ARCHITECT HAVAb-IgG

REF 6C29-27
REF 6C29-22

en
HAVAb-IgG
6C29
G5-9209/R01
B6C2Q0

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.

NAME

ARCHITECT HAVAb-IgG

INTENDED USE

The ARCHITECT HAVAb-IgG assay is a chemiluminescent microparticle immunoassay (CMIA) for the qualitative detection of IgG antibody to hepatitis A virus (IgG anti-HAV) in human serum and plasma.

The ARCHITECT HAVAb-IgG assay is indicated as an aid in the diagnosis of hepatitis A viral infection or detection of IgG anti-HAV.

SUMMARY AND EXPLANATION OF THE TEST

The ARCHITECT HAVAb-IgG assay determines the presence of IgG anti-HAV in human serum and plasma. The presence of IgG anti-HAV, with a nonreactive IgM anti-HAV test result, implies past infection with hepatitis A virus (HAV) or vaccination against HAV.[1]

BIOLOGICAL PRINCIPLES OF THE PROCEDURE

The ARCHITECT HAVAb-IgG assay is a two-step immunoassay for the qualitative detection of IgG anti-HAV in human serum and plasma using CMIA technology with flexible assay protocols, referred to as Chemiflex.

1. Sample, assay diluent, and hepatitis A virus (human) coated paramagnetic microparticles are combined. The IgG anti-HAV present in the sample binds to the hepatitis A virus (human) coated microparticles.
2. After washing, the anti-human IgG acridinium-labeled conjugate is added to create a reaction mixture.
3. Following another wash cycle, Pre-Trigger and Trigger Solutions are added to the reaction mixture.
4. The resulting chemiluminescent reaction is measured as relative light units (RLUs). There is a direct relationship between the amount of IgG anti-HAV in the sample and the RLUs detected by the ARCHITECT iSystem optics.

The presence or absence of IgG anti-HAV in the specimen is determined by comparing the chemiluminescent signal in the reaction to the cutoff signal determined from an active calibration.

Specimens with signal to cutoff (S/CO) values ≥ 1.00 are considered reactive for IgG anti-HAV. Specimens with S/CO values < 1.00 are considered nonreactive.

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

REAGENTS

Kit Contents

ARCHITECT HAVAb-IgG 6C29

NOTE: Some kit sizes are not available in all countries or for use on all ARCHITECT iSystems. Please contact your local distributor.

REF	6C29-27	6C29-22
Σ	100	400
MICROPARTICLES	1 x 6.6 mL	4 x 6.6 mL
CONJUGATE	1 x 5.9 mL	4 x 5.9 mL
ASSAY DILUENT	1 x 10.0 mL	4 x 10.0 mL

MICROPARTICLES Hepatitis A virus (human) coated microparticles in MOPS/KCl buffer. Minimum concentration: 0.08% solids. Preservatives: ProClin 300.

CONJUGATE Anti-human IgG (mouse monoclonal) acridinium-labeled conjugate in MES/NaCl buffer with protein (bovine) stabilizer. Minimum concentration: 0.01 µg/mL. Preservatives: ProClin 300 and ProClin 950.

ASSAY DILUENT HAVAb-IgG Assay Diluent containing protein (goat, mouse and casein) stabilizer in TRIS buffer. Preservatives: ProClin 300 and ProClin 950.

Other Reagents

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

TRIGGER SOLUTION ARCHITECT Trigger Solution containing 0.35 N sodium hydroxide.

WASH BUFFER ARCHITECT Wash Buffer containing phosphate buffered saline solution. Preservatives: antimicrobial agents.

Warnings and Precautions

- IVD
- For *In Vitro* Diagnostic Use

Safety Precautions

CAUTION: This product contains human-sourced and/or potentially infectious components. Refer to the **REAGENTS** section of this package insert. No known test method can offer complete assurance that products derived from human sources or inactivated microorganisms will not transmit infection. Therefore, all human-sourced materials should be considered potentially infectious. It is recommended that these reagents and human specimens be handled in accordance with the OSHA Standard on Bloodborne Pathogens. Biosafety Level 2 or other appropriate biosafety practices should be used for materials that contain or are suspected of containing infectious agents.[2-5]

The following warnings and precautions apply to: MICROPARTICLES / CONJUGATE / ASSAY DILUENT	
	
WARNING	Contain methylisothiazolones.
H317	May cause an allergic skin reaction.
Prevention	
P261	Avoid breathing mist / vapors / spray.
P272	Contaminated work clothing should not be allowed out of the workplace.
P280	Wear protective gloves / protective clothing / eye protection.
Response	
P302+P352	IF ON SKIN: Wash with plenty of water.
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 in accordance with local regulations.

