to 403 µg/24 hours (160 to 1112 nmol/24 hours).
5. Serum and urine Cortisol expected values in children over the age of 6 are considered to be equivalent to the adult population.[10]

Specific Performance Characteristics

Methods Comparison

A comparison of 152 serum cortisol values using the Access Cortisol assay on the Access Immunoassay system and a commercially available immunoassay kit gave the following statistical data:

n	Range of Observations (µg/dL)	Intercept (µg/dL)	Slope	Correlation Coefficient (r)
152	1.2–53.8	2.058	0.962	0.974

A comparison of 130 cortisol values obtained by assaying samples of serum and plasma (heparin) using the Access Cortisol assay on the Access Immunoassay system gave the following statistical data:

n	Range of Observations (µg/dL)	Intercept (µg/dL)	Slope	Correlation Coefficient (r)
130	5.9–29.4	-0.354	1.045	0.967

A comparison of 130 cortisol values obtained by assaying samples of serum and plasma (EDTA) using the Access Cortisol assay on the Access Immunoassay system gave the following statistical data:

n	Range of Observations (µg/dL)	Intercept (µg/dL)	Slope	Correlation Coefficient (r)
130	5.6–27.9	0.553	0.924	0.973

A comparison of 121 extracted urine cortisol values using the Access Cortisol assay on the Access Immunoassay system and a commercially available immunoassay kit gave the following statistical data:

n	Range of Observations (µg/24-hours)	Intercept (µg/24-hours)	Slope	Correlation Coefficient (r)
121	3–448	1.100	2.279	0.968

A comparison of 121 unextracted urine cortisol values using the Access Cortisol assay on the Access Immunoassay system and a commercially available immunoassay kit gave the following statistical data:

n	Range of Observations (µg/24-hours)	Intercept (µg/24-hours)	Slope	Correlation Coefficient (r)
121	6–1372	-21.9	1.880	0.968

Dilution Recovery (Linearity)

Multiple dilutions of 3 human serum samples containing various cortisol levels with Access Cortisol Calibrator S0 (zero) resulted in the following data:

Sample 1	Expected Concentration (µg/dL)	Determined Concentration (µg/dL)	Recovery (%)
Neat	N/A	32.4	N/A
1/1.5	21.6	22.7	105.1
1/2	16.2	16.0	98.8
1/3	10.8	10.3	95.4
1/6	5.4	5.3	98.1
1/10	3.2	3.2	100.0
1/25	1.3	1.2	92.3
		Mean % Recovery	**98.3**

Sample 2	Expected Concentration (µg/dL)	Determined Concentration (µg/dL)	Recovery (%)
Neat	N/A	46.8	N/A
1/1.5	31.2	32.4	103.8
1/2	23.4	24.7	105.6
1/3	15.6	16.0	102.6
1/6	7.8	8.6	110.3
1/10	4.7	5.7	121.3
1/25	1.9	2.1	110.5
		Mean % Recovery	**109.0**

Sample 3	Expected Concentration (µg/dL)	Determined Concentration (µg/dL)	Recovery (%)
Neat	N/A	54.1	N/A
1/1.15	46.9	46.0	98.1
1/1.5	36.0	36.6	101.7
1/2	27.0	28.0	103.7
1/3	18.0	18.3	101.7
1/7.5	7.2	7.3	101.4
		Mean % Recovery	**101.3**

Spiking Recovery

Addition of six different levels of cortisol to two serum samples with low cortisol resulted in the following data:

Sample 1 (µg/dL spike)	Expected Concentration (µg/dL)	Determined Concentration (µg/dL)	Recovery (%)
0	N/A	13.2	N/A
5	18.2	18.6	102.2
10	23.2	23.5	101.3
15	28.2	29.8	105.7
25	38.2	42.6	111.5
35	48.2	47.5	98.5
45	58.2	57.5	98.8
		Mean % Recovery	**103.0**

