ARCHITECT SYSTEM

0843

Free PSA

IVD REF 7K71

B7K710

77-4134/R3

Free PSA

This package insert must be read carefully prior to use. Package insert instructions must be carefully followed. Reliability of assay results cannot be guaranteed if there are any deviations from the instructions in this package insert.

Note Changes Highlighted

Revised June, 2007

Key to symbols used

REF	List number		Expiration date
IVD	*In Vitro* Diagnostic Medical Device	LOT	Lot number
2°C 8°C	Store at 2-8°C	REAGENT LOT	Reagent Lot
	Consult instructions for use	SAMPLE CUPS	Sample Cups
	Caution: consult accompanying documents	SEPTUMS	Septums
		CONTROL NO.	Control Number
SN	Serial Number	REACTION VESSELS	Reaction Vessels
	Manufacturer	REPLACEMENT CAPS	Replacement Caps

See **REAGENTS** section for a full explanation of symbols used in reagent component naming.

ABBOTT
Diagnostics Division

WARNING: The concentration of free PSA in a given specimen, determined with assays from different manufacturers, can vary due to differences in assay methods and reagent specificity. The results reported by the laboratory to the physician must include the identity of the free PSA assay used. Values obtained with different assay methods cannot be used interchangeably.

NAME

ARCHITECT Free PSA (Prostate Specific Antigen)

INTENDED USE

The ARCHITECT Free PSA assay is a Chemiluminescent Microparticle Immunoassay (CMIA) for the quantitative determination of free prostate specific antigen (PSA) in human serum. The ARCHITECT Free PSA assay is intended to be used in conjunction with the ARCHITECT Total PSA assay in men aged 50 years or older with total PSA values between 4 and 10 ng/mL and DRE non-suspicious for cancer to determine the % free PSA value. The ARCHITECT % free PSA value can be used as an aid in discriminating between prostate cancer and benign disease.

SUMMARY AND EXPLANATION OF TEST

Prostate specific antigen (PSA), a member of the human kallikrein gene family, is a serine protease with chymotrypsin-like activity.[1-3] The mature form of PSA is a single chain glycoprotein of 237 amino acids containing 7-8% carbohydrate as a single N-linked oligosaccharide side chain. PSA has a molecular weight of approximately 30,000 daltons.[1,3,4]

The major site of PSA production is the glandular epithelium of the prostate. PSA produced by the prostate is secreted into the seminal fluid in high concentrations. PSA is also present in urine and serum.[3] The function of PSA is the proteolytic cleavage of gel forming proteins in the seminal fluid resulting in liquification of the seminal gel and increased sperm mobility.[3,5] Low levels of PSA are found in the blood as a result of leakage of PSA from the prostate gland. Increasing levels of PSA are associated with prostatic pathology; including prostatitis, benign prostatic hyperplasia (BPH), and cancer of the prostate.[6-9]

PSA occurs in three major forms in blood. The major immunodetectable form is PSA complexed with the serine protease inhibitor, alpha-1-antichymotrypsin (PSA-ACT). Uncomplexed, or free PSA, is the other immunodetectable form of PSA in serum. The majority of free PSA in serum appears to be an inactive form that cannot complex with protease inhibitors and may be either a PSA zymogen or an enzymatically-inactive, cleaved form of PSA. A third form of PSA, a complex with alpha-2-macroglobulin (AMG), is not detectable with current immunoassays for PSA due to the engulfment and subsequent masking of PSA epitopes by the alpha-2-macroglobulin molecule.[2,3,10]

Immunoassays have been designed to detect free PSA, PSA-ACT complex, and total PSA (immunodetectable forms: e.g., free PSA and PSA-ACT).[10-12] Using these types of assays, the proportion of free PSA in the serum was found to be significantly higher in patients with BPH than in patients with prostate cancer ($p < 0.00001$).[12] The proportion, or percent, of free PSA determined by comparing the concentration of free PSA to the concentration of total PSA has been proposed as a way to improve the discrimination between BPH and prostate cancer, especially in those men with intermediate levels of total serum PSA.[10,12-17]

BIOLOGICAL PRINCIPLES OF THE PROCEDURE

The ARCHITECT Free PSA assay is a two step immunoassay to determine the presence of free PSA in human serum, using Chemiluminescent Microparticle Immunoassay (CMIA) technology with flexible assay protocols, referred to as Chemiflex.