Safety Data Sheets are available at www.abbottdiagnostics.com or contact your local representative.

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

Reagent Handling

- Do not use reagent kits beyond the expiration date.
- **Do not pool reagents within a kit or between kits.**
- Before loading the reagent kit on the system for the first time, the microparticle bottle requires mixing to resuspend microparticles that may 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 and have no effect on assay efficacy.
- When handling conjugate vials, change gloves that have contacted human serum or plasma, since introduction of human IgG will result in a neutralized conjugate.

For a detailed discussion of handling precautions during system operation, refer to the ARCHITECT System Operations Manual, Section 7.

Reagent Storage

When stored and handled as directed, reagents are stable until the expiration date.

	Storage Temperature	Maximum Storage Time	Additional Storage Instructions
Unopened/ Opened*	2-8°C	Until expiration date	May be used immediately after removal from 2-8°C storage. Store in upright position.
On board	System temperature	30 days	Discard after 30 days. For information on tracking onboard time, refer to the ARCHITECT System Operations Manual, Section 5.

* Reagents may be stored on or off the ARCHITECT iSystem. 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.** For information on unloading reagents, refer to the ARCHITECT System Operations Manual, Section 5.

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 are invalid, and samples must be retested. Assay recalibration may be necessary. For troubleshooting information, refer to the ARCHITECT System Operations Manual, Section 10.

INSTRUMENT PROCEDURE

The ARCHITECT HAVAb-IgG assay file must be installed on the ARCHITECT iSystem from an ARCHITECT iSystem Assay CD-ROM prior to performing the assay.

For detailed information on assay file installation and 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.

SPECIMEN COLLECTION AND PREPARATION FOR ANALYSIS

Specimen Types

Verified specimen types to be used with this assay:

Specimen Types	Collection Tubes
Serum	Serum
	Serum separator tubes
Plasma	Potassium EDTA
	Sodium citrate
	Sodium heparin
	ACD
	CPDA-1
	CPD

- Other specimen collection tube types have not been tested with this assay.
- This assay was designed and validated for use with human serum or plasma from individual patient and donor specimens.
- Performance has not been established for the use of cadaveric specimens or the use of body fluids other than human serum or plasma.
- The instrument does not provide the capability to verify specimen type. It is the responsibility of the operator to verify that the correct specimen types are used in the assay.

Specimen Conditions

- Do not use specimens with the following conditions:
  - heat-inactivated
  - pooled
  - grossly hemolyzed
  - obvious microbial contamination

- For accurate results, serum and plasma specimens should be free of fibrin, red blood cells, and other particulate matter. Serum specimens from patients receiving anticoagulant or thrombolytic therapy may contain fibrin due to incomplete clot formation.
- To prevent cross contamination, use of disposable pipettes or pipette tips is recommended.

Preparation for Analysis

- Follow the tube manufacturer's processing instructions for collection tubes. Gravity separation is not sufficient for specimen preparation.

  Specimens must be separated from clots or red blood cells using centrifugation, as recommended by the tube manufacturer.
- Mix thawed specimens thoroughly by low speed vortexing or by inverting 10 times. Visually inspect the specimens. If layering or stratification is observed, continue mixing until specimens are visibly homogeneous.
- 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 the specimen is centrifuged before a complete clot forms, the presence of fibrin may cause erroneous results or aspiration errors.
- Specimens from heparinized patients may be partially coagulated and erroneous results could occur due to the presence of fibrin. To prevent this phenomenon, draw the specimen prior to heparin therapy.
- To ensure consistency in results, specimens must be transferred to a centrifuge tube and centrifuged at ≥ 10,000 RCF (Relative Centrifugal Force) for 10 minutes before testing if
  - they contain fibrin, red blood cells, or other particulate matter or
  - they require repeat testing.

  Transfer clarified specimens to a sample cup or secondary tube for testing.
- Centrifuge at ≥ 10,000 RCF for 10 minutes to remove particulate matter and ensure consistency in the results.
- Centrifuged specimens with a lipid layer on the top must be transferred to a sample cup or secondary tube. Care must be taken to transfer only the clarified specimen without the lipemic material.
- Inspect all specimens for bubbles. Remove bubbles with an applicator stick before analysis. Use a new applicator stick for each specimen to prevent cross contamination.

Specimen Storage

Specimen Type	Storage Temperature	Maximum Storage Time
Serum or plasma	2-8°C	≤ 14 days

If testing will be delayed more than 14 days, remove serum or plasma from the clot, serum separator, or red blood cells and store frozen at - 10°C or colder.

