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HBsAg Reagent Kit
Antibody to Hepatitis B Surface Antigen (Mouse Monoclonal IgG and IgM)

Revised June 2019.

REF 06P0260

Instructions must be carefully followed. Reliability of assay results cannot be guaranteed if there are any deviations from these instructions.

■NAME

Alinity s HBsAg Reagent Kit
Antibody to Hepatitis B Surface Antigen (Mouse Monoclonal IgG and IgM)

■INTENDED USE

The Alinity s HBsAg assay is a chemiluminescent microparticle immunoassay (CMIA) used for the qualitative detection of hepatitis B surface antigen (HBsAg) in human serum and plasma specimens on the Alinity s System.

The Alinity s HBsAg assay is intended to screen individual human donors, including volunteer donors of whole blood and blood components, and other living donors for the presence of HBsAg. The assay is also intended for use in testing serum and plasma specimens to screen organ donors when specimens are obtained while the donor's heart is still beating, and in testing serum specimens to screen cadaveric (non-heart-beating) donors. It is not intended for use on cord blood specimens.

■ SUMMARY AND EXPLANATION OF THE TEST

Hepatitis B virus (HBV) is the causative agent of hepatitis B. An estimated 257 million individuals are living with hepatitis B virus infection. More than 887 000 people die annually of HBV-related liver disease. Globally, chronic hepatitis B is a major cause of liver cirrhosis and hepatocellular carcinoma.[1, 2]

HBV belongs to the hepadnavirus family and is a partially double-stranded DNA virus. It consists of a central core nucleocapsid containing the viral DNA, DNA polymerase, and a surrounding envelope consisting of HBsAg, which is expressed during HBV infection. Additionally, HBV-infected cells produce spherical or long filamentous particles that consist of excess HBsAg.[3]

The virus is divided into multiple major serotypes (e.g., adr, adw, ayr, ayw) based on antigenic determinants present on the envelope proteins, and into at least 8 genotypes (A–H) according to overall nucleotide sequence variation of the genome. Differences among genotypes can affect the disease severity, course and likelihood of complications, response to treatment, and possibly vaccine protection.[2-5]

HBV, unlike other DNA viruses, replicates through a reverse transcription step. The reverse transcription process lacks proofreading capability; therefore, HBV is subject to a mutation rate more than 10 times higher than the mutation rate of other DNA viruses. Surface antigen gene mutations may cause changes in the antigenic structure of HBsAg, resulting in reduced recognition by some antibodies to HBsAg.[6-11]

HBV is transmitted through sexual, parenteral, and perinatal routes. Transmission may also occur through transfusion of HBV-contaminated blood and blood products. After infection with HBV, HBsAg is the first antigenic marker, appearing 1 to 12 weeks after exposure and 2 to 6 weeks before the onset of clinical symptoms. HBsAg persists during this acute phase and clears late in the convalescence period. Failure to clear HBsAg within 6 months indicates a chronic hepatitis B infection.[2, 3]

HBsAg assays are used to screen blood and blood products for the presence of HBsAg to prevent transmission of HBV infection to recipients of blood or blood products. HBsAg assays are also used to screen organ and tissue donors. In addition, HBsAg assays are used to identify persons infected with HBV and to monitor the status of infected individuals in combination with other hepatitis B serological markers. Testing for HBsAg as part of an antenatal screening program may identify HBV infected mothers and allow for appropriate immunoprophylaxis of the newborn.[12-18]

■BIOLOGICAL PRINCIPLES OF THE PROCEDURE

This assay is for the qualitative detection of HBsAg in human serum and plasma using chemiluminescent microparticle immunoassay (CMIA) technology.

Sample, anti-HBs coated paramagnetic microparticles, and anti-HBs acridinium-labeled conjugate are combined to create a reaction mixture and incubated. The HBsAg present in the sample binds to the anti-HBs coated microparticles and to the anti-HBs acridinium-labeled conjugate. The mixture is washed. Ancillary wash buffer is added and incubated. Following a wash cycle, Pre-Trigger and Trigger Solutions are added.

The resulting chemiluminescent reaction is measured as relative light units (RLU). There is a direct relationship between the amount of HBsAg in the sample and the RLU detected by the system optics. The presence or absence of HBsAg in the sample is determined by comparing the chemiluminescent RLU in the reaction to the cutoff RLU determined from an active calibration.

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

■REAGENTS

Kit Contents

Alinity s HBsAg Reagent Kit 06P02

Volumes (mL) listed in the table below indicate the volume per cartridge.

REF	06P0260
Tests per cartridge	500
Number of cartridges per kit	10
Tests per kit	5000
MICROPARTICLES	27.0 mL
CONJUGATE	26.7 mL
ANCILLARY WASH BUFFER	26.5 mL

MICROPARTICLES Anti-HBs (mouse, monoclonal, IgM, IgG) coated microparticles in MES buffer with protein (bovine) stabilizer and surfactant. Minimum concentration: 0.08% solids. Preservatives: ProClin 300 and ProClin 950.

CONJUGATE Anti-HBs (mouse, monoclonal, IgG) and anti-HBs (goat IgG) acridinium-labeled conjugate in phosphate buffer with human plasma and protein (bovine, goat, mouse) stabilizers and surfactant. Minimum concentration: 0.35 µg/mL. Preservatives: ProClin 300, ProClin 950, and sodium azide.

ANCILLARY WASH BUFFER MES buffer and surfactant. Preservatives: ProClin 300 and ProClin 950.

Warnings and Precautions

- IVD
- For *In Vitro* Diagnostic Use
- Performance characteristics of this product have not been established for laboratory diagnosis of HBV infection.

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.[19-22]

The human plasma used in the conjugate is nonreactive for HBsAg, HIV-1 RNA or HIV-1 Ag, anti-HIV-1/HIV-2, anti-HCV, and anti-HBs.

The following warnings and precautions apply to: MICROPARTICLES

WARNING	Contains 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.

The following warnings and precautions apply to: CONJUGATE

WARNING	Contains methylisothiazolones and sodium azide
H317	May cause an allergic skin reaction.
EUH032	Contact with acids liberates very toxic gas.
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.

The following warnings and precautions apply to: ANCILLARY WASH BUFFER

WARNING	Contains methylisothiazolones and dodecyltrimethylammonium bromide.
H317	May cause an allergic skin reaction.
H412	Harmful to aquatic life with long lasting
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.
P273	Avoid release to the environment.
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.transfusion.abbott or contact your local representative.

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

Reagent Handling

- Do not invert reagent cartridges.
- Upon receipt, reagent cartridges can be used immediately or stored in an upright position.
- If a reagent cartridge is dropped, place in an upright position for 1 hour before use to allow bubbles that may have formed to dissipate.

- Reagents are susceptible to the formation of foam and bubbles. Bubbles may interfere with the detection of the reagent level in the cartridge and cause insufficient reagent aspiration that may adversely affect results.

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

Reagent Storage

- Do not freeze.

	Storage Temperature	Maximum Storage Time	Additional Storage Instructions
Unopened	2 to 8°C	Until expiration date	Store in upright position.
Opened	2 to 15°C	15 days after opening*	Store in upright position. Discard after 15 days. If cartridge does not remain upright during storage off the system, discard the cartridge. Do not reuse original reagent caps or replacement caps due to the risk of contamination and the potential to compromise reagent performance.

*Includes time on board the system.

Reagents may be stored on or off the system. If removed from the system, store reagents with new replacement caps in an upright position at 2 to 15°C. For reagents stored off the system, it is recommended that they be stored in their original trays or boxes to ensure they remain upright.

For information on unloading reagents, refer to the Alinity s System Operations Manual, Section 5.

Indications of Reagent Deterioration

Deterioration of the reagents may be indicated when a calibration error occurs or a control value is out of the specified range. Associated test results are invalid, and samples must be retested. Assay recalibration may be necessary.

For troubleshooting information, refer to the Alinity s System Operations Manual, Section 10.

INSTRUMENT PROCEDURE

The Alinity s HBsAg Assay File must be installed on the Alinity s System prior to performing the assay.

For detailed information on assay file installation and viewing and editing assay parameters, refer to the Alinity s System Operations Manual, Section 2.

For information on printing assay parameters, refer to the Alinity s System Operations Manual, Section 5.

For a detailed description of system procedures, refer to the Alinity s System Operations Manual.

SPECIMEN COLLECTION AND PREPARATION FOR ANALYSIS

Specimen Types

The specimen types listed below were verified for use with this assay. Other specimen types and anticoagulants have not been verified with this assay.

Specimen Types	Anticoagulants
Serum (including serum separator tubes)	Not Applicable
Plasma	Dipotassium EDTA (including plasma preparation tubes) Tripotassium EDTA Lithium heparin (including plasma separator tubes) Sodium citrate Sodium heparin ACD-A ACD-B CP2D CPD CPDA-1

- Liquid anticoagulants may have a dilution effect resulting in lower S/CO values for individual specimens.
- Performance has not been established for the use of umbilical cord blood or bodily fluids such as urine, saliva, semen, amniotic fluid, cerebrospinal fluid, or pleural fluid.
- Performance has been established for the use of cadaveric serum specimens (including specimens collected post-mortem, non-heart-beating) that have been collected up to 24 hours after death.[23] Follow general standards and/or regulations for collection, storage and handling.
- Performance has not been established for the use of cadaveric plasma specimens.
- Testing of cadaveric serum specimens from patients with plasma dilution due to transfusions of > 2000 mL of blood or colloids within 48 hours, or > 2000 mL of crystalloids within 1 hour (or any combination thereof) prior to collection of the specimens has not been verified.
- The system does not provide the capability to verify specimen types. It is the responsibility of the operator to verify that the correct specimen types are used with the assay.

Specimen Conditions

- Do not use:
  - heat-inactivated specimens
  - pooled specimens
  - grossly hemolyzed specimens
  - specimens with obvious microbial contamination
  - specimens with fungal growth
- For accurate results, serum and plasma specimens should be free of fibrin, red blood cells, and other particulate matter.
- To prevent cross contamination, use of disposable pipettes or pipette tips is recommended.

Preparation for Analysis

Failure to follow the specified centrifugation procedure may give erroneous or inconsistent test results.

- Clear, nonhemolyzed specimens should be used when possible. Specimens containing visible particulate matter may give erroneous or inconsistent test results.
- Specimens should be free of bubbles. Remove bubbles with an applicator stick before analysis. Use a new applicator stick for each specimen to prevent cross contamination.

- Prior to centrifugation, previously frozen specimens (including previously frozen plasmapheresis specimens) must be mixed gently and thoroughly after thawing.
- Specimens collected by plasmapheresis, which have not been frozen, do not require centrifugation. All other specimens (including previously frozen plasmapheresis specimens) must be centrifuged between 30 000 - 75 000 g-minutes.
- All specimens must be tested or retested within 48 hours of initial centrifugation. After 48 hours, these specimens need to be recentrifuged between 30 000 - 75 000 g-minutes.

The acceptable time and force ranges that meet this criterion are listed in the table below.

Centrifugation Time (Minutes)	RCF (x g)	g-Minutes
10	3000	30 000
15	2000 – 3000	30 000 – 45 000
20	1500 – 3000	30 000 – 60 000
25	1300 – 3000	32 500 – 75 000

Convert rpm to RCF as follows: RCF = $1.12 \times r_{max} (rpm/1000)^2$
Convert RCF to rpm as follows:

$$rpm = 1000 \times \sqrt{\frac{RCF}{1.12 \times r_{max}}}$$

RCF- The relative centrifugal force generated during centrifugation.

rpm - The revolutions per minute of the rotor on which the specimens are being spun (usually the digital readout on the centrifuge will indicate the rpm).

Centrifugation Time - The time should be measured from the time the rotor reaches the required RCF or rpm to the time it begins decelerating.

rmax - Radius of the rotor in millimeters. The radius measured is dependent on whether the rotor is a fixed angle rotor or a swinging bucket rotor. This value is typically provided with the rotor by the manufacturer. For the fixed angle rotor, r_{max} is the measure of the distance from the rotor axis (center) to the bottom of the specimen tube in the rotor or rotor adapter. For the swinging bucket rotor, r_{max} is the measure of the distance from the rotor axis (center) to the bottom of the specimen tube in the rotor adapter or bucket at full extension.