In the first step, sample and anti-free PSA coated paramagnetic microparticles are combined. Free PSA present in the sample binds to the anti-free PSA coated microparticles. After washing, anti-PSA acridinium-labeled conjugate is added in the second step. Pre-Trigger and Trigger Solutions are then added to the reaction mixture; the resulting chemiluminescent reaction is measured as relative light units (RLUs). A direct relationship exists between the amount of free PSA in the sample and the RLUs detected by the ARCHITECT *i** optical system.

For additional information on system and assay technology refer to the ARCHITECT System Operations Manual, Section 3.

* *i* = immunoassay

REAGENTS

Reagent Kit, 100 Tests/500 Tests

NOTE: Reagent Kit Configurations vary based on order. Some kit sizes are not available in all countries or for use on all Architect *i* Systems. Please contact your local distributor.

ARCHITECT Free PSA Reagent Kit (7K71)

- **MICROPARTICLES** 1 or 4 Bottle(s) (6.6 mL for 100 test bottle/ 27.0 mL for 500 test bottle) Anti-Free PSA (mouse, monoclonal) coated Microparticles in TRIS buffer with protein (bovine) stabilizers. Preservative: Antimicrobial Agents.
- **CONJUGATE** 1 or 4 Bottle(s) (5.9 mL for 100 test bottle/26.3 mL for 500 test bottle) Anti-PSA (mouse, monoclonal) acridinium-labeled Conjugate in MES buffer with protein (bovine) stabilizers. Minimum concentration: 10 ng/mL. Preservative: Antimicrobial Agents.

Other Reagents

ARCHITECT *i* Pre-Trigger Solution

- **PRE-TRIGGER SOLUTION** Pre-Trigger Solution containing 1.32% (w/v) hydrogen peroxide.

ARCHITECT *i* Trigger Solution

- **TRIGGER SOLUTION** Trigger Solution containing 0.35N sodium hydroxide.

ARCHITECT *i* Wash Buffer

NOTE: Bottle and volume varies based on order.

- **WASH BUFFER** Wash Buffer containing phosphate buffered saline solution. Preservative: Antimicrobial Agent.

WARNINGS AND PRECAUTIONS

- **For *In Vitro* Diagnostic Use.**
- ⚠ **CAUTION:** This product requires the handling of human specimens. It is recommended that all human sourced materials be considered potentially infectious and handled with appropriate biosafety practices.

Safety Precautions

For product not classified as dangerous per European Directive 1999/45/EC as amended - Safety data sheet available for professional user on request.

- For a detailed discussion of safety precautions during system operation, refer to the ARCHITECT System Operations Manual, Section 8.

Handling Precautions

- Do not use reagent kits beyond the expiration date.
- **Do not mix reagents from different reagent kits.**
- Prior to loading the ARCHITECT Free PSA Reagent Kit on the system for the first time, the microparticle bottle requires mixing to resuspend microparticles that have settled during shipment. For microparticle mixing instructions, refer to the **PROCEDURE, Assay Procedure** section of this package insert.
- **Septums MUST be used to prevent reagent evaporation and contamination and to ensure reagent integrity. Reliability of assay results cannot be guaranteed if septums are not used according to the instructions in this package insert.**
- **To avoid contamination, wear clean gloves when placing a septum on an uncapped reagent bottle.**
- Once a septum has been placed on an open reagent bottle, **do not invert the bottle** as this will result in reagent leakage and may compromise assay results.
- Over time, residual liquids may dry on the septum surface. These are typically dried salts which have no effect on assay efficacy.
- For a detailed discussion of handling precautions during system operation, refer to the ARCHITECT System Operations Manual, Section 7.

Storage Instructions

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The ARCHITECT Free PSA Reagent Kit must be stored at 2-8°C and may be used immediately after removal from 2-8°C storage.
- When stored and handled as directed, reagents are stable until the expiration date.
- The ARCHITECT Free PSA Reagent Kit may be stored on-board the ARCHITECT *i* System for a maximum of 30 days. After 30 days, the reagent kit must be discarded. For information on tracking on-board time, refer to the ARCHITECT System Operations Manual, Section 5.
- Reagents may be stored on or off the ARCHITECT *i* System. If reagents are removed from the system, store them at 2-8°C (with septums and replacement caps) in an upright position. For reagents stored off the system, it is recommended that they be stored in their original trays and boxes to ensure they remain upright. **If the microparticle bottle does not remain upright (with a septum installed) while in refrigerated storage off the system, the reagent kit must be discarded.** After reagents are removed from the system, you must initiate a scan to update the on-board stability timer.