No qualitative performance differences were observed between experimental controls and 21 nonreactive or 21 spiked reactive specimens subjected to 6 freeze/thaw cycles; however, multiple freeze/thaw cycles should be avoided.

No qualitative performance differences were observed between experimental controls and 19 nonreactive or 19 spiked reactive specimens tested with elevated levels of bilirubin (≤ 20 mg/dL), triglycerides (≤ 3,000 mg/dL), protein (≤ 12 g/dL), or hemoglobin (≤ 500 mg/dL).

No qualitative performance differences were observed between experimental controls and 21 nonreactive or 21 spiked reactive specimens tested with elevated levels of red blood cells (≤ 0.4% v/v).

Avoid multiple freeze/thaw cycles.

Specimen Shipping

- Package and label specimens in compliance with applicable state, federal, and international regulations covering the transport of clinical specimens and infectious substances.
- It is recommended that specimens be removed from the clot, serum separator, or red blood cells.
- Ship at 2-8°C (wet ice) or at -10°C or colder (dry ice).
- Do not exceed the storage time limitations listed above.

PROCEDURE

Materials Provided

6C29 ARCHITECT HAVAb-IgG Reagent Kit

Materials Required but not Provided

- ARCHITECT HAVAb-IgG Assay file obtained from the ARCHITECT iSystem e-Assay CD-ROM found on www.abbottdiagnostics.com.
- 6C29-01 ARCHITECT HAVAb-IgG Calibrator
- 6C29-10 ARCHITECT HAVAb-IgG Controls
- ARCHITECT Pre-Trigger Solution
- ARCHITECT Trigger Solution
- ARCHITECT Wash Buffer
- ARCHITECT Reaction Vessels
- ARCHITECT Sample Cups
- ARCHITECT Septum
- ARCHITECT 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.

Assay Procedure

- Before loading the reagent kit on the system for the first time, the microparticle bottle requires mixing to resuspend microparticles that may have settled during shipment. After the first time the microparticles have been loaded, no further mixing is required.
  - **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.
  - **If the microparticles do not resuspend, DO NOT USE. Contact your local Abbott representative.**
  - Once the microparticles have been resuspended, remove and discard the cap. Wearing clean gloves, remove a septum from the bag. Carefully snap the septum onto the top of the bottle.
- Load the reagent kit on the ARCHITECT iSystem.
  - Verify that all necessary reagents are present.
  - Ensure that septums are present on all reagent bottles.
- Order calibration, if necessary.
  - For information on ordering calibrations, refer to the ARCHITECT System Operations Manual, Section 6.
- Order tests.
  - For information on ordering patient specimens and controls and for general operating procedures, refer to the ARCHITECT System Operations Manual, Section 5.
- Minimum sample cup volume is calculated by the system and printed on the Orderlist report. To minimize the effects of evaporation, verify adequate sample cup volume is present prior to running the test.

  Maximum number of replicates sampled from the same sample cup: 10

- Priority:
  Sample volume for first test: 75 µL
  Sample volume for each additional test from same sample cup: 25 µL
- ≤ 3 hours on board:
  Sample volume for first test: 150 µL
  Sample volume for each additional test from same sample cup: 25 µL
- > 3 hours on board: Additional sample volume 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.

- Prepare ARCHITECT HAVAb-IgG Calibrator 1 and Controls.
  - Mix calibrator(s) and controls by gentle inversion before use.
  - Hold bottles **vertically** and dispense recommended volumes into each respective sample cup.
  - Recommended volumes:
    for each calibrator: 4 drops
    for each control: 4 drops
- Load samples.
  - For information on loading samples, refer to the ARCHITECT System Operations Manual, Section 5.
- Press RUN.
- For additional information on principles of operation, refer to the ARCHITECT System Operations Manual, Section 3.
- For optimal performance, it is important to perform routine maintenance as described in the ARCHITECT System Operations Manual, Section 9. Perform maintenance more frequently when required by laboratory procedures.

Specimen Dilution Procedures

Specimens cannot be diluted for the ARCHITECT HAVAb-IgG assay.

Calibration

- Test Calibrator 1 in replicates of three by ordering a Calibration for the ARCHITECT HAVAb-IgG assay from the Orders menu. The calibrator should be priority loaded.
  A single sample of each control level must be tested to evaluate the assay calibration. Ensure that assay control values are within the ranges specified in the respective control package insert.
- Once an ARCHITECT HAVAb-IgG 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 or
  - 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 HAVAb-IgG assay is that a single sample of each control be tested once every 24 hours each day of use for each reagent lot. If the quality control procedures in your laboratory require more frequent use of controls to verify test results, follow your laboratory-specific procedures.