Sample 2 (µg/dL spike)	Expected Concentration (µg/dL)	Determined Concentration (µg/dL)	Recovery (%)
0	N/A	11.9	N/A
5	16.9	16.6	98.2
10	21.9	21.1	96.3
15	26.9	25.2	93.7
25	36.9	36.6	99.2
35	46.9	46.6	99.4
45	56.9	54.8	96.3
		Mean % Recovery	**97.2**

Imprecision

This assay exhibits total imprecision of less than 12% at approximately 5 µg/dL (138 nmol/L) and less than 10% for higher concentrations of cortisol. Using commercially available human serum based control material, 20 assays with three replicates per assay were generated to provide the following data on precision. The data were analyzed via analysis of variance (ANOVA):[20,21]

Sample	Grand Mean (n=60) (µg/dL)	Within Run (%CV)	Total Imprecision (%CV)
Level 1	6.0	6.7	7.9
Level 2	24.1	4.4	6.0
Level 3	38.4	4.4	6.4

Analytical Specificity/Interferences

Samples containing up to 10 mg/dL (171 µmol/L) bilirubin, hemolyzed samples containing up to 500 mg/dL hemoglobin, and lipemic samples containing the equivalent of 1800 mg/dL (20.32 mmol/L) triglycerides do not affect the concentration of cortisol assayed. In addition, samples containing up to 9 g/dL (90 g/L) total protein (normal sample + 3 mg/dL [0.03 g/L] albumin) do not affect the concentration of cortisol assayed.

The following table describes the cross-reactivity of the assay with substances that are similar in structure to cortisol.

Substance	Analyte Added (µg/dL)	Cross-Reactivity (%)
Corticosterone	100	2.08
Cortisone	100	8.06
11-Deoxycorticosterone	1000	0.91
11-Deoxycortisol	100	17.80
17-α Hydroxyprogesterone	1000	5.33
Progesterone	1000	0.46
Prednisolone	20	7.60
Tetrahydrocortisone	1000	0.10
Prednisone	1000	3.05
Dexamethasone	1000	0.04

Analytical Sensitivity

The lowest detectable level of cortisol distinguishable from zero (Access Cortisol Calibrator S0) with 95% confidence is 0.4 µg/dL (11 nmol/L). This value is determined by processing a complete six point calibration curve, controls, and 10 replicates of the zero calibrator in multiple assays. The analytical sensitivity value is interpolated from the curve at the point that is two standard deviations from the mean measured zero calibrator signal.

Access
Immunoassay Systems

CORTISOL CALIBRATORS
REF 33605

Intended Use

The Access Cortisol Calibrators are intended to calibrate the Access Cortisol assay for the quantitative determination of cortisol levels in human serum, plasma (heparin, EDTA) and urine using the Access Immunoassay Systems.

Summary and Explanation

Quantitative assay calibration is the process by which samples with known analyte concentrations (i.e., assay calibrators) are tested like patient samples to measure the response. The mathematical relationship between the measured responses and the known analyte concentrations establishes the calibration curve. This mathematical relationship, or calibration curve, is used to convert RLU (Relative Light Unit) measurements of patient samples to specific quantitative analyte concentrations.

Traceability

The measurand (analyte) in the Access Cortisol Calibrators is traceable to USP reference material. Traceability process is based on EN ISO 17511.

The assigned values were established using representative samples from this lot of calibrator and are specific to the assay methodologies of the Access reagents. Values assigned by other methodologies may be different. Such differences, if present, may be caused by inter-method bias.

Product Information

Access Cortisol Calibrators
Cat. No. 33605: S0–S5, 4.0 mL/vial

- Provided ready to use.
- Store upright and refrigerate at 2 to 10°C.
- Mix contents by gently inverting before use. Avoid bubble formation.
- Stable until the expiration date stated on the label when stored at 2 to 10°C.
- Signs of possible deterioration are control values out of range.
- Refer to calibration card for exact concentrations.