Indications of Reagent Deterioration

When a control value is out of the specified range, it may indicate deterioration of the reagents or errors in technique. Associated test results may be invalid and may require retesting. Assay recalibration may be necessary. For troubleshooting information, refer to the ARCHITECT System Operations Manual, Section 10.

INSTRUMENT PROCEDURE

- The ARCHITECT Free PSA assay file must be installed on the ARCHITECT *i* System from the ARCHITECT *i* Assay CD-ROM prior to performing the assay. For detailed information on assay file installation and on viewing and editing assay parameters, refer to the ARCHITECT System Operations Manual, Section 2.
- For information on printing assay parameters, refer to the ARCHITECT System Operations Manual, Section 5.
- For a detailed description of system procedures, refer to the ARCHITECT System Operations Manual.
- The default result unit for the ARCHITECT Free PSA assay is ng/mL. An alternate result unit, µg/L, may be selected for reporting results by editing assay parameter "Result concentration units", to µg/L. The conversion factor used by the system is 1.0.

SPECIMEN COLLECTION AND PREPARATION FOR ANALYSIS

- Only human serum may be used in the ARCHITECT Free PSA assay. Follow the tube manufacturer's processing instructions for serum collection tubes.
- It is recommended to obtain specimens for PSA testing prior to procedures involving manipulation of the prostate.
- Follow these package insert instructions as well as the specimen collection tube manufacturer's instructions for specimen collection and preparation for analysis. Refer to the specimen collection tube manufacturer's instructions for centrifugation time and speed.
- Insufficient processing of sample, or disruption of the sample during transportation may cause depressed results.
- For optimal results, serum specimens should be free of fibrin, red blood cells, or other particulate matter. Centrifuge specimens containing fibrin, red blood cells, or particulate matter prior to use to ensure consistency in the results.
- Ensure that complete clot formation in serum specimens has taken place prior to centrifugation. Some specimens, especially those from patients receiving anticoagulant or thrombolytic therapy may exhibit increased clotting time. If specimens are centrifuged before a complete clot forms, the presence of fibrin or particulate matter may cause erroneous results. Centrifuge specimens containing fibrin, red blood cells, or particulate matter. Note that interfering levels of fibrin may be present in samples that do not have obvious or visible particulate matter.
- If proper specimen collection and preparation cannot be verified, or if samples have been disrupted due to transportation or sample handling, an additional centrifugation step is recommended. Centrifugation conditions should be sufficient to remove particulate matter. Aliquots poured versus pipetted from specimen tube types that do not include serum separators are at higher risk of including particulates and generating depressed results.
- Failure to follow these instructions may result in depressed specimen results.
- Serum should be separated from the clot within 3 hours from time of collection and stored at 2-8°C for up to 24 hours. The serum, if not tested within 24 hours, should be frozen at -20°C or colder.[18,19]
- The ARCHITECT *i* System does not provide the capability to verify specimen type. It is the responsibility of the operator to verify the correct specimen type is used in the ARCHITECT Free PSA assay.
- Use caution when handling patient specimens to prevent cross contamination. Use of disposable pipettes or pipette tips is recommended.
- Do not use grossly hemolyzed specimens.
- **For optimal results, inspect all samples for bubbles. Remove bubbles with an applicator stick prior to analysis. Use a new applicator stick for each sample to prevent cross contamination.**
- Multiple freeze-thaw cycles of specimens should be avoided. Specimens must be mixed THOROUGHLY after thawing, by vortexing. Thawed samples containing red blood cells or particulate matter, **or which are hazy or cloudy in appearance** must be centrifuged prior to use to ensure consistency in the results.
- Specimens with obvious microbial contamination should not be used.