The ARCHITECT HAVAb-IgG Control values must be within the acceptable ranges specified in the control package insert. If a control is out of its specified range, the associated test results are invalid and must be retested. Recalibration may be indicated.

Verification of Assay Claims

For protocols to verify package insert claims, refer to the ARCHITECT System Operations Manual, Appendix B.

The ARCHITECT HAVAb-IgG assay belongs to method group 5.

RESULTS

Calculation

The ARCHITECT iSystem calculates cutoff RLU (CO) from the mean RLU value of three Calibrator 1 replicates and stores the result.

- Cutoff RLU = Calibrator 1 mean RLU Value x 0.29
- The cutoff RLU is stored for each reagent lot calibration.

The ARCHITECT iSystem then calculates a result based on the ratio of the sample RLU to the cutoff RLU (S/CO) for each specimen and control.

- Example
  If the sample RLU = 4730 and the
  Cutoff RLU = 1920
  4730/1920 = 2.46
  S/CO = 2.46

Interpretation of Results

ARCHITECT HAVAb-IgG Results

Results (S/CO)	Interpretation
< 1.00	Nonreactive (NR)
≥ 1.00	Reactive (R)

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.

LIMITATIONS OF THE PROCEDURE

- If the IgG anti-HAV results are inconsistent with clinical evidence, additional testing is recommended.
- For diagnostic purposes, results should be used in conjunction with patient history and other hepatitis markers for diagnosis of acute or chronic infection.
- Specimens from heparinized patients may be partially coagulated and erroneous results could occur due to the presence of fibrin. To prevent this phenomenon, draw the specimen prior to heparin therapy.
- 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 that employ mouse monoclonal antibodies.[6, 7] ARCHITECT HAVAb-IgG 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. Patients routinely exposed to animals or to animal serum products can be prone to this interference, and anomalous values may be observed. Additional information may be required for diagnosis.[8]

SPECIFIC PERFORMANCE CHARACTERISTICS

Precision

The ARCHITECT HAVAb-IgG assay demonstrated imprecision of ≤ 10% for Calibrator 1 and Positive Control in a study where a panel, consisting of one diluted IgG anti-HAV reactive specimen, three control lots, and three calibrator lots, was tested. The study was performed at one external site, running one ARCHITECT iSystem (and only one lot of negative control), and one internal site, running two ARCHITECT iSystems. Both sites tested all panel members with three reagent lots and evaluated them with each calibrator lot. Each combination of instruments, control lots, calibrator lots, and reagent lots was tested in four runs. The controls and calibrator were tested in replicates of three on each run. The diluted IgG anti-HAV reactive specimen was tested in replicates of four on each run. The intra-run and inter-run standard deviation (SD) and percent coefficient of variation (%CV) were analyzed with a variance components analysis[9] using a mixed analysis of variance model.[10] The data from this study are summarized in Table 1.*

Table 1: ARCHITECT HAVAb-IgG Precision

			Intra-assay		Inter-assay[a]	
Panel Member	**n**	**Mean**	**SD**	**%CV**	**SD**	**%CV**
Calibrator 1 (RLUs)	324	7758	478.5	6.2	488.6	6.3
Negative Control (S/CO)	756	0.13	0.020	16.12	0.020	16.12
Positive Control (S/CO)	972	2.32	0.141	6.08	0.164	7.05
Diluted Specimen (S/CO)	432	1.72	0.101	5.87	0.107	6.23

[a] Inter-assay variability contains intra-assay variability.

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

Specificity

- The ARCHITECT HAVAb-IgG assay demonstrated a specificity of ≥ 99.17%* in a study testing serum and plasma specimens from the following populations:
  - Randomly selected blood donors (BD)
  - Randomly selected hospitalized patients (HP)

  The testing was performed at one clinical site and one internal site. Of 1855 specimens initially tested, 879 specimens were reactive by both ARCHITECT HAVAb-IgG and AxSYM HAVAB 2.0. In addition, 8 other specimens were found to be reactive by supplemental testing. Therefore, these 887 specimens were considered true IgG anti-HAV reactives and were excluded from the specificity calculation. The data from the remaining 968 specimens from this study are summarized in Table 2.*

Table 2: ARCHITECT HAVAb-IgG Specificity Results

Population	**n**	**False Reactives**	**Specificity (%)**	**Specificity 95% CI[a]**
BD	474	3	99.37	98.16 - 99.87
HP	494	5	98.99	97.65 - 99.67
Total	968	8	99.17	98.38 - 99.64