NOTE: If custom tube adapters (i.e., adapters not defined by the centrifuge manufacturer) are used, then the radius (r_{max}) should be manually measured in millimeters and the RCF calculated.

g- minutes - The unit of measure for the product of RCF (× g) and centrifugation time (minutes).

Specimen Storage

Specimen Type	Temperature	Maximum Storage Time	Special Instructions
Living Donor Serum/ Plasma	Room temperature (15 to 30°C)	7 days	Specimens may be stored on or off the clot, red blood cells, or separator gel.
	2 to 8°C	14 days	Specimens may be stored on or off the clot, red blood cells, or separator gel.
	-20°C or colder	3 months	Remove serum or plasma from the clot, red blood cells, or separator gel.

- Living donor specimens stored at -20°C or colder for greater than 3 months may be used for informational purposes (*e.g.*, lookback testing, discordant sample testing, clinical and validation testing).
- Storage at a combination of 15 to 30°C and 2 to 8°C may not exceed 14 days (inclusive of shipping time) and cannot exceed the maximum durations listed in the table above.
- Performance has not been established for living donor specimens that have undergone more than 6 freeze/thaw cycles.

Specimen Type	Temperature	Maximum Storage Time	Special Instructions
Cadaveric Serum	Room temperature (15 to 30°C)	3 days	If specimens are not processed directly after initial centrifugation, it is recommended to remove the supernatant from the clot, red blood cells, or separator gel until further processing.
	2 to 8°C	14 days	If specimens are not processed directly after initial centrifugation, it is recommended to remove the supernatant from the clot, red blood cells, or separator gel until further processing.
	-20°C or Colder	3 months	If specimens are not processed directly after initial centrifugation, it is recommended to remove the supernatant from the clot, red blood cells, or separator gel until further processing.

- Performance has not been established using cadaveric specimens stored at -20°C or colder for greater than 3 months.
- Storage at a combination of 15 to 30°C and 2 to 8°C may not exceed 14 days (inclusive of shipping time) and cannot exceed the maximum durations listed in the table above.
- Performance has not been established for cadaveric specimens that have undergone more than 6 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.

■PROCEDURE

Materials Provided

06P02 Alinity s HBsAg Reagent Kit

Materials Required but not Provided

- Alinity s HBsAg Assay File
- 06P0204 Alinity s HBsAg Calibrator Kit
- 06P0213 Alinity s HBsAg Assay Control Kit
- 06P0215 Alinity s HBsAg Release Control Kit
- Alinity Trigger Solution
- Alinity Pre-Trigger Solution
- Alinity s Concentrated Wash Buffer

For information on materials required for operation of the system, refer to the Alinity s System Operations Manual, Section 1.

For information on materials required for maintenance procedures, refer to the Alinity s System Operations Manual, Section 9.

Assay Procedure

For a detailed description of how to run an assay, refer to the Alinity s System Operations Manual, Section 5.

- Primary tubes may be on board the system for up to 10 hours.
- If using primary or aliquot tubes, refer to the Alinity s System Operations Manual, Section 4 to ensure sufficient specimen is present.
- 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
  - ≤ 3 hours on the reagent and sample manager:
    - Sample volume for first test: 275 µL
    - Sample volume for each additional test from same sample cup: 75 µL
  - > 3 hours on the reagent and sample manager:
    - Replace with a fresh aliquot of sample.
- Refer to the Alinity s HBsAg Calibrator Kit, Assay Control Kit, and/or Release Control Kit package inserts for preparation and usage.
- For general operating procedures, refer to the Alinity s System Operations Manual, Section 5.
- For optimal performance, it is important to perform routine maintenance as described in the Alinity s System Operations Manual, Section 9. Perform maintenance more frequently when required by laboratory procedures.

Calibration

For instructions on performing a calibration, refer to the Alinity s System Operations Manual, Section 5.

Three replicates of Alinity s HBsAg Calibrator 1 and Calibrator 2 are automatically tested by the system. The calibrators must be priority loaded.

Each assay control must be tested to evaluate the assay calibration. Once a calibration is accepted and stored, it may be used for 14 days. During this time, all subsequent samples may be tested without further calibration unless:

- A reagent kit with a new lot number is used.
- Daily quality control results are outside of quality control limits used to monitor and control system performance.

This assay may require recalibration after maintenance to critical parts or subsystems or after service procedures have been performed.

Quality Control Procedures

Assay Controls

The Alinity s HBsAg Assay Controls must be tested once every 24 hours when the system is being used.

Assay control values must be within the ranges specified in the Alinity s HBsAg Assay Control Kit package insert. When the assay control values are within range, sample results are generated, and a valid release control result is required to release test results. If an assay control value is not within range, sample results are not generated for in-process or scheduled samples. For troubleshooting information, refer to the Alinity s System Operations Manual, Section 10.

Release Controls

The Alinity s HBsAg Release Control must be tested in order to release test results.

The release control is tested at user-defined intervals. For configuring the release control, refer to the Alinity s System Operations Manual, Section 2. For manually ordering the release control, refer to the Alinity s System Operations Manual, Section 5.

The release control must meet specifications defined in the Alinity s HBsAg Release Control Kit package insert in order to validate the system functionality and release test results. If the release control does not meet specifications, refer to the Alinity s System Operations Manual, Section 10, for additional information.

Other Controls

Additional controls may be tested at operator's discretion in accordance with local, state, and/or federal regulations or accreditation requirements and your laboratory's quality control policy. For additional information on configuring customer controls, refer to the Alinity s System Operations Manual, Section 2.

Invalidate controls: Additional controls may be tested anywhere within a run as an invalidate control. Specifications may be assigned to invalidating controls. If an invalidate control fails to meet assigned specifications, no sample results are calculated or provided by the system. When an invalidate control meets assigned specifications, sample processing continues, and a valid release control result is required to release test results.

Non-validating controls: Additional controls may be tested anywhere within a run as a non-validating control. Specifications may be assigned to non-validating controls. A valid release control result is required to release test results. If the user-assigned specifications for the non-validating control(s) are not met and the release control specifications are met, there will be no effect on sample processing. In this case, reactive sample results must not be considered invalid.

Quality Control Guidance

Refer to "Basic QC Practices" by James O Westgard, Ph.D. for guidance on laboratory quality control practices.[24]

RESULTS

Calculation

The Alinity s System calculates results for the Alinity s HBsAg assay using the ratio of the sample RLU to the cutoff RLU (S/CO) for each specimen and control.

Cutoff RLU = (Calibrator 1 mean RLU x 0.0575) + (Calibrator 2 mean RLU × 0.8)

The cutoff RLU is stored for each reagent lot calibration.

S/CO = Sample RLU/Cutoff RLU

Interpretation of Results

The cutoff is 1.00 S/CO.

Initial Results

Initial Result (S/CO)	Interpretation	Retest Procedure
< 1.00	Nonreactive	No retest required. Specimen considered negative for HBsAg.
≥ 1.00	Reactive	Retest in duplicate.

Final Interpretation

Retest Result (S/CO)	Final Results	Final Interpretation
Both results < 1.00	Nonreactive	Specimen considered negative for HBsAg.
One or both results ≥ 1.00	Repeatedly Reactive	Specimen must be further tested by the Alinity s HBsAg Confirmatory assay.

Only specimens that are confirmed by specific neutralization with anti-HBs using the Alinity s System are considered positive for HBsAg.

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 Alinity s System Operations Manual, Section 5.

LIMITATIONS OF THE PROCEDURE

- Potential interference has not been evaluated for substances other than those described in the **SPECIFIC PERFORMANCE CHARACTERISTICS - Interference** section of this package insert.
- False reactive results can be expected with any test kit. Falsely elevated results have been observed due to non-specific interactions (refer to the **SPECIFIC PERFORMANCE CHARACTERISTICS** section of this package insert).

- Although the association of infectivity and the presence of HBsAg is strong, it is recognized that presently available methods for HBsAg detection are not sensitive enough to detect all potentially infectious units of blood or possible cases of HBV infection. A nonreactive test result does not exclude infection.
- Heterophilic antibodies in human serum can react with reagent immunoglobulins, interfering with *in vitro* immunoassays.[25] Patients routinely exposed to animals or to animal serum products can be prone to this interference and anomalous results may be observed.
- Vaccination with a recombinant HBsAg Hepatitis B vaccine may cause transient positive results caused by a passive transfer of antigen by vaccination.

Refer to the **SPECIMEN COLLECTION AND PREPARATION FOR ANALYSIS** section of this package insert for specimen limitations.

■SPECIFIC PERFORMANCE CHARACTERISTICS

Representative performance data are provided in this section. Results obtained in individual laboratories may vary.

Reproducibility

A study was performed based on guidance from CLSI EP15-A2.[26] Testing was conducted using 3 lots of the Alinity s HBsAg Reagent Kit, Calibrator Kit, Assay Control Kit, and Release Control Kit. Panel members and controls were tested twice a day for 5 days in replicates of 4 at 3 sites.

			Within-Run		Between-Run		Between-Day		Within-Laboratory[a]		Between-Site		Between-Lot		Reproducibility[b]	
Sample	N	Mean S/CO	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV
Low HBsAg	360	1.70	0.080	4.7	0.000	0.0	0.010	0.6	0.081	4.8	0.000	0.0	0.032	1.9	0.091	5.4
High HBsAg	360	8.43	0.356	4.2	0.000	0.0	0.078	0.9	0.364	4.3	0.000	0.0	0.115	1.4	0.406	4.8
Positive Control	360	2.50	0.096	3.8	0.000	0.0	0.030	1.2	0.100	4.0	0.000	0.0	0.000	0.0	0.114	4.6
Negative Control	360	0.18	0.023	NA	0.019	NA	0.004	NA	0.030	NA	0.003	NA	0.000	NA	0.031	NA

%CV = coefficient of variation expressed as a percentage; N = number of replicates; NA = Not applicable: %CVs are not meaningful when S/CO approaches zero; SD = standard deviation

[a] Includes within-run, between-run, and between-day variability.

[b] Includes within-run, between-run, between-day, between-site, between-lot and the site-lot interaction variability.

Specificity

A total of 7347 fresh serum specimens and 6511 fresh plasma specimens from volunteer whole blood donors were collected at 3 distinct blood centers. A total of 3135 specimens from plasmapheresis donors were collected at one additional blood center. The initial and repeat reactive rates for the serum specimens were 0.10% (7/7347) and 0.07% (5/7347), respectively. The initial and repeat reactive rates for the plasma specimens were 0.05% (3/6511) and 0.05% (3/6511), respectively. The initial and repeat reactive rates for the plasmapheresis donor specimens were 0.00% (0/3135) and 0.00% (0/3135), respectively. Repeatedly reactive specimens were further tested using the Alinity s HBsAg Confirmatory assay; 2 specimens were confirmed positive and 6 specimens were not confirmed. The 2 confirmed positive specimens were positive by HBV Qualitative DNA.

Specificity based on assumed zero prevalence of HBsAg in whole blood and plasmapheresis donors was estimated in this study to be 99.96% (16 985/16 991) with a 95% confidence interval of 99.92% to 99.99%.

Specimen Category	Number Tested	IR (% of Total) (95% CI)	RR (% of Total) (95% CI)	Number Confirmed Positive (% of RR)	Specificity (%)[a] (95% CI)
Volunteer Blood Donors- Serum	7347	7 (0.10) (0.04 – 0.20)	5 (0.07) (0.02 – 0.16)	2 (40.00)	99.96 (7342 / 7345) (99.88 – 99.99)
Volunteer Blood Donors- Plasma	6511	3 (0.05) (0.01 – 0.13)	3 (0.05) (0.01 – 0.13)	0 (0.00)	99.95 (6508 / 6511) (99.87 – 99.99)
Total Volunteer Blood Donors	**13 858**	**10 (0.07) (0.03 – 0.13)**	**8 (0.06) (0.02 – 0.11)**	**2 (25.00)**	**99.96 (13 850 / 13 856) (99.91 – 99.98)**
Plasmapheresis Donors	3135	0 (0.00) (0.00 – 0.12)	0 (0.00) (0.00 – 0.12)	NA	100.00 (3135 / 3135) (99.88 – 100.00)
Total Donors	**16 993**	**10 (0.06) (0.03 – 0.11)**	**8 (0.05) (0.02 – 0.09)**	**2 (25.00)**	**99.96 (16 985 / 16 991) (99.92 – 99.99)**

IR = Initially Reactive; RR = Repeatedly Reactive; CI = Confidence Interval

[a] Specimens confirmed positive were excluded from specificity calculations

For total donors, the IR rate not reactive on retest was estimated to be 0.01% (2/16 985) with a 95% confidence interval of 0.00% to 0.04%.