- When shipped, specimens must be packaged and labeled in compliance with applicable state, federal, and international regulations covering the transport of clinical specimens and infectious substances. Specimens that will not be assayed within 24 hours should be stored/shipped frozen. Prior to shipment, it is recommended that specimens be removed from the clot or serum separator.
- ARCHITECT Free PSA Calibrators and Controls should be mixed by gentle inversion prior to use.

PROCEDURE

Materials Provided

- 7K71 ARCHITECT Free PSA Reagent Kit

Materials Required but not Provided

- ARCHITECT *i* System
- ARCHITECT *i* Assay CD-ROM
- 7K71-01 ARCHITECT Free PSA Calibrators
- ARCHITECT *i* **PRE-TRIGGER SOLUTION**
- ARCHITECT *i* **TRIGGER SOLUTION**
- ARCHITECT *i* **WASH BUFFER**
- ARCHITECT *i* **REACTION VESSELS**
- ARCHITECT *i* **SAMPLE CUPS**
- ARCHITECT *i* **SEPTUMS**
- ARCHITECT *i* **REPLACEMENT CAPS**
- Pipettes or pipette tips (optional) to deliver the volumes specified on the patient or control order screen.
- For information on materials required for maintenance procedures, refer to the ARCHITECT System Operations Manual, Section 9.

Materials Available but not Provided

- 7K71-10 ARCHITECT Free PSA Controls

Assay Procedure

- Before loading the ARCHITECT Free PSA Reagent Kit on the system for the first time, the microparticle bottle requires mixing to resuspend microparticles that have settled during shipment:
  - Invert the microparticle bottle 30 times.
  - Visually inspect the bottle to ensure microparticles are resuspended. If microparticles are still adhered to the bottle, continue to invert the bottle until the microparticles have been completely resuspended.
  - Once the microparticles have been resuspended, remove and discard the cap. Wearing clean gloves, remove a septum from the bag. Squeeze the septum in half to confirm that the slits are open. Carefully snap the septum onto the top of the bottle.
  - **If the microparticles do not resuspend, DO NOT USE. Contact your local Abbott representative.**
- Order tests.
- Load the ARCHITECT Free PSA Reagent Kit on the ARCHITECT *i* System. Verify that all necessary assay reagents are present. Ensure that septums are present on all reagent bottles.
- The minimum sample cup volume is calculated by the system and is printed on the Orderlist report. No more than 10 replicates may be sampled from the same sample cup. To minimize the effects of evaporation verify adequate sample cup volume is present prior to running the test.
  - Priority: 140 µL for the first Free PSA test plus 90 µL for each additional Free PSA test from the same sample cup
  - ≤ 3 hours onboard: 150 µL for the first Free PSA test plus 90 µL for each additional Free PSA test from the same sample cup
  - > 3 hours onboard: additional sample volume is required. Refer to the ARCHITECT System Operations Manual, Section 5 for information on sample evaporation and volumes.
  - If using primary or aliquot tubes, use the sample gauge to ensure sufficient patient specimen is present.
  - To obtain the recommended volume requirements for the ARCHITECT Free PSA Calibrators and Controls, hold the bottles **vertically** and dispense 7 drops of each calibrator or 7 drops of each control into each respective sample cup.
- Load Samples
  - For information on loading samples, refer to the ARCHITECT System Operations Manual, Section 5.
- Press RUN. The ARCHITECT *i* System performs the following functions:
  - Moves the sample carrier to the aspiration point
  - Loads a reaction vessel (RV) into the process path
  - Aspirates and transfers sample into the RV
  - Advances the RV one position and transfers microparticles into the RV
  - Mixes, incubates and washes the reaction mixture
  - Adds conjugate to the RV
  - Mixes, incubates and washes the reaction mixture
  - Adds Pre-Trigger and Trigger Solutions
  - Measures chemiluminescent emission to determine the quantity of free PSA in the sample
  - Aspirates contents of RV to liquid waste and unloads RV to solid waste
  - Calculates the result
- For information on ordering patient specimens and controls, and general operating procedures, refer to the ARCHITECT System Operations Manual, Section 5.
- For optimal performance, it is important to follow the routine maintenance procedures defined in the ARCHITECT System Operations Manual, Section 9. If your laboratory requires more frequent maintenance, follow those procedures.