[a] CI = Confidence Interval

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

- Of 210 specimens initially tested from populations of interfering substances (IS) and patients at increased risk for HAV infection (HR), 118 specimens were reactive by both ARCHITECT HAVAb-IgG and AxSYM HAVAB 2.0. These 118 specimens were considered true IgG anti-HAV reactives and were excluded from the study. The data from the remaining 92 specimens from this study are summarized in Table 3.*

Table 3: ARCHITECT HAVAb-IgG Potentially Interfering Substances and High Risk Specimens

Population	**n**	**Initial Reactives**	**Repeat Reactives**
IS[b]	48	4	4[c]
HR[d]	44	3	3[e]

[b] Specimens containing the following potentially interfering substances were evaluated for cross-reactivity by ARCHITECT HAVAb-IgG:

- CMV-IgG
- CMV-IgM
- Chronic HBV
- HCV
- Recovered HBV
- HIV-1
- HSV
- Flu vaccines
- Alcoholic cirrhosis
- Antinuclear antibodies (ANA)
- Elevated IgM
- Rheumatoid factor
- Elevated IgG
- HAMA

[c] The repeat reactives in the IS population were from 1 HIV-1 specimen, 1 HAMA specimen, and 2 rheumatoid factor specimens.

[d] The HR population included specimens from hemophilia patients, intravenous drug users, and men who have had sex with men.

[e] The repeat reactives in the HR population were from 1 intravenous drug user specimen and 2 hemophiliac specimens.

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

Sensitivity

The ARCHITECT HAVAb-IgG assay demonstrated a sensitivity of ≥ 98% in a study testing serum and plasma specimens drawn from individuals vaccinated against HAV and patients who had recovered from acute HAV infection. The data from this study are summarized in Table 4.*

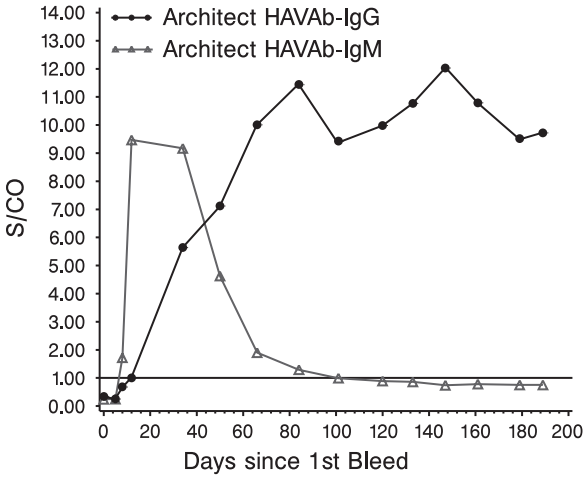
Table 4: ARCHITECT HAVAb-IgG Sensitivity Results

Population	**n**	**Reactive**	**Nonreactive**
Vaccinated	101	101	0
Recovered from HAV Infection	45	45	0

Testing by ARCHITECT HAVAb-IgG and ARCHITECT HAVAb-IgM was performed on serial bleed panels. The reactive ARCHITECT HAVAb-IgG result is indicative of seroconversion from IgM anti-HAV to IgG anti-HAV.

* Representative data for one of the panels is provided in Figure 1.*

Figure 1



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

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Key to Symbols

	Caution
	Consult instructions for use
	Manufacturer
	Sufficient for
	Temperature limitation
	Use by/Expiration date
ASSAY DILUENT	Assay Diluent
CONJUGATE	Conjugate
CONTAINS: AZIDE	Contains Sodium Azide. Contact with acids liberates very toxic gas.
CONTROL NO.	Control Number
IVD	*In Vitro* Diagnostic Medical Device
LOT	Lot Number
MICROPARTICLES	Microparticles
PRE-TRIGGER SOLUTION	Pre-Trigger Solution
PRODUCT OF GERMANY	Product of Germany
REACTION VESSELS	Reaction Vessels
REAGENT LOT	Reagent Lot
REF	List Number
REPLACEMENT CAPS	Replacement Caps
SAMPLE CUPS	Sample Cups
SEPTUM	Septum
SN	Serial number
TRIGGER SOLUTION	Trigger Solution
WARNING: SENSITIZER	Warning: May cause an allergic reaction.
WASH BUFFER	Wash Buffer

The following U.S. Patents are relevant to the ARCHITECT iSystem or its components. There are other such patents and patent applications in the United States and worldwide.

5 468 646	5 543 524	5 545 739
5 565 570	5 669 819	5 783 699

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