IR Rate Not Reactive on Retest = 100% x (Number of IR – Number of RR) / (Number Tested – Number of RR)

Sensitivity

A total of 886 specimens from the categories shown in the table below were tested using the Alinity s HBsAg assay at 3 clinical sites. All repeatedly reactive specimens were tested using the Alinity s HBsAg Confirmatory assay.

Sensitivity was estimated to be 100.00% (432/432) with a 95% confidence interval of 99.15% to 100.00% for preselected positive specimens.

Specimen Category	Number Tested	Number RR (% of Total)	Number Confirmed Positive (% of RR)	Sensitivity (%) (95% CI)
Preselected HBsAg Positive[a]	167	167 (100.00)	167 (100.00)	100.00 (167/167) [97.82 – 100.00]
Preselected HBsAg Positive - Acute HBV Infection[a]	70	70 (100.00)	70 (100.00)	100.00 (70/70) [94.87 – 100.00]
Preselected HBsAg Positive - Chronic HBV Infection[a]	195	195 (100.00)	195 (100.00)	100.00 (195/195) [98.13 – 100.00]
Subtotal	**432**	**432 (100.00)**	**432 (100.00)**	**100.00 (432/432) [99.15 – 100.00]**
Increased Risk of HBV Infection[b]	403	3 (0.74)	3 (100.00)	NA[d]
Recovered HBV Infection[c]	51	0 (0.00)	NA	NA
Total	**886**	**435 (49.10)**	**435 (100.00)**	**100.00 (435/435) [99.16 – 100.00]**

NA = not applicable; RR = Repeatedly Reactive

[a] Preselected HBsAg positive specimens were previously confirmed positive by specific antibody neutralization using FDA approved assays. Acute and chronic HBV classifications were determined using four HBV reference markers (HBsAg, anti-HBc IgM, anti-HBc, and anti-HBs) or by medical diagnosis.

[b] The following risk factors were included: current or past residence in a Hepatitis B endemic region, diagnosed or treated for a sexually transmitted disease, hemodialysis patient, heterosexual contact with a high-risk individual or an infected individual, history of incarceration, household contact with HBV infected individual, intravenous drug user, men who have sex with men, and multiple sex partners.

[c] Specimens were classified as recovered using four HBV reference markers (HBsAg, anti-HBc IgM, anti-HBc, and anti-HBs). Recovered HBV infection specimens were assumed HBsAg negative and were not included in the sensitivity analysis.

[d] The sensitivity calculation and confidence interval are not meaningful due to the small number of specimens.

Genotype Detection

A total of 16 preselected HBsAg positive specimens of known genotype (genotypes A–H) obtained from commercial vendors were tested using the Alinity s HBsAg assay. The results were compared to a commercially available HBsAg assay. All specimens were repeatedly reactive by both the Alinity s HBsAg assay and the commercially available HBsAg assay.

HBsAg Mutant Detection

A total of 52 preselected HBsAg positive mutant specimens (14 native mutant specimens and 38 recombinant mutant specimens) obtained from commercial vendors were tested using the Alinity s HBsAg assay. The results were compared to a commercially available HBsAg assay.

Mutant	Alinity s HBsAg Interpretation	Commercially Available HBsAg Assay Interpretation
Native Mutant Specimens		
Ser-143-Leu+Pro-211-His	**RR**	**RR**
Gly-145-Ala+Thr-189-Ile	**RR**	**RR**
Thr-27-Lys+Tyr-100-Cys+Gln-129-Arg+Leu-175-Ser+Trp-199-Leu	**RR**	**RR**
Leu-49-Arg+Gln-101-His+Thr-126-Ile+Glu-164-Gly	**RR**	**RR**
Gly-145-Ala	**RR**	**RR**
Cys-76-Trp+Pro-120-Ser+Ser-132-Phe	**RR**	**RR**
Asp-144-Glu+Ser-204-Asn+Ser-207-Asn	**RR**	**RR**
Pro-127-Leu+Gln-129-His	**RR**	**RR**
Ser-143-Leu+Thr-189-Ile	**RR**	**RR**
Gly-145-Ala+Thr-189-Ile+Phe-212-Tyr	**RR**	**RR**
Ser-143-Leu	**RR**	**RR**
Thr-118-Lys+ Thr-140-Ile+Cys-149-Tyr	**RR**	**RR**
Pro-135-Leu+ Cys-139-Tyr+ Asp-144-Ala+ Gly-145-Arg+Ser-171-Tyr+ Val-180-Ala	**RR**	**RR**
Phe-93-Cys+ Met-103-Ile+ Gly-145-Arg+ Ser-174-Asn	**RR**	**RR**
Recombinant Mutant Specimens		
Cys-137-Tyr	**RR**	**RR**
Cys-147-Ser	**RR**	**RR**
Cys-124-Arg	**RR**	Nonreactive
122-Asp-Thr	**RR**	Nonreactive
Pro-120-Ser+Thr-125-Met+Pro-127-Tyr+Ser-143-Leu	**RR**	**RR**
Cys-121-Tyr+Lys-122-Leu+Thr-123-Asn+Gly-130-Glu+Met-133-Ile+Asp-144-Gly+Gly-145-Arg	**RR**	Nonreactive
Gln-129-His	**RR**	**RR**
Met-133-Leu	**RR**	**RR**
Asp-144-Ala	**RR**	**RR**
Gly-145-Arg	**RR**	**RR**
Pro-142-Leu+Gly-145-Arg	**RR**	**RR**
Pro-142-Ser+Gly-145-Arg	**RR**	**RR**
Thr-123-Ala	**RR**	Nonreactive
122-Asn-Thr	**RR**	Nonreactive
122-Arg-Ala	**RR**	Nonreactive
Thr-123-Asn	**RR**	Nonreactive
Gly-145-Lys	**RR**	**RR**
Thr-143-Leu	**RR**	**RR**
Thr-123-Ser	**RR**	Nonreactive
123-Arg-Gly-Ala	**RR**	Nonreactive
Thr-123-Ala+Gly-145-Arg	**RR**	Nonreactive
Gly-145-Glu	**RR**	**RR**
Met-133-Leu+Gly-145-Arg	**RR**	**RR**
Thr-126-Ser	**RR**	**RR**
Met-133-Thr	**RR**	**RR**
Gly-145-Ala	**RR**	**RR**
Pro-120-Ser+Asp-144-Glu+Gly-145-Arg+Thr-189-Ile	**RR**	**RR**
Phe-134-His+Pro-142-Leu+Asp-144-Glu+Gly-145-Arg	**RR**	**RR**
Thr-126-Ile	**RR**	**RR**
Thr-123-Asn+Thr-143-Ser	**RR**	Nonreactive
Thr-126-Ala+Met-133-Ile	**RR**	**RR**
Pro-127-Thr+Gly-145-Arg	**RR**	**RR**
Asp-144-Glu+Gly-145-Arg	**RR**	**RR**
Thr-126-Ile+Phe-134-His+Pro-142-Leu+Gly-145-Arg	**RR**	**RR**
Thr-143-Leu+Val-190-Ala+Tyr-200-Cys+Tyr-206-Arg	**RR**	**RR**
Leu-109-Ile+Gly-112-Lys+Ser-113-Ala+Pro-120-Thr+Phe-134-Ser	**RR**	**RR**
Ile-110-Arg+Lys-122-Tyr+Phe-134-Ser+Pro-142-Leu+Asp-144-Ala	**RR**	**RR**
Thr-125-Met+Thr-126-Asn+Pro-127-Thr	**RR**	**RR**

RR = repeatedly reactive

Analytical Sensitivity

Analytical sensitivity was evaluated using dilutions of the WHO 3rd International Standard for hepatitis B surface antigen (HBsAg) (subtypes ayw1/adw2, genotype B4, NIBSC Code 12/226). The dilutions ranged from 0.005 to 0.100 IU/mL (0.03 to 0.56 ng/mL). The dilutions were tested across 3 lots of the Alinity s HBsAg Reagent Kit on 1 Alinity s System. The analytical sensitivity of the Alinity s HBsAg assay was 0.013 IU/mL for all 3 reagent lots. For the ng/mL unit, the analytical sensitivity of the Alinity s HBsAg assay ranged from 0.07 to 0.08 ng/mL.

Seroconversion Sensitivity

To determine the seroconversion sensitivity, 20 seroconversion panels obtained from commercial vendors were tested on the Alinity s System using the Alinity s HBsAg assay. The results were compared to a commercially available HBsAg assay and representative data from 5 panels are summarized in the following table.

Panel ID	Days Since 1st Bleed	Alinity s HBsAg Reactive ≥ 1.00 S/CO	Commercially-Available HBsAg Assay Reactive ≥ 1.00 S/CO
HBV6272[a]	72	0.41	0.71
	74	0.44	0.71
	94	**1.24**	**1.81**
	97	**1.90**	**2.75**
	101	**2.77**	**3.82**
	104	**3.73**	**4.54**
	108	**6.20**	**7.58**
	111	**12.53**	**11.09**
	115	**21.39**	**15.89**
HBV6277	0	0.16	0.41
	4	0.16	0.45
	21	0.21	0.53
	26	0.36	0.65
	28	0.49	0.59
	33	**1.24**	**1.38**
	35	**1.94**	**1.83**
	40	**4.89**	**4.73**
	42	**6.35**	**7.65**
	47	**26.54**	**28.93**
	49	**45.06**	**44.42**

HBV11002	0	0.35	0.57
	2	0.51	0.61
	7	**1.57**	**1.60**
	9	**2.14**	**1.97**
	35	**1563.84**	**327.21**
	39	**480.36**	**186.51**
HBV11013[b]	232	0.24	0.42
	239	0.39	0.49
	244	**1.06**	**1.27**
	246	**1.41**	**1.73**
	251	**3.51**	**2.44**
	253	**5.21**	**3.97**
	258	**7.31**	**5.43**
	260	**11.85**	**9.68**
	265	**28.53**	**21.70**
	267	**80.06**	**36.41**
HBV11027	0	0.19	0.44
	5	0.16	0.40
	12	0.17	0.39
	14	0.15	0.43
	19	0.26	0.38
	21	0.20	0.39
	26	0.28	0.47
	29	0.47	0.52
	33	**1.14**	0.88
	37	**2.82**	**1.95**
	40	**5.77**	**3.88**
	64	**6538.18**	**473.16**

[a] Sixteen early bleeds are not shown as they are all nonreactive.
[b] Twenty-five early bleeds are not shown as they are all nonreactive.

Other Specimen Conditions or Disease States

A total of 191 specimens from individuals with other specimen conditions or disease states unrelated to HBV infection were evaluated. Of the 191 specimens, 9 were repeatedly reactive using the Alinity s HBsAg assay and a commercially available HBsAg assay, and all 9 specimens were confirmed positive by both the Alinity s HBsAg Confirmatory assay and a commercially available HBsAg confirmatory assay; therefore, supplemental testing was not required.

Specimen Category	Number Tested	IR (% of Total)	RR (% of Total)	Number Final Status Positive[a] (% of Repeatedly Reactive)
Other Specimen Conditions or Disease States[b]	191	9 (4.71)	9 (4.71)	9[c] (100.00)

IR = Initially Reactive; RR = Repeatedly Reactive

[a] Final status positive is defined as concordant with another HBsAg and HBsAg confirmatory assay.

[b] The specimens included the following: Anti-HIV-1/HIV-2 Positive (10), Anti-HTLV I/II Positive (10), Anti-HCV Positive (10), Anti-HAV Positive (10), Anti-HDV Positive (9), Co-infected CMV/EBV/HSV (10), Anti-*T pallidum* Positive (10), Non-viral Hepatitis (10), Rheumatoid Factor Positive (10), Anti-ds DNA Positive (10), Pregnant Females (14), Multiparous Females (10), Hyper IgG/IgM (10), Influenza Vaccine Recipient (10), Hemodialysis Patients (10), HAMA Positive (10), *E coli* Infection (9), Heterophilic Antibody Positive (9), and Fungal (Yeast) Infection (10).