Specimen Dilution Procedures

Specimens cannot be diluted for the ARCHITECT Free PSA assay. Specimens with a free PSA value exceeding 30 ng/mL are flagged with the code "> 30.00".

Calibration

- To perform an ARCHITECT Free PSA calibration, test calibrators 1 and 2 in duplicate. A single sample of all levels of free PSA controls must be tested to evaluate the assay calibration. Ensure that assay control values are within the concentration ranges specified in the control package insert. Calibrators should be priority loaded.
- Calibration range: 0 - 30 ng/mL.
- Once an ARCHITECT Free PSA calibration is accepted and stored, all subsequent samples may be tested without further calibration unless:
  - A reagent kit with a new lot number is used.
  - Controls are out of range.
- For detailed information on how to perform an assay calibration, refer to the ARCHITECT System Operations Manual, Section 6.

QUALITY CONTROL PROCEDURES

The recommended control requirement for the ARCHITECT Free PSA assay is a single sample of all control levels tested once every 24 hours each day of use. If the quality control procedures in your laboratory require more frequent use of controls to verify test results, follow your laboratory-specific procedures. Ensure that assay control values are within the concentration ranges specified in the package insert.

Verification of Assay Claims

For protocols to verify package insert claims, refer to the ARCHITECT System Operations Manual, Appendix B. The ARCHITECT Free PSA assay belongs to method group 6.

RESULTS

The ARCHITECT Free PSA assay utilizes a 4 Parameter Logistic Curve fit data reduction method (4PLC, Y weighted) to generate a calibration curve.

Alternate Result Units

- The default result unit for the ARCHITECT Free PSA assay is ng/mL. When the alternate result unit, µg/L, is selected, the conversion factor used by the system is 1.0.
- Conversion Formula: (Concentration in ng/mL) x (1.0) = µg/L

Flags

- Some results may contain information in the Flags field. For a description of the flags that may appear in this field, refer to the ARCHITECT System Operations Manual, Section 5.

Calculation of ARCHITECT % Free PSA Value

- The ARCHITECT % Free PSA Value can be calculated when both ARCHITECT Free PSA and ARCHITECT Total PSA results are obtained for the same sample.
- The ARCHITECT *i* System (ARCHITECT software version 2.00 or higher) can automatically calculate a % free PSA value. For information on configuring a calculated assay, refer to the ARCHITECT System Operations Manual, Section 2.
- The % free PSA value is calculated by dividing the ARCHITECT Free PSA result by the ARCHITECT Total PSA result, then multiplying by 100.

LIMITATIONS OF THE PROCEDURE

- Specimens from patients who have received preparations of mouse monoclonal antibodies for diagnosis or therapy may contain human anti-mouse antibodies (HAMA). Such specimens may show either falsely elevated or depressed values when tested with assay kits which employ mouse monoclonal antibodies.[20,21] ARCHITECT Free PSA reagents contain a component that reduces the effect of HAMA reactive specimens. Additional clinical or diagnostic information may be required to determine patient status.
- Heterophilic antibodies in human serum can react with reagent immunoglobulins, interfering with *in vitro* immunoassays.[22] Patients routinely exposed to animals or animal serum products can be prone to this interference and anomalous values may be observed. Additional information may be required for diagnosis.
- The concentration of PSA in a given specimen, determined with assays from different manufacturers, can vary due to differences in assay methods, calibration, and reagent specificity.[3,23,24]
- Quality control samples may be produced by introducing seminal fluid PSA into a human serum matrix. PSA in serum and seminal fluid may exist in different forms. The concentration of PSA in these controls, determined with assays from different manufacturers, can vary due to differences in assay methods, calibration, reagent specificity, and the form of PSA that is present; therefore, it is important to use assay-specific values to evaluate control results.
- Digital rectal examination (DRE) may cause clinically significant changes in the free PSA and free/total PSA ratio in some patients.[25] Additionally, prostatic massage, ultrasonography, cystoscopy, and needle biopsy may cause clinically significant elevations.[25,26] Serum for free PSA determinations should be drawn before performing prostatic manipulations. PSA levels may also be increased following ejaculation.[27]
- Active free PSA in the serum at the time of blood sampling, can continue to complex with serum protease inhibitors, especially alpha-2-macroglobulin, resulting in a rapid decrease in PSA levels of the active form of free PSA.[28]
- Hormonal therapy may affect PSA expression; therefore, a low PSA level after any treatment that includes hormonal therapy may not adequately reflect the presence of residual or recurrent disease.[29]
- The measurement of free PSA or the free/total PSA ratio is not an absolute test for malignancy. The PSA values should be used in conjunction with information available from the clinical evaluation and other diagnostic procedures: e.g. symptoms, clinical impressions, digital rectal examination, transrectal ultrasound, etc. A prostatic biopsy is required for the diagnosis of cancer.