S0:	Human serum with < 0.1% sodium azide, and 0.5% ProClin** 300. Contains 0 µg/dL (nmol/L) cortisol.
S1, S2, S3, S4, S5:	Cortisol (purified chemical compound) in human serum at levels of approximately 2, 5, 10, 25 and 60 µg/dL (55, 138, 276, 690 and 1655 nmol/L), respectively, with < 0.1% sodium azide, and 0.5% ProClin 300.
Calibration Card:	1

Warnings and Precautions

- For *in vitro* diagnostic use.
- Human source material used in the preparation of the reagent has been tested and found negative or non-reactive for Hepatitis B, Hepatitis C (HCV), and Human Immunodeficiency Virus (HIV-1 and HIV-2). Because no known test method can offer complete assurance that infectious agents are absent, handle reagents and patient samples as if capable of transmitting infectious disease.[22]
- Each serum/plasma pool used in the preparation of this product has been tested and found negative for the presence of fibrinogen.
- Sodium azide may react with lead and copper plumbing to form highly explosive metal azides. On disposal of liquids, flush with a large volume of water to prevent azide build-up.[11]
- Xi. Irritant: 0.5% ProClin 300.

R 43: May cause sensitization by skin contact.

S 28-37: After contact with skin, wash immediately with plenty of soap and water. Wear suitable gloves.

- The Material Safety Data Sheet (MSDS) is available upon request.

Procedure

Refer to the appropriate system manuals and/or Help system for information on calibration theory, configuring calibrators, calibrator test request entry, and reviewing calibration data.

Calibration Details

The Access Cortisol Calibrators are provided at six levels - zero and approximately 2, 5, 10, 25 and 60 µg/dL – prepared gravimetrically from purified cortisol and human serum. Assay calibration data are valid up to 28 days.

Calibrators run in duplicate.

Limitations of the Procedure

If there is evidence of microbial contamination or excessive turbidity in a reagent, discard the vial.

Access
Immunoassay Systems

CORTISOL CALIBRATOR S0
REF 33606

Intended Use
The Access Cortisol Calibrator S0 is intended for use with the Access Cortisol assay to dilute patient samples containing analyte concentrations greater than the analyte specific S5 calibrator.

Summary and Explanation
The analyte level in patient samples may exceed the level of the specific S5 calibrator. If a quantitative value is required, it will be necessary to dilute the samples in order to determine the analyte concentration.

Product Information
Access Cortisol Calibrator S0

Cat. No. 33606: 4 mL/vial

- Provided ready to use.
- Store upright and refrigerate at 2 to 10°C.
- Mix contents by gently inverting before use. Avoid bubble formation.
- Stable until the expiration date stated on the label when stored at 2 to 10°C.

S0:	Human serum with < 0.1% sodium azide, and 0.5% ProClin** 300. Contains 0 µg/dL (nmol/L) cortisol.

Warnings and Precautions
- For *in vitro* diagnostic use.
- Human source material used in the preparation of the reagent has been tested and found negative or non-reactive for Hepatitis B, Hepatitis C (HCV), and Human Immunodeficiency Virus (HIV-1 and HIV-2). Because no known test method can offer complete assurance that infectious agents are absent, handle reagents and patient samples as if capable of transmitting infectious disease.[22]
- Each serum/plasma pool used in the preparation of this product has been tested and found negative for the presence of fibrinogen.
- Sodium azide may react with lead and copper plumbing to form highly explosive metal azides. On disposal of liquids, flush with a large volume of water to prevent azide build-up.[11]
- Xi. Irritant: 0.5% ProClin 300.

R 43: May cause sensitization by skin contact.
S 28-37: After contact with skin, wash immediately with plenty of soap and water. Wear suitable gloves.

- The Material Safety Data Sheet (MSDS) is available upon request.

Procedure
Samples can be accurately measured within the analytical range of the lower limit of detection and the highest calibrator value of the specific assay. If a sample contains more analyte than the stated value of the S5 calibrator, dilute the sample following dilution instructions in the labeling under "Limitations of the Procedure" in the reagent pack section. Refer to the appropriate system manuals and/or Help system for instructions on how to enter a sample dilution in a test request.

Limitations of the Procedure

If there is evidence of microbial contamination or excessive turbidity in the reagent, discard the vial.

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Beckman Coulter, Inc.
250 S. Kraemer Blvd.
Brea, CA 92821 U.S.A.

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Beckman Coulter Ireland Inc.
Mervue Business Park,
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