[c] One anti-HIV-1/HIV-2 Positive and 8 anti-HDV Positive specimens were confirmed positive.

Interference

Potentially Interfering Endogenous Substances

A study was performed based on guidance from CLSI EP07-A2.[27]
No interference was observed using the Alinity s HBsAg assay from potentially interfering substances at the levels shown below.

Potentially Interfering Substance	Interferent Level
Conjugated Bilirubin	≤ 20 mg/dL
Unconjugated Bilirubin	≤ 20 mg/dL
Hemoglobin	≤ 500 mg/dL
Triglycerides	≤ 3000 mg/dL
Total Protein	≤ 12 g/dL

In addition, a negative and positive control were spiked with biotin to a concentration of 4250 ng/mL. No interference was observed using the Alinity s HBsAg assay.

The effect of potentially interfering substances has only been evaluated for those listed in this package insert.

■PERFORMANCE CHARACTERISTICS OF CADAVERIC SPECIMEN TESTING

Reproducibility

Twenty-four cadaveric donor serum specimens and 24 living donor serum specimens were spiked with human serum or plasma reactive for HBsAg to create low level reactive specimens.
Each specimen was tested once per day for 6 days using each of 3 lots of the Alinity s HBsAg Reagent Kit. Total %CV values were determined.

			Total[a]	
Specimen Category	Number of Replicates	Mean S/CO	SD	%CV
Cadaveric[b]	432	2.77	0.103	3.7
Living Donor	432	2.82	0.150	5.3

[a] Total variability contains within-specimen, between-lot and lot-specimen interaction variance components.

[b] Cadaveric serum specimens were collected up to 13.7 hours after death.

Specificity

Specificity was determined by testing 55 cadaveric serum specimens and 55 living donor serum specimens. Each specimen was tested once using each of 3 lots of the Alinity s HBsAg Reagent Kit.

Specimen Category	Lot	Nonreactive	Repeatedly Reactive	Specificity (%) (95% CI)
Cadaveric[a]	Lot 1	55	0	100.00 (93.51 – 100.00)
	Lot 2	55	0	100.00 (93.51 – 100.00)
	Lot 3	55	0	100.00 (93.51 – 100.00)
Living Donor	Lot 1	55	0	100.00 (93.51 – 100.00)
	Lot 2	55	0	100.00 (93.51 – 100.00)
	Lot 3	55	0	100.00 (93.51 – 100.00)

[a] Cadaveric serum specimens were collected up to 23.7 hours after death.

Analytical Sensitivity

Cadaveric serum specimens and living donor serum specimens were spiked with human serum or plasma reactive for HBsAg to create low-level reactive specimens. Each specimen was tested once, within 24 hours of spiking, using each of 3 lots of the Alinity s HBsAg Reagent Kit. All specimens were reactive on all 3 reagent lots.

Specimen Category	Lot	Number of Specimens	Mean S/CO	Sensitivity (%) (95% CI)
Cadaveric[a]	Lot 1	55	2.92	100.00 (93.51 – 100.00)
	Lot 2	55	2.98	100.00 (93.51 – 100.00)
	Lot 3	55	3.02	100.00 (93.51 – 100.00)
Living Donor	Lot 1	54	3.00	100.00 (93.40 – 100.00)
	Lot 2	54	2.99	100.00 (93.40 – 100.00)
	Lot 3	54	2.98	100.00 (93.40 – 100.00)

[a] Cadaveric serum specimens were collected up to 23.7 hours after death.

Cadaveric Specimen Storage

Cadaveric specimen storage was determined by testing a minimum of 12 low-level reactive specimens, prepared by spiking nonreactive cadaveric serum specimens to a target S/CO value near the cutoff with human plasma reactive for HBsAg, and a minimum of 12 nonreactive cadaveric serum specimens. Each specimen was tested at Day 0, and then subjected to either 2 to 8°C storage for 14 days, room temperature (15 to 30°C) storage for 3 days, −20°C or colder storage for 3 months, or 6 freeze/thaw cycles. Nonreactive specimens were evaluated by calculating the differences between the mean S/CO of Day 0 and the mean S/CO of each storage condition and related timepoint. Reactive specimens were evaluated by calculating the percent differences between the mean S/CO of Day 0 and the mean S/CO of each storage condition and related timepoint. There were no changes to the interpretation; the data demonstrate that cadaveric serum specimens can be stored at the following conditions when tested with the Alinity s HBsAg assay.

		Nonreactive Specimens	Reactive Specimens
Storage Condition	Timepoint	Upper Limit of 2-sided 95% CI of Differences	Lower Limit of 2-sided 95% CI of % Differences
Room Temperature (15 to 30°C)[a]	3 days	0.00 S/CO	-8.7 %
2 to 8°C[a]	14 days	-0.03 S/CO	-14.9 %
-20°C or colder[b]	3 months	0.03 S/CO	-3.0 %
Freeze/Thaw[a]	6 cycles	-0.01 S/CO	-14.8 %

Abbreviations: CI = confidence interval; S/CO = sample to cutoff ratio

[a] Cadaveric serum specimens were collected up to 22.9 hours after death.

[b] Cadaveric serum specimens were collected up to 17.3 hours after death.

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Note for number formatting:

- A space is used as thousands separator (example: 10 000 specimens).
- A period is used to separate the integer part from the fractional part of a number written in decimal form (example: 3.12%).

■Key to Symbols

	Caution
	Consult instructions for use
	Manufacturer
	Sufficient for
	Temperature limitation
	Use by/Expiration date
ANCILLARY WASH BUFFER	Ancillary Wash Buffer
CONJUGATE	Conjugate
CONTAINS: AZIDE	Contains Sodium Azide. Contact with acids liberates very toxic gas.
DISTRIBUTED IN THE USA BY	Distributed in the USA by
INFORMATION FOR USA ONLY	Information needed for United States of America Only
IVD	*In Vitro* Diagnostic Medical Device
LOT	Lot Number
MICROPARTICLES	Microparticles
PRODUCT OF IRELAND	Product of Ireland
REF	List Number
SN	Serial Number

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Revised June 2019

HBsAg Confirmatory Reagent Kit
Antibody to Hepatitis B Surface Antigen (Sheep)

Revised June 2019.

REF 06P0359

Instructions must be carefully followed. Reliability of assay results cannot be guaranteed if there are any deviations from these instructions.

■NAME

Alinity s HBsAg Confirmatory Reagent Kit (also referred to as HBsAg Conf) Antibody to Hepatitis B Surface Antigen (Sheep)

■INTENDED USE

The Alinity s HBsAg Confirmatory assay is used to confirm the presence of hepatitis B surface antigen (HBsAg) in human serum and plasma by means of specific antibody neutralization on the Alinity s System. The assay is intended to be used for confirmation of samples found to be repeatedly reactive by the Alinity s HBsAg assay.

■SUMMARY AND EXPLANATION OF THE TEST

Hepatitis B virus (HBV) is the causative agent of hepatitis B. An estimated 257 million individuals are living with hepatitis B virus infection. More than 887 000 people die annually of HBV-related liver disease. Globally, chronic hepatitis B is a major cause of liver cirrhosis and hepatocellular carcinoma.[1, 2]

HBV belongs to the hepadnavirus family and is a partially double-stranded DNA virus. It consists of a central core nucleocapsid containing the viral DNA, DNA polymerase, and a surrounding envelope consisting of HBsAg, which is expressed during HBV infection. Additionally, HBV-infected cells produce spherical or long filamentous particles that consist of excess HBsAg.[3]

The virus is divided into multiple major serotypes (e.g., adr, adw, ayr, ayw) based on antigenic determinants present on the envelope proteins, and into at least 8 genotypes (A–H) according to overall nucleotide sequence variation of the genome. Differences among genotypes can affect the disease severity, course and likelihood of complications, response to treatment, and possibly vaccine protection.[2-5]

HBV, unlike other DNA viruses, replicates through a reverse transcription step. The reverse transcription process lacks proofreading capability; therefore, HBV is subject to a mutation rate more than 10 times higher than the mutation rate of other DNA viruses. Surface antigen gene mutations may cause changes in the antigenic structure of HBsAg, resulting in reduced recognition by some antibodies to HBsAg.[6-11]

HBV is transmitted through sexual, parenteral, and perinatal routes. Transmission may also occur through transfusion of HBV-contaminated blood and blood products. After infection with HBV, HBsAg is the first antigenic marker, appearing 1 to 12 weeks after exposure and 2 to 6 weeks before the onset of clinical symptoms. HBsAg persists during this acute phase and clears late in the convalescence period. Failure to clear HBsAg within 6 months indicates a chronic hepatitis B infection.[2, 3]

HBsAg assays are used to screen blood and blood products for the presence of HBsAg to prevent transmission of HBV infection to recipients of blood or blood products. HBsAg assays are also used to screen organ and tissue donors. In addition, HBsAg assays are used to identify persons infected with HBV and to monitor the status of infected individuals in combination with other hepatitis B serological markers. Testing for HBsAg as part of an antenatal screening program may identify HBV infected mothers and allow for appropriate immunoprophylaxis of the newborn. Specific antibody neutralization assays are used to confirm the presence of HBsAg.[12-18]

■BIOLOGICAL PRINCIPLES OF THE PROCEDURE

This assay uses the Alinity s HBsAg assay reagents in addition to the reagents described in the **REAGENTS** section of this package insert. For information on the Alinity s HBsAg assay, refer to the Alinity s HBsAg Reagent Kit package insert.

This assay is used to confirm the presence of hepatitis B surface antigen (HBsAg) in human serum and plasma, using chemiluminescent microparticle immunoassay (CMIA) technology. This assay consists of two single tests that are both pre-treatment immunoassays.

Sample and Pre-Treatment 1 are combined and incubated. When HBsAg is present in the sample, it is neutralized by the antibody (anti-HBs) in Pre-Treatment 1. The pretreated sample, anti-HBs coated paramagnetic microparticles, and anti-HBs acridinium-labeled conjugate are combined to create a reaction mixture and incubated. Any non-neutralized HBsAg present in the sample binds to the anti-HBs coated microparticles and to the anti-HBs acridinium-labeled conjugate. The neutralized HBsAg is blocked from forming a sandwich with anti-HBs coated microparticles and acridinium-labeled anti-HBs conjugate. The mixture is washed. Ancillary wash buffer is added and incubated. Following a wash cycle, Pre-Trigger and Trigger Solutions are added. This sequence is repeated for the sample and Pre-Treatment 2, except Pre-Treatment 2 does not contain anti-HBs and will not neutralize HBsAg in the sample.

The resulting chemiluminescent reaction is measured as relative light units (RLU). There is a direct relationship between the amount of HBsAg in the sample and the RLU detected by the system optics. The Alinity s HBsAg Confirmatory sample to cutoff (S/CO) result is determined by comparing the chemiluminescent RLU in the reaction to the cutoff RLU determined from an active calibration.

If the non-neutralized sample (incubated with Pre-Treatment 2) result is greater than or equal to the cutoff of 0.70 S/CO and the RLU of the neutralized sample (incubated with Pre-Treatment 1) is reduced by at least 50% compared to the non-neutralized sample, the sample is considered confirmed positive for HBsAg.

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

■REAGENTS

Kit Contents

Alinity s HBsAg Confirmatory Reagent Kit 06P03

Volumes (mL) listed in the table below indicate the volume per cartridge.

REF	06P0359
Tests per cartridge	42
Number of cartridges per kit	1
Tests per kit	42
PRE-TREATMENT 1	4.2 mL
PRE-TREATMENT 2	23.3 mL

PRE-TREATMENT 1 Recalcified sheep plasma reactive for anti-HBs and recalcified human plasma. Preservatives: ProClin 950 and sodium azide.

PRE-TREATMENT 2 Recalcified human plasma and recalcified sheep plasma. Preservatives: ProClin 950 and sodium azide.

For each specimen to be tested, the Alinity s System performs an undiluted interpretation. The system performs automated dilution(s) of the sample if the assay interpretation is inconclusive. The system performs automated retest of the sample if the assay interpretation is invalid. The Alinity s HBsAg Confirmatory Reagent Kit supports up to 42 undiluted interpretations, or a combination of undiluted and diluted interpretations.

Warnings and Precautions

- IVD
- For *In Vitro* Diagnostic Use
- Performance characteristics of this product have not been established for laboratory diagnosis of HBV infection.