EXPECTED VALUES

[Values developed for the ARCHITECT *i*2000 analyzer.]

The distribution of ARCHITECT Free PSA values determined in apparently healthy males, males with BPH, and males with stage A and B prostate cancer is shown below.

Distribution of ARCHITECT Free PSA Values

		Percent (%)				
	Number of Subjects	0 - 0.5 (ng/mL)	>0.5 - 2.5 (ng/mL)	>2.5 - 5.0 (ng/mL)	>5.0 - 10 (ng/mL)	>10 (ng/mL)
Healthy Males	475	87.2	12.8	0.0	0.0	0.0
BPH	212	51.9	42.9	4.2	0.5	0.5
Stage A Prostate Cancer	26	38.5	42.3	11.5	3.8	3.8
Stage B Prostate Cancer	67	23.9	68.7	7.5	0.0	0.0

This distribution table is derived from 475 apparently healthy male subjects with no clinical evidence of prostate cancer, 212 males with BPH, and 93 males with active prostate cancer.

A prospective study of 430 subjects was conducted at nine clinical sites. A fixed cutoff of 26% was used to determine the sensitivity and specificity for subjects with a total PSA range of 4 to 10 ng/mL and a DRE non-suspicious for cancer. The total and free PSA values were determined using the ARCHITECT Free PSA and ARCHITECT Total PSA assays. At the fixed cutoff of 26%, the ARCHITECT Free PSA assay yielded a sensitivity of 91.1% and a specificity of 18.2%.

The distribution of ARCHITECT % free PSA values was determined for the same 430 subjects (307 biopsy negative and 123 biopsy positive). The % free PSA values were divided into five groups by the following boundaries: ≤ 10, > 10-15, > 15-20, > 20-26, and > 26. The table below shows the % free PSA values.

Distribution of ARCHITECT % Free PSA Values for Specimens with ARCHITECT Total PSA between 4 and 10 ng/mL

		Distribution of Subjects (%)				
	Number of Subjects	% Free PSA Ranges ≤ 10	>10-15	>15-20	>20-26	>26
Biopsy Negative	307	9.4	22.5	25.4	24.8	17.9
Biopsy Positive	123	27.6	30.9	17.9	15.4	8.1

The probabilities of prostate cancer given the value in specific ranges for % free PSA were calculated based on a logistic regression model using the same group of subjects as above. Prostate cancer probabilities associated with % free PSA values are dependent on the disease prevalence within the study population.[30]

In this study, the probabilities of prostate cancer are representative of a patient population for both screening and referral sites with an overall disease prevalence of approximately 29%.[31] The table below shows the distribution of cancer probabilities of % free PSA using the same study population adjusted for different rates of disease prevalence.

Probability of Prostate Cancer by Disease Prevalence for Subjects with ARCHITECT Total PSA between 4 and 10 ng/mL and DRE Non-suspicious for Cancer

Disease Prevalence Rate (%)	% Free PSA Ranges				
	≤ 10	>10-15	>15-20	>20-26	>26
25[32]	44.0	32.9	23.4	16.0	10.6
29	48.6	37.1	26.9	18.6	12.5
35	56.0	44.2	33.1	23.5	16.1

The estimates of cancer probability may be influenced by the presence of other risk factors.