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.[19-22]

The human-sourced material used in the Pre-Treatment 1 and Pre-Treatment 2 is nonreactive for HBsAg, HIV-1 RNA or HIV-1 Ag, anti-HIV-1/HIV-2, anti-HCV, and anti-HBs.

The following warnings and precautions apply to: PRE-TREATMENT 1 and PRE-TREATMENT 2.

WARNING	Contains methylisothiazolone and sodium azide.
H317	May cause an allergic skin reaction.
EUH032	Contact with acids liberates very toxic gas.
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.transfusion.abbott or contact your local representative.

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

Reagent Handling

- Do not invert reagent cartridges.
- Upon receipt, reagent cartridges can be used immediately or stored in an upright position.
- If a reagent cartridge is dropped, place in an upright position for 1 hour before use to allow bubbles that may have formed to dissipate.
- Reagents are susceptible to the formation of foam and bubbles. Bubbles may interfere with the detection of the reagent level in the cartridge and cause insufficient reagent aspiration that may adversely affect results.

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

Reagent Storage

- Do not freeze.

	Storage Temperature	Maximum Storage Time	Additional Storage Instructions
Unopened	2 to 8°C	Until expiration date	Store in upright position.
Opened	2 to 15°C	30 days after opening*	Store in upright position. Discard after 30 days. If cartridge does not remain upright during storage off the system, discard the cartridge. Do not reuse original reagent caps or replacement caps due to the risk of contamination and the potential to compromise reagent performance.

*Includes time on board the system.

Reagents may be stored on or off the system. If removed from the system, store reagents with new replacement caps in an upright position at 2 to 15°C. For reagents stored off the system, it is recommended that they be stored in their original trays or boxes to ensure they remain upright.

For information on unloading reagents, refer to the Alinity s System Operations Manual, Section 5.

Indications of Reagent Deterioration

Deterioration of the reagents may be indicated when a control value is out of the specified range. Associated test results are invalid, and samples must be retested. Assay recalibration may be necessary.

For troubleshooting information, refer to the Alinity s System Operations Manual, Section 10.

■ INSTRUMENT PROCEDURE

The Alinity s HBsAg and HBsAg Confirmatory Assay Files must be installed on the Alinity s System prior to performing the assay.

For detailed information on assay file installation and viewing and editing assay parameters, refer to the Alinity s System Operations Manual, Section 2.

For information on printing assay parameters, refer to the Alinity s System Operations Manual, Section 5.

For a detailed description of system procedures, refer to the Alinity s System Operations Manual.

■ SPECIMEN COLLECTION AND PREPARATION FOR ANALYSIS

Specimen Types

The specimen types listed below were verified for use with this assay. Other specimen types and anticoagulants have not been verified with this assay.

Specimen Types	Anticoagulants
Serum (including serum separator tubes)	Not Applicable
Plasma	Dipotassium EDTA (including plasma preparation tubes) Tripotassium EDTA Lithium heparin (including plasma separator tubes) Sodium citrate Sodium heparin ACD-A ACD-B CP2D CPD CPDA-1

- Liquid anticoagulants may have a dilution effect resulting in lower S/CO values for individual specimens.
- Performance has not been established for the use of umbilical cord blood or bodily fluids such as urine, saliva, semen, amniotic fluid, cerebrospinal fluid, or pleural fluid.
- Performance has not been established for the use of cadaveric blood specimens with the Alinity s HBsAg Confirmatory assay.
- The system does not provide the capability to verify specimen types. It is the responsibility of the operator to verify that the correct specimen types are used with the assay.

Specimen Conditions

- Do not use:
  - heat-inactivated specimens
  - pooled specimens
  - grossly hemolyzed specimens
  - specimens with obvious microbial contamination
  - specimens with fungal growth
- For accurate results, serum and plasma specimens should be free of fibrin, red blood cells, and other particulate matter.
- To prevent cross contamination, use of disposable pipettes or pipette tips is recommended.

Preparation for Analysis

Failure to follow the specified centrifugation procedure may give erroneous or inconsistent test results.

- Clear, nonhemolyzed specimens should be used when possible. Specimens containing visible particulate matter may give erroneous or inconsistent test results.
- Specimens should be free of bubbles. Remove bubbles with an applicator stick before analysis. Use a new applicator stick for each specimen to prevent cross contamination.
- Prior to centrifugation, previously frozen specimens (including previously frozen plasmapheresis specimens) must be mixed gently and thoroughly after thawing.
- Specimens collected by plasmapheresis, which have not been frozen, do not require centrifugation. All other specimens (including previously frozen plasmapheresis specimens) must be centrifuged between 30 000 - 75 000 g-minutes.
- All specimens must be tested or retested within 48 hours of initial centrifugation. After 48 hours, these specimens need to be recentrifuged between 30 000 - 75 000 g-minutes.

The acceptable time and force ranges that meet this criterion are listed in the table below.

Centrifugation Time (Minutes)	RCF (x g)	g-Minutes
10	3000	30 000
15	2000 – 3000	30 000 – 45 000
20	1500 – 3000	30 000 – 60 000
25	1300 – 3000	32 500 – 75 000

Convert rpm to RCF as follows: $RCF = 1.12 \times r_{max} (rpm/1000)^2$

Convert RCF to rpm as follows:

$$rpm = 1000 \times \sqrt{\frac{RCF}{1.12 \times r_{max}}}$$

RCF-	The relative centrifugal force generated during centrifugation.
rpm -	The revolutions per minute of the rotor on which the specimens are being spun (usually the digital readout on the centrifuge will indicate the rpm).
Centrifugation Time -	The time should be measured from the time the rotor reaches the required RCF or rpm to the time it begins decelerating.
rmax -	Radius of the rotor in millimeters. The radius measured is dependent on whether the rotor is a fixed angle rotor or a swinging bucket rotor. This value is typically provided with the rotor by the manufacturer. For the fixed angle rotor, r_{max} is the measure of the distance from the rotor axis (center) to the bottom of the specimen tube in the rotor or rotor adapter. For the swinging bucket rotor, r_{max} is the measure of the distance from the rotor axis (center) to the bottom of the specimen tube in the rotor adapter or bucket at full extension. **NOTE:** If custom tube adapters (i.e., adapters not defined by the centrifuge manufacturer) are used, then the radius (r_{max}) should be manually measured in millimeters and the RCF calculated.
g-minutes -	The unit of measure for the product of RCF (× g) and centrifugation time (minutes).

Specimen Storage

Specimen Type	Temperature	Maximum Storage Time	Special Instructions
Serum/ Plasma	Room temperature (15 to 30°C)	7 days	Specimens may be stored on or off the clot, red blood cells, or separator gel.
	2 to 8°C	14 days	Specimens may be stored on or off the clot, red blood cells, or separator gel.
	-20°C or colder	3 months	Remove serum or plasma from the clot, red blood cells, or separator gel.

- Storage at a combination of 15 to 30°C and 2 to 8°C may not exceed 14 days (inclusive of shipping time) and cannot exceed the maximum durations listed in the table above.
- Performance has not been established for donor specimens that have undergone more than 6 freeze/thaw cycles.
- Specimens stored at -20°C or colder for greater than 3 months may be used for informational purposes (e.g., lookback testing, discordant sample testing, clinical and validation testing).

Specimen Shipping

Package and label specimens in compliance with applicable state, federal, and international regulations covering the transport of clinical specimens and infectious substances.

■PROCEDURE

Materials Provided

06P03 Alinity s HBsAg Confirmatory Reagent Kit

Materials Required but not Provided

- Alinity s HBsAg Assay File
- Alinity s HBsAg Confirmatory Assay File
- 06P02 Alinity s HBsAg Reagent Kit
- 06P0204 Alinity s HBsAg Calibrator Kit
- 06P0213 Alinity s HBsAg Assay Control Kit
- 06P0215 Alinity s HBsAg Release Control Kit
- Alinity Trigger Solution
- Alinity Pre-Trigger Solution
- Alinity s Concentrated Wash Buffer

For information on materials required for operation of the system, refer to the Alinity s System Operations Manual, Section 1.

For information on materials required for maintenance procedures, refer to the Alinity s System Operations Manual, Section 9.

Assay Procedure

For a detailed description of how to run an assay, refer to the Alinity s System Operations Manual, Section 5.

- Primary tubes may be on board the system for up to 10 hours.
- If using primary or aliquot tubes, refer to the Alinity s System Operations Manual, Section 4 to ensure sufficient specimen is present.
- 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
  - ≤ 3 hours on the reagent and sample manager:
    - Sample volume for first test: 472 µL*
    - Sample volume for each additional test from same sample cup: 272 µL*
  - > 3 hours on the reagent and sample manager:
    - Replace with a fresh aliquot of sample.
- Refer to the Alinity s HBsAg Calibrator Kit, Assay Control Kit, and/or Release Control Kit package inserts for preparation and usage.
- For general operating procedures, refer to the Alinity s System Operations Manual, Section 5.
- For optimal performance, it is important to perform routine maintenance as described in the Alinity s System Operations Manual, Section 9. Perform maintenance more frequently when required by laboratory procedures.

* Sample volume is based on sufficient quantity required to perform all dilutions, if necessary.

Calibration

For instructions on performing a calibration, refer to the Alinity s System Operations Manual, Section 5.

The Alinity s HBsAg Confirmatory assay uses a calibration generated with the Alinity s HBsAg assay and Alinity s HBsAg Calibrator Kit. Three replicates of Alinity s HBsAg Calibrator 1 and Calibrator 2 are automatically tested by the system. The calibrators must be priority loaded. The calibration must be evaluated using both the Alinity s HBsAg and Alinity s HBsAg Confirmatory assays before the Alinity s HBsAg Confirmatory assay results can be generated. The Alinity s HBsAg Negative Control and Alinity s HBsAg Positive Control must be tested with the Alinity s HBsAg assay, and the Alinity s HBsAg Positive Control must also be tested with the Alinity s HBsAg Confirmatory assay.

Once a calibration is accepted and stored, it may be used for 14 days. During this time, all subsequent samples may be tested without further calibration unless:

• A reagent kit with a new lot number is used.

• Daily quality control results are outside of quality control limits used to monitor and control system performance.

This assay may require recalibration after maintenance to critical parts or subsystems or after service procedures have been performed.

Quality Control Procedures

Assay Controls

The Alinity s HBsAg Negative Control and Alinity s HBsAg Positive Control must be tested with the Alinity s HBsAg assay, and the Alinity s HBsAg Positive Control must be tested with the Alinity s HBsAg Confirmatory assay at least once every 24 hours when the system is being used.

The Alinity s HBsAg Negative Control and Alinity s HBsAg Positive Control values generated using the Alinity s HBsAg assay, and the Alinity s HBsAg Positive Control values generated using the Alinity s HBsAg Confirmatory assay must be within the ranges specified in the Alinity s HBsAg Assay Control Kit package insert. When all assay control values are within range, sample results are generated, and a valid Alinity s HBsAg Release Control result generated using the Alinity s HBsAg assay is required to release the Alinity s HBsAg Confirmatory test results. If any assay control value is not within range, sample results are not generated for in-process or scheduled Alinity s HBsAg Confirmatory samples. For troubleshooting information, refer to the Alinity s System Operations Manual, Section 10

Release Controls

The Alinity s HBsAg Release Control must be tested in order to release test results.

The release control is tested at user-defined intervals using the Alinity s HBsAg assay. For configuring the release control, refer to the Alinity s System Operations Manual, Section 2. For manually ordering the release control, refer to the Alinity s System Operations Manual, Section 5.

The release control must meet the specifications defined in the Alinity s HBsAg Release Control Kit package insert in order to validate the system functionality and release test results. If the release control does not meet specifications, refer to the Alinity s System Operations Manual, Section 10, for additional information.

Other Controls

Additional controls may be tested at operator's discretion in accordance with local, state, and/or federal regulations or accreditation requirements and your laboratory's quality control policy. For additional information on configuring customer controls, refer to the Alinity s System Operations Manual, Section 2.

Invalidate controls: Additional controls may be tested anywhere within a run as an invalidate control. Specifications may be assigned to invalidating controls. If an invalidate control fails to meet assigned specifications, no sample results are calculated or provided by the system. When an invalidate control meets assigned specifications, sample processing continues, and a valid release control result is required to release test results.