SPECIFIC PERFORMANCE CHARACTERISTICS

Precision[a]

The Architect Free PSA assay precision is ≤ 8%. Precision was determined as described in the National Committee for Clinical Laboratory Standards (NCCLS) Protocol EP5-A.[33] Six samples, consisting of three serum based panels and three free PSA controls, were assayed using three instruments, in replicates of two at two separate times per day for twenty days (n=80 for each sample), using a single lot of reagents and a single calibration. Data from this study are summarized in the following table.*

Reproducibility of ARCHITECT Free PSA

Sample	Instrument	Mean Free PSA (ng/mL)	Within Run SD	Within Run %CV	Total SD	Total %CV
Low Control	1	0.397	0.0076	1.9	0.0093	2.3
	2	0.400	0.0079	2.0	0.0085	2.1
	3	0.383	0.0080	2.1	0.0104	2.7
Medium Control	1	0.992	0.0130	1.3	0.0154	1.6
	2	1.000	0.0182	1.8	0.0209	2.1
	3	0.962	0.0248	2.6	0.0265	2.7
High Control	1	6.787	0.1175	1.7	0.1642	2.4
	2	6.966	0.1630	2.3	0.2094	3.0
	3	6.802	0.1241	1.8	0.1565	2.3
Panel 1	1	0.136	0.0029	2.1	0.0035	2.6
	2	0.139	0.0033	2.4	0.0035	2.5
	3	0.133	0.0030	2.3	0.0032	2.4
Panel 2	1	2.808	0.0447	1.6	0.0626	2.2
	2	2.887	0.0641	2.2	0.0788	2.7
	3	2.778	0.0591	2.1	0.0673	2.4
Panel 3	1	10.500	0.1853	1.8	0.3772	3.6
	2	10.952	0.3054	2.8	0.4507	4.1
	3	10.726	0.2662	2.5	0.4284	4.0

* Representative performance data are shown. Results obtained at individual laboratories may vary.

MEASUREMENT RANGE

The measurement (reportable) range of the ARCHITECT Free PSA assay is 0.008 ng/mL to 30 ng/mL, as defined by the analytical sensitivity lower limit and the upper limit of the calibration range. For patient specimens with a free PSA assay value exceeding 30 ng/mL refer to the sample dilution procedures section of this package insert.

Analytical Sensitivity[a]

The sensitivity of the ARCHITECT Free PSA assay was calculated to be less than 0.008 ng/mL. This sensitivity is defined as the concentration at two standard deviations above the mean RLU for the ARCHITECT Free PSA MasterCheck Level 0 and represents the lowest measurable concentration of free PSA that can be distinguished from zero.

Analytical Specificity[a]

The specificity of the ARCHITECT Free PSA assay was determined by testing sera containing the following compounds. These compounds showed less than or equal to 10% interference in the ARCHITECT Free PSA assay at the levels indicated.

INTERFERING SUBSTANCES

Test Compound	Concentration
Bilirubin	20 mg/dL
Hemoglobin	500 mg/dL
Total Protein	2.0 g/dL & 12.0 g/dL
Prostatic Acid Phosphatase	1000 ng/mL
Triglycerides	3000 mg/dL
Hytrin	20 µg/mL
Proscar	25 µg/mL
Flomax	1 µg/mL

Carryover[a]

No significant carryover (mean less than 4 PPM) was observed when a sample containing 7,167.5 ng/mL of free PSA was assayed.

To maintain optimum system performance and reduce the potential of carryover due to protein build up on the sample pipettor probe, it is important to follow the routine maintenance procedures defined in Section 9 of the ARCHITECT System Operations Manual, or, for troubleshooting information refer to the ARCHITECT System Operations Manual, Section 10.

High Dose Hook[a]

High dose hook is a phenomenon whereby very high level specimens may read within the dynamic range of the assay. For the ARCHITECT Free PSA assay, no high dose hook effect was observed when samples containing up to 2,400 ng/mL of free PSA were assayed.

[a] [Values developed for the ARCHITECT *i*2000 analyzer.]

Accuracy by Correlation

The ARCHITECT Free PSA assay reagents were compared on the ARCHITECT *i*2000/*i*2000$_{SR}$ and the ARCHITECT *i*1000$_{SR}$ platforms. The results of specimen testing are shown below.

Statistical Method	Number of Observations	Intercept	Slope	Correlation Coefficient
Least Squares	149	0.00	0.99	1.000
Passing-Bablok*	149	0.00	0.98	1.000

* A linear regression method with no special assumptions regarding the distribution of the samples and the measurement errors.[34]

In this evaluation, serum specimens tested ranged from 0.009 ng/mL to 22.707 ng/mL, by the *i*1000$_{SR}$ platform.

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