Non-validating controls: Additional controls may be tested anywhere within a run as a non-validating control. Specifications may be assigned to non-validating controls. A valid release control result is required to release test results. If the user-assigned specifications for the non-validating control(s) are not met and the release control specifications are met, there will be no effect on sample processing. In this case, reactive sample results must not be considered invalid.

Quality Control Guidance

Refer to "Basic QC Practices" by James O Westgard, Ph.D. for guidance on laboratory quality control practices.[23]

■RESULTS

Calculation

The Alinity s System calculates results for the Alinity s HBsAg Confirmatory assay using the ratio of the sample RLU to the cutoff RLU (S/CO) for each specimen and control.

Cutoff RLU = [(Calibrator 1 mean RLU x 0.0575) + (Calibrator 2 mean RLU x 0.8)] x 0.75

The cutoff RLU is stored for each reagent lot calibration.

S/CO = Sample RLU/Cutoff RLU

The Alinity s System calculates the % Neutralization result for the Alinity s HBsAg Confirmatory assay using the Pre-Treatment 1 (HBsAgCf C2) and Pre-Treatment 2 (HBsAgCf C1) results for each specimen and control using the following equation:

% Neutralization = [(Sample with HBsAgCf C1 RLU) - (Sample with HBsAgCf C2 RLU)] / [(Sample with HBsAgCf C1 RLU) - (Calibrator 2 Mean RLU)] × 100

The result is based on S/CO and % Neutralization of the sample. If the sample's HBsAgCf C1 S/CO is <0.70, % neutralization is not applicable. Obtain the final interpretation of results directly from the table in **Interpretation of Results** section in this package insert.

Interpretation of Results

Undiluted

HBsAgCf C1 (S/CO)	% Neutralization	Interpretation
< 0.70	Not Applicable	Not Confirmed
≥ 0.70	< -15%	Invalid Sample is automatically retested with no dilution
≥ 0.70 to < 10.00	≥ -15% to < 50%	Not Confirmed
≥ 0.70	≥ 50%	Confirmed Positive
≥ 10.00	≥ -15% to < 50%	Inconclusive Sample is automatically retested with 1:500 dilution

1:500 Dilution

HBsAgCf C1 (S/CO)	% Neutralization	Interpretation
< 0.70	Not Applicable	Not Confirmed
≥ 0.70	< -15%	Invalid Sample is automatically retested with 1:500 dilution
≥ 0.70	≥ 50%	Confirmed Positive
≥ 0.70	≥ -15% to < 50%	Inconclusive Sample is automatically retested with 1:18 750 dilution

1:18 750 Dilution

HBsAgCf C1 (S/CO)	% Neutralization	Interpretation
< 0.70	Not Applicable	Not Confirmed
≥ 0.70	< -15%	Invalid Sample is automatically retested with 1:18 750 dilution
≥ 0.70	≥ 50%	Confirmed Positive
≥ 0.70	≥ -15% to < 50%	Not Confirmed

- Follow the dilution and final interpretation routine as outlined in the table above, even if % neutralization results > 100% are obtained.
- The interpretation of Not Confirmed for HBsAg indicates that the presence of HBsAg cannot be confirmed through neutralization. The repeatedly reactive result obtained with the Alinity s HBsAg assay may be the result of a nonspecific reaction (false reactive). As the presence of nonspecific binding may obscure low levels of HBsAg in the specimen due to early infection or early recovery, a Not Confirmed result does not exclude HBV infection.

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 Alinity s System Operations Manual, Section 5.

■LIMITATIONS OF THE PROCEDURE

- Potential interference has not been evaluated for substances other than those described in the **SPECIFIC PERFORMANCE CHARACTERISTICS - Interference** section of this package insert.
- Although the association of infectivity and the presence of HBsAg is strong, it is recognized that presently available methods for HBsAg detection are not sensitive enough to detect all potentially infectious units of blood or possible cases of HBV infection.
- Heterophilic antibodies in human serum can react with reagent immunoglobulins, interfering with in vitro immunoassays.[24] Patients routinely exposed to animals or to animal serum products can be prone to this interference and anomalous results may be observed.
- Vaccination with a recombinant HBsAg Hepatitis B vaccine may cause transient positive results caused by a passive transfer of antigen by vaccination.

Refer to the **SPECIMEN COLLECTION AND PREPARATION FOR ANALYSIS** section of this package insert for specimen limitations.

■SPECIFIC PERFORMANCE CHARACTERISTICS

Representative performance data are provided in this section. Results obtained in individual laboratories may vary.

Reproducibility

A study was performed based on guidance from CLSI EP15-A2.[25] Testing was conducted using 3 lots of the Alinity s HBsAg Reagent Kit, HBsAg Confirmatory Kit, Calibrator Kit, Assay Control Kit, and Release Control Kit. Panel members and positive control were tested twice a day for 5 days in replicates of 4 at 3 sites.

			Within-Run		Between-Run		Between-Day		Within-Laboratory[b]		Between-Site		Between-Lot		Reproducibility[c]	
Sample	N	Mean S/CO[a]	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV
Low HBsAg	360	1.75	0.081	4.6	0.015	0.9	0.028	1.6	0.087	4.9	0.000	0.0	0.038	2.2	0.098	5.6
High HBsAg	360	8.40	0.345	4.1	0.091	1.1	0.000	0.0	0.357	4.2	0.000	0.0	0.120	1.4	0.400	4.8
Positive Control	360	2.55	0.098	3.8	0.000	0.0	0.028	1.1	0.102	4.0	0.000	0.0	0.024	0.9	0.112	4.4

			Within-Run		Between-Run		Between-Day		Within-Laboratory[b]		Between-Site		Between-Lot		Reproducibility[c]	
Sample	N	Mean %Neut	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV
Low HBsAg	360	94.98	3.913	4.1	0.705	0.7	0.673	0.7	4.032	4.2	1.421	1.5	3.822	4.0	6.275	6.6
High HBsAg	360	99.05	0.663	0.7	0.257	0.3	0.000	0.0	0.711	0.7	0.205	0.2	0.672	0.7	1.115	1.1
Positive Control	360	97.37	2.337	2.4	0.374	0.4	0.000	0.0	2.366	2.4	0.928	1.0	2.376	2.4	3.808	3.9

%CV = coefficient of variation expressed as a percentage; N = number of replicates; %Neut = % neutralization; SD = standard deviation

[a] Pre-Treatment 2 S/CO.

[b] Includes within-run, between-run, and between-day variability.

[c] Includes within-run, between-run, between-day, between-site, between-lot and the site-lot interaction variability.

Confirmation of HBsAg Reactive Specimens

Preselected Positive and Increased Risk specimens that were repeatedly reactive by the Alinity s HBsAg assay were evaluated using the Alinity s HBsAg Confirmatory assay.

Specimen Category	N	Number of Alinity s HBsAg RR (% of Total)	Number Confirmed Positive[a] (% of RR) (95% CI)
Preselected HBsAg Positive[b]	167	167 (100.00)	167 (100.00) (97.82 - 100.00)
Preselected HBsAg Positive – Acute HBV Infection[b]	70	70 (100.00)	70 (100.00) (94.87 - 100.00)
Preselected HBsAg Positive – Chronic HBV Infection[b]	195	195 (100.00)	195 (100.00) (98.13 - 100.00)
Total Preselected Positive	**432**	**432 (100.00)**	**432 (100.00) (99.15 - 100.00)**
Increased Risk of HBV Infection[c]	403	3 (0.74)	3 (100.00) (NA[d])
HBsAg Positive Genotypes A-H	16	16 (100.0)	16 (100.0) (79.4 - 100.0)

NA = Not Applicable; RR = Repeatedly Reactive

[a] A specimen was considered as confirmed positive if the result for the non-neutralized specimen (incubated with Alinity s HBsAg Confirmatory Pre-Treatment 2) was ≥ 0.70 S/CO and if neutralization with anti-HBs (Alinity s HBsAg Confirmatory Pre-Treatment 1) was ≥ 50%

[b] Preselected HBsAg positive specimens were previously confirmed positive by specific antibody neutralization using FDA approved assays. Acute and chronic HBV classifications were determined using four HBV reference markers (HBsAg, anti-HBc IgM, anti-HBc, and anti-HBs) or by medical diagnosis.

[c] The following risk factors were included: current or past residence in a Hepatitis B endemic region, diagnosed or treated for a sexually transmitted disease, hemodialysis patient, heterosexual contact with a high-risk individual or an infected individual, history of incarceration, household contact with HBV infected individual, intravenous drug user, men who have sex with men, and multiple sex partners.

[d] The confidence interval is not meaningful due to the small number of specimens.

Presumed negative specimens from the following categories were evaluated using the Alinity s HBsAg assay. Specimens that were repeatedly reactive by the Alinity s HBsAg assay were evaluated using the Alinity s HBsAg Confirmatory assay.

Specimen Category	N	Number of Alinity s HBsAg RR (% of Total)	Number Confirmed Positive[a] (% of RR)
Volunteer Blood Donors - Serum	7347	5 (0.07)	2 (40.00)
Volunteer Blood Donors - Plasma	6511	3 (0.05)	0 (0.00)
Total Volunteer Blood Donors	**13 858**	**8 (0.06)**	**2 (25.00)[b]**
Plasmapheresis Donors	3135	0 (0.00)	NA
Total Donors	**16 993**	**8 (0.05)**	**2 (25.00)[b]**
Other Specimen Conditions or Disease States[c]	191	9 (4.71)	9 (100.00)[d]

NA = Not Applicable; RR = Repeatedly Reactive

[a] A specimen was considered as confirmed positive if the result for the non-neutralized specimen (incubated with Alinity s HBsAg Confirmatory Pre-Treatment 2) was ≥ 0.70 S/CO and if neutralization with anti-HBs (Alinity s HBsAg Confirmatory Pre-Treatment 1) was ≥ 50%

[b] The 6 repeatedly reactive specimens that were not confirmed by the Alinity s HBsAg Confirmatory assay were nonreactive by a commercially available HBsAg assay.

[c] The specimens included the following: Anti-HIV-1/HIV-2 Positive (10), Anti-HTLV I/II Positive (10), Anti-HCV Positive (10), Anti-HAV Positive (10), Anti-HDV Positive (9), Co-infected CMV/EBV/HSV (10), Anti-*T pallidum* Positive (10), Non-viral Hepatitis (10), Rheumatoid Factor Positive (10), Anti-ds DNA Positive (10), Pregnant Females (14), Multiparous Females (10), Hyper IgG/IgM (10), Influenza Vaccine Recipient (10), Hemodialysis Patients (10), HAMA Positive (10), *E coli* Infection (9), Heterophilic Antibody Positive (9), and Fungal (Yeast) Infection (10).

[d] One anti-HIV-1/HIV-2 Positive and 8 anti-HDV Positive specimens were confirmed positive.

Interference

Potentially Interfering Endogenous Substances

A study was performed based on guidance from CLSI EP07-A2.[26]
No interference was observed using the Alinity s HBsAg Confirmatory assay from potentially interfering substances at the levels shown below.

Potentially Interfering Substance	Interferent Level
Conjugated Bilirubin	≤ 20 mg/dL
Unconjugated Bilirubin	≤ 20 mg/dL
Hemoglobin	≤ 500 mg/dL
Triglycerides	≤ 3000 mg/dL
Total Protein	≤ 12 g/dL

In addition, a positive control was spiked with biotin to a concentration of 4250 ng/mL. No interference was observed using the Alinity s HBsAg Confirmatory assay.

The effect of potentially interfering substances has only been evaluated for those listed in this package insert.

HBsAg Mutant Detection

A total of 52 preselected HBsAg positive mutant specimens (14 native mutant specimens and 38 recombinant mutant specimens) obtained from commercial vendors were tested using the Alinity s HBsAg Confirmatory assay. The results were compared to a commercially available HBsAg confirmatory assay.

Mutant	Alinity s HBsAg Confirmatory Interpretation	Commercially Available Confirmatory HBsAg Assay Interpretation
Native Mutant Specimens		
Ser-143-Leu+Pro-211-His	**CP**	**CP**
Gly-145-Ala+Thr-189-Ile	**CP**	**CP**
Thr-27-Lys+Tyr-100-Cys+Gln-129-Arg+Leu-175-Ser+Trp-199-Leu	**CP**	**CP**
Leu-49-Arg+Gln-101-His+Thr-126-Ile+Glu-164-Gly	**CP**	**CP**
Gly-145-Ala	**CP**	**CP**
Cys-76-Trp+Pro-120-Ser+Ser-132-Phe	**CP**	**CP**
Asp-144-Glu+Ser-204-Asn+Ser-207-Asn	**CP**	**CP**
Pro-127-Leu+Gln-129-His	**CP**	**CP**
Ser-143-Leu+Thr-189-Ile	**CP**	**CP**
Gly-145-Ala+Thr-189-Ile+Phe-212-Tyr	**CP**	**CP**
Ser-143-Leu	**CP**	**CP**
Thr-118-Lys+ Thr-140-Ile+Cys-149-Tyr	**CP**	RRNC
Pro-135-Leu+ Cys-139-Tyr+ Asp-144-Ala+ Gly-145-Arg+Ser-171-Tyr+ Val-180-Ala	**CP**	RRNC
Phe-93-Cys+ Met-103-Ile+ Gly-145-Arg+ Ser-174-Asn	**CP**	RRNC
Recombinant Mutant Specimens		
Cys-137-Tyr	**CP**	**CP**
Cys-147-Ser	**CP**	**CP**
Cys-124-Arg	**CP**	**NA**
122-Asp-Thr	**CP**	**NA**
Pro-120-Ser+Thr-125-Met+Pro-127-Tyr+Ser-143-Leu	**CP**	**CP**
Cys-121-Tyr+Lys-122-Leu+Thr-123-Asn+Gly-130-Glu+Met-133-Ile+Asp-144-Gly+Gly-145-Arg	**CP**	NA
Gln-129-His	**CP**	**CP**
Met-133-Leu	**CP**	**CP**
Asp-144-Ala	**CP**	**CP**
Gly-145-Arg	**CP**	**CP**
Pro-142-Leu+Gly-145-Arg	**CP**	**CP**
Pro-142-Ser+Gly-145-Arg	**CP**	**CP**
Thr-123-Ala	**CP**	NA
122-Asn-Thr	**CP**	NA
122-Arg-Ala	**CP**	NA
Thr-123-Asn	**CP**	NA
Gly-145-Lys	**CP**	**CP**
Thr-143-Leu	**CP**	**CP**
Thr-123-Ser	**CP**	NA
123-Arg-Gly-Ala	**CP**	NA
Thr-123-Ala+Gly-145-Arg	**CP**	NA
Gly-145-Glu	**CP**	**CP**
Met-133-Leu+Gly-145-Arg	**CP**	**CP**
Thr-126-Ser	**CP**	**CP**
Met-133-Thr	**CP**	**CP**
Gly-145-Ala	**CP**	**CP**
Pro-120-Ser+Asp-144-Glu+Gly-145-Arg+Thr-189-Ile	**CP**	**CP**
Phe-134-His+Pro-142-Leu+Asp-144-Glu+Gly-145-Arg	**CP**	**CP**
Thr-126-Ile	**CP**	**CP**
Thr-123-Asn+Thr-143-Ser	**CP**	NA
Thr-126-Ala+Met-133-Ile	**CP**	**CP**
Pro-127-Thr+Gly-145-Arg	**CP**	**CP**
Asp-144-Glu+Gly-145-Arg	**CP**	**CP**
Thr-126-Ile+Phe-134-His+Pro-142-Leu+Gly-145-Arg	**CP**	**CP**
Thr-143-Leu+Val-190-Ala+Tyr-200-Cys+Tyr-206-Arg	**CP**	**CP**
Leu-109-Ile+Gly-112-Lys+Ser-113-Ala+Pro-120-Thr+Phe-134-Ser	**CP**	**CP**
Ile-110-Arg+Lys-122-Tyr+Phe-134-Ser+Pro-142-Leu+Asp-144-Ala	**CP**	**CP**
Thr-125-Met+Thr-126-Asn+Pro-127-Thr	**CP**	**CP**

CP = confirmed positive; RRNC = repeatedly reactive not confirmed

NA = not applicable; specimen was nonreactive on screening assay

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Note for number formatting:

- A space is used as thousands separator (example: 10 000 specimens).
- A period is used to separate the integer part from the fractional part of a number written in decimal form (example: 3.12%).

Key to Symbols

	Caution
	Consult instructions for use
	Manufacturer
	Sufficient for
	Temperature limitation
	Use by/Expiration date
CONTAINS: AZIDE	Contains Sodium Azide. Contact with acids liberates very toxic gas.
DISTRIBUTED IN THE USA BY	Distributed in the USA by
INFORMATION FOR USA ONLY	Information needed for United States of America Only
IVD	*In Vitro* Diagnostic Medical Device
LOT	Lot Number
PRE-TREATMENT 1	Pre-Treatment 1
PRE-TREATMENT 2	Pre-Treatment 2
PRODUCT OF IRELAND	Product of Ireland
REF	List Number
SN	Serial Number

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Revised June 2019

Alinity s

HBsAg Calibrator Kit

en
HBsAg
REF 06P0204
G92138R02
S6P02E

Revised April 2019.

Instructions must be carefully followed. Reliability of assay results cannot be guaranteed if there are any deviations from these instructions.

NAME

Alinity s HBsAg Calibrator Kit

INTENDED USE

The Alinity s HBsAg Calibrators are used to calibrate the Alinity s System when it is used for the qualitative detection of hepatitis B surface antigen (HBsAg) in human serum and plasma.

REAGENTS

Kit Contents

CAL 1 2 bottles of HBsAg Calibrator 1 contain inactivated, purified, human HBsAg (subtype ad) in phosphate buffer with human plasma. Preservatives: ProClin 300 and ProClin 950.

CAL 2 2 bottles of HBsAg Calibrator 2 contain recalcified, human plasma. Preservatives: ProClin 950 and sodium azide.

Calibrator	Quantity	Color	Target Value (IU/mL)
CAL 1	2 x 1.6 mL	None	0.5244
CAL 2	2 x 1.6 mL	None	Not applicable

Standardization

The HBsAg Calibrator 1 is standardized to the World Health Organization (WHO) Second International Standard for HBsAg (subtype adw2, genotype A NIBSC Code 00/588).

Warnings and Precautions

IVD

For *In Vitro* Diagnostic Use

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.[1-4]

Calibrator 1 contains purified HBsAg (inactivated). The human plasma used is nonreactive for HBsAg, HIV-1 RNA or HIV-1 Ag, anti-HIV-1/HIV-2, anti-HCV, and anti-HBs.

The human plasma used in the calibrator 2 is nonreactive for HBsAg, HIV-1 RNA or HIV-1 Ag, anti-HIV-1/HIV-2, anti-HCV, and anti-HBs.

The following warnings and precautions apply to: CAL 1	
WARNING:	Contains 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.

The following warnings and precautions apply to: CAL 2	
WARNING:	Contains methylisothiazolone and sodium azide.
H317	May cause an allergic skin reaction.
EUH032	Contact with acids liberates very toxic gas.
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.transfusion.abbott or contact your local representative.

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

Reagent Handling

- Do not pool the calibrators.
- Do not freeze.
- For a detailed discussion of handling calibrators during system operation, refer to the Alinity s System Operations Manual, Section 7.

Reagent Storage

	Storage Temperature	Maximum Storage Time	Additional Storage Instructions
Unopened	2 to 8°C	Until expiration date	Store in an upright position. May be used immediately after removal from 2 to 8°C storage.
Onboard	System Temperature	5 hours	
Opened	2 to 8°C	24 hours	Store tightly capped. Store in an upright position. Do not invert calibrators prior to loading them on the system.

Indications of Deterioration

- Instability or deterioration should be suspected if there are precipitates, visible signs of leakage, turbidity, if calibration does not meet the appropriate package insert and/or Alinity s System Operations Manual criteria, or if controls do not meet the appropriate criteria.
- For troubleshooting information, refer to the Alinity s System Operations Manual, Section 10.

PROCEDURE

Materials Provided

- 06P0204 Alinity s HBsAg Calibrator Kit

Instructions for Use

- Calibrator bottles are one-time use.
- For information on ordering calibrations and loading calibrators, refer to the Alinity s System Operations Manual, Section 5.

QUALITY CONTROL PROCEDURES

- Three replicates of Calibrator 1 and Calibrator 2 are automatically tested by the system. The calibrators must be priority loaded.
- Once a calibration is accepted and stored, it may be used for 14 days. During this time, all subsequent samples may be tested without further calibration unless:
  - A reagent kit with a new lot number is used.
  - Daily quality control results are outside of quality control limits used to monitor and control system performance.
- This assay may require recalibration after maintenance to critical parts or subsystems or after service procedures have been performed.
- Refer to the Alinity s HBsAg Reagent Kit package insert and the Alinity s System Operations Manual for additional information.
- A single sample of each assay control must be tested to evaluate the calibration. For information on ordering controls, refer to the Alinity s System Operations Manual, Section 5.
  - Ensure that assay control values are within the ranges specified in the **RESULTS** section of the Alinity s HBsAg Assay Control Kit package insert.

BIBLIOGRAPHY

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2. US Department of Health and Human Services. *Biosafety in Microbiological and Biomedical Laboratories*. 5th ed. Washington, DC: US Government Printing Office; December 2009.
3. World Health Organization. *Laboratory Biosafety Manual*. 3rd ed. Geneva: World Health Organization; 2004.
4. Clinical and Laboratory Standards Institute (CLSI). *Protection of Laboratory Workers from Occupationally Acquired Infections; Approved Guideline—Fourth Edition*. CLSI Document M29-A4. Wayne, PA: CLSI; 2014.

Key to Symbols

	Caution
	Consult instructions for use
	Manufacturer
	Temperature limitation
	Use by/Expiration date
CAL 1	Calibrator 1
CAL 2	Calibrator 2
CN	Control Number
CONTAINS: AZIDE	Contains Sodium Azide. Contact with acids liberates very toxic gas.
DISTRIBUTED IN THE USA BY	Distributed in the USA by
INFORMATION FOR USA ONLY	Information needed for the United States of America only
IVD	*In vitro* Diagnostic Medical Device
LOT	Lot Number
PRODUCT OF IRELAND	Product of Ireland
REF	List Number
SN	Serial Number

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Revised April 2019.

Alinity s

HBsAg Assay Control Kit

en
HBsAg
REF 06P0213
G92139R02
C6P02E

Revised April 2019.

Instructions must be carefully followed. Reliability of assay results cannot be guaranteed if there are any deviations from these instructions.

NAME

Alinity s HBsAg Assay Control Kit

INTENDED USE

The Alinity s HBsAg Assay Controls are used to verify the calibration of the Alinity s System when it is used for the qualitative detection of hepatitis B surface antigen (HBsAg) in human serum and plasma.

REAGENTS

Kit Contents

Σ 1 x 30 tests

CONTROL – 1 bottle of HBsAg Negative Control contains recalcified, human plasma. Preservatives: ProClin 950 and sodium azide.

CONTROL + 1 bottle of HBsAg Positive Control contains inactivated, purified, human HBsAg (subtypes ad and ay) in human plasma. Preservatives: sodium azide and antimicrobial agents.

Control	Quantity	Color	Minimum Activity (S/CO)
CONTROL –	1 x 5.1 mL	None	Not applicable
CONTROL +	1 x 5.1 mL	None	1.42

S/CO = sample to cutoff

Warnings and Precautions

IVD

For *In Vitro* Diagnostic Use

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.[1-4]

The human plasma used in the negative control is nonreactive for HBsAg, HIV-1 RNA or HIV-1 Ag, anti-HIV-1/HIV-2, anti-HCV, and anti-HBs.

The positive control contains purified HBsAg (inactivated). The human plasma used is nonreactive for HBsAg, HIV-1 RNA or HIV-1 Ag, anti-HIV-1/HIV-2, anti-HCV, and anti-HBs.

The following warnings and precautions apply to: CONTROL –	
WARNING:	Contains methylisothiazolone and sodium azide.
H317	May cause an allergic skin reaction.
EUH032	Contact with acids liberates very toxic gas.
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.

The following warnings and precautions apply to: CONTROL +	
Contains sodium azide.	
EUH032	Contact with acids liberates very toxic gas.
P501	Dispose of contents / container in accordance with local regulations.

Safety Data Sheets are available at www.transfusion.abbott or contact your local representative.

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

Reagent Handling

- Do not pool the assay controls.
- Do not freeze.
- For a detailed discussion of handling assay controls during system operation, refer to the Alinity s System Operations Manual, Section 7.

Reagent Storage

	Storage Temperature	Maximum Storage Time	Additional Storage Instructions
Unopened	2 to 8°C	Until expiration date	Store in an upright position. May be used immediately after removal from 2 to 8°C storage.
Onboard	System Temperature	15 hours	
Opened	2 to 8°C	30 days	Store tightly capped. Return to refrigerated storage after use. Do not invert controls prior to loading on the system.

Indications of Deterioration

- Instability or deterioration should be suspected if there are precipitates, visible signs of leakage, turbidity, or if assay controls do not meet the appropriate package insert criteria.
- For troubleshooting information, refer to the Alinity s System Operations Manual, Section 10.

PROCEDURE

Materials Provided

- 06P0213 Alinity s HBsAg Assay Control Kit

Instructions for Use

For information on ordering assay controls, refer to the Alinity s System Operations Manual, Section 5.

QUALITY CONTROL PROCEDURES

- The Alinity s HBsAg Assay Controls must be tested once every 24 hours when the system is being used.
- Assay control values must be within the ranges specified in the **RESULTS** section of this package insert. When the assay control values are within range, sample results are generated, and a valid release control result is required to release test results. If an assay control value is not within range, sample results are not generated for in-process or scheduled samples. For troubleshooting information, refer to the Alinity s System Operations Manual, Section 10.
- Refer to the Alinity s HBsAg Reagent Kit package insert and the Alinity s System Operations Manual for additional information.

RESULTS

The following table details the acceptable Sample to Cutoff ratio (S/CO) specifications for the Alinity s HBsAg Assay Controls.

Assay Control	S/CO Range
CONTROL –	≤ 0.70
CONTROL +	1.42 - 7.25

For the Alinity s HBsAg Confirmatory assay, the Positive Control has the following specifications (non-neutralized results only*):

Assay Control	S/CO Range	% Neutralization
CONTROL +	1.47 - 7.49	≥ 50%

* The HBsAg Confirmatory assay consists of 2 tests: in the first test, Pre-Treatment 1 neutralizes HBsAg present in the sample; in the second test, Pre-Treatment 2 does not neutralize HBsAg in the sample. For the first neutralizing test, the S/CO range for the positive control result is not defined.

BIBLIOGRAPHY

1. US Department of Labor, Occupational Safety and Health Administration, 29 CFR Part 1910.1030, Bloodborne pathogens.
2. US Department of Health and Human Services. *Biosafety in Microbiological and Biomedical Laboratories*. 5th ed. Washington, DC: US Government Printing Office; December 2009.
3. World Health Organization. *Laboratory Biosafety Manual*. 3rd ed. Geneva: World Health Organization; 2004.
4. Clinical and Laboratory Standards Institute (CLSI). *Protection of Laboratory Workers from Occupationally Acquired Infections; Approved Guideline—Fourth Edition*. CLSI Document M29-A4. Wayne, PA: CLSI; 2014.

Key to Symbols

	Caution
	Consult instructions for use
	Manufacturer
	Sufficient for
	Temperature limitation
	Use by/Expiration date
CN	Control Number
CONTAINS: AZIDE	Contains Sodium Azide. Contact with acids liberates very toxic gas.
CONTROL –	Negative Control
CONTROL +	Positive Control
DISTRIBUTED IN THE USA BY	Distributed in the USA by
INFORMATION FOR USA ONLY	Information needed for the United States of America only
IVD	*In vitro* Diagnostic Medical Device
LOT	Lot Number
PRODUCT OF IRELAND	Product of Ireland
REF	List Number
SN	Serial Number

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Revised April 2019.

Alinity s

HBsAg Release Control Kit

en
HBsAg
REF 06P0215
G92140R02
H6P02E

Revised April 2019.

Instructions must be carefully followed. Reliability of assay results cannot be guaranteed if there are any deviations from these instructions.

NAME

Alinity s HBsAg Release Control Kit

INTENDED USE

The Alinity s HBsAg Release Control is used to validate the Alinity s System functionality and release sample results when it is used for the qualitative detection of hepatitis B surface antigen (HBsAg) in human serum and plasma.

REAGENTS

Kit Contents

Σ 25 x 20 tests

RELEASE CONTROL 25 bottles of HBsAg Release Control contain inactivated, purified, human HBsAg (subtypes ad and ay) in human plasma. Preservatives: sodium azide and antimicrobial agents.

Control	Quantity	Color	Minimum Activity (S/CO)
RELEASE CONTROL	25 x 4.0 mL	None	1.42

S/CO = sample to cutoff

Warnings and Precautions

IVD

For *In Vitro* Diagnostic Use

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.[1-4]

The release control contains purified HBsAg (inactivated). The human plasma used is nonreactive for HBsAg, HIV-1 RNA or HIV-1 Ag, anti-HIV-1/HIV-2, anti-HCV, and anti-HBs.

The following warnings and precautions apply to: RELEASE CONTROL	
Contains sodium azide.	
EUH032	Contact with acids liberates very toxic gas.
P501	Dispose of contents / container in accordance with local regulations.

Safety Data Sheets are available at www.transfusion.abbott or contact your local representative.

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

Reagent Handling

- Do not pool the release control.
- Do not freeze.
- For a detailed discussion of handling the release control during system operation, refer to the Alinity s System Operations Manual, Section 7.

Reagent Storage

	Storage Temperature	Maximum Storage Time	Additional Storage Instructions
Unopened	2 to 8°C	Until expiration date	Store in an upright position. May be used immediately after removal from 2 to 8°C storage.
Onboard	System Temperature	24 hours	
Opened	2 to 8°C	14 days	Store tightly capped. Return to refrigerated storage after use. Do not invert controls prior to loading on the system.

Indications of Deterioration

- Instability or deterioration should be suspected if there are precipitates, visible signs of leakage, turbidity, or if the release control does not meet the appropriate package insert criteria.
- For troubleshooting information, refer to the Alinity s System Operations Manual, Section 10.

PROCEDURE

Materials Provided

- 06P0215 Alinity s HBsAg Release Control Kit

Instructions for Use

For information on ordering release controls, refer to the Alinity s System Operations Manual, Section 5.

QUALITY CONTROL PROCEDURES

- The Alinity s HBsAg Release Control must be tested in order to release test results. The release control is tested at user-defined intervals. For configuring the release control, refer to the Alinity s System Operations Manual, Section 2. For manually ordering the release control, refer to the Alinity s System Operations Manual, Section 5.
- The release control must meet the specifications defined in the **RESULTS** section of this package insert in order to validate the system functionality and release test results. If the release control does not meet specifications, refer to the Alinity s System Operations Manual, Section 10, for additional information.
- Refer to the Alinity s HBsAg Reagent Kit package insert and the Alinity s System Operations Manual for additional information.

RESULTS

The acceptable Sample to Cutoff ratio (S/CO) specification for the Alinity s HBsAg Release Control is shown below.

RELEASE CONTROL S/CO Range: 1.42 - 7.25

BIBLIOGRAPHY

1. US Department of Labor, Occupational Safety and Health Administration, 29 CFR Part 1910.1030, Bloodborne pathogens.
2. US Department of Health and Human Services. *Biosafety in Microbiological and Biomedical Laboratories*. 5th ed. Washington, DC: US Government Printing Office; December 2009.
3. World Health Organization. *Laboratory Biosafety Manual*. 3rd ed. Geneva: World Health Organization; 2004.
4. Clinical and Laboratory Standards Institute (CLSI). *Protection of Laboratory Workers from Occupationally Acquired Infections; Approved Guideline—Fourth Edition*. CLSI Document M29-A4. Wayne, PA: CLSI; 2014.

Key to Symbols

	Caution
	Consult instructions for use
	Manufacturer
	Sufficient for
	Temperature limitation
	Use by/Expiration date
CN	Control Number
CONTAINS: AZIDE	Contains Sodium Azide. Contact with acids liberates very toxic gas.
DISTRIBUTED IN THE USA BY	Distributed in the USA by
INFORMATION FOR USA ONLY	Information needed for the United States of America only
IVD	*In vitro* Diagnostic Medical Device
LOT	Lot Number
PRODUCT OF IRELAND	Product of Ireland
REF	List Number
RELEASE CONTROL	Release Control
SN	Serial Number

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Revised April 2019.

Alinity s HBsAg Reagent Kit

HBsAg

Antibody to Hepatitis B Surface Antigen (Mouse Monoclonal IgG and IgM)

Alinity s HBsAg Reagent Kit

Abbott

2°C – 8°C

LOT Exp.

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REF 06P0260 Σ 10 x 500

www.abbottdiagnostics.com/IFU

2°C – 8°C

G72873R01

MICROPARTICLES	10 x 27.0 mL
CONJUGATE	10 x 26.7 mL
ANCILLARY WASH BUFFER	10 x 26.5 mL

Exp.

LOT

IVD

PRODUCT OF IRELAND

CONTAINS: AZIDE

INFORMATION FOR USA ONLY

REF 06P0260

Alinity s HBsAg Reagent Kit

The Alinity s HBsAg assay is a chemiluminescent microparticle immunoassay (CMIA) used for the qualitative detection of hepatitis B surface antigen (HBsAg) in human serum and plasma specimens on the Alinity s System. The Alinity s HBsAg assay is intended to screen individual human donors, including volunteer donors of whole blood and blood components, and other living donors for the presence of HBsAg. The assay is also intended for use in testing serum and plasma specimens to screen organ donors when specimens are obtained while the donor's heart is still beating, and in testing serum specimens to screen cadaveric (non-heart-beating) donors. It is not intended for use on cord blood specimens.

- MICROPARTICLES Anti-HBs (mouse, monoclonal, IgM, IgG) coated microparticles in MES buffer with protein (bovine) stabilizer and surfactant. Minimum concentration: 0.08 % solids. Preservatives: ProClin 300 and ProClin 950.
- CONJUGATE Anti-HBs (mouse, monoclonal, IgG) and anti-HBs (goat, IgG) acridinium-labeled conjugate in phosphate buffer with human plasma and protein (bovine, goat, mouse) stabilizers and surfactant. Minimum concentration: 0.35 µg/mL. Preservatives: ProClin 300, ProClin 950, and sodium azide. Infection risk.
- ANCILLARY WASH BUFFER MES buffer and surfactant. Preservatives: ProClin 300 and ProClin 950.

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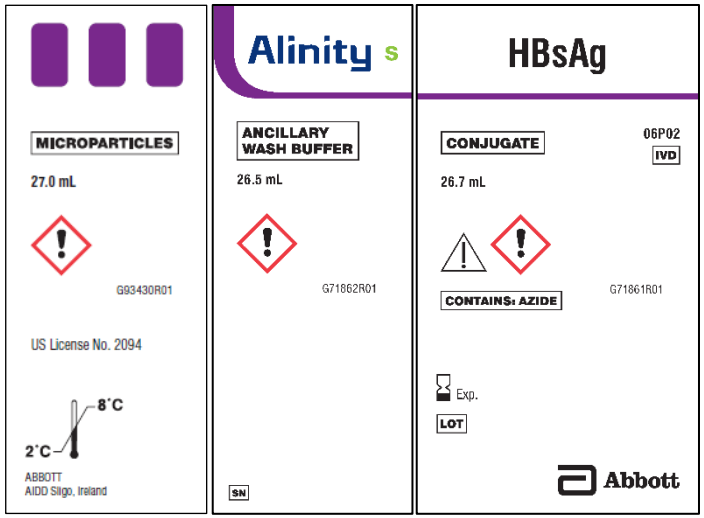
G92004R02

Alinity s HBsAg Reagent Kit (Continued)

The Alinity s HBsAg Reagent Kit is composed of 10 reagent cartridges. Each cartridge is composed of 3 component bottles (microparticles, ancillary wash buffer, and conjugate) bound as a single unit. The microparticle is in position 1, the ancillary wash buffer in position 2, and the conjugate is in position 3 as shown below. Each bottle has a label, and the 3 labels together contain all the required labeling elements for a container label.



Alinity s HBsAg Confirmatory Reagent Kit

HBsAg Conf

Antibody to Hepatitis B Surface Antigen (Sheep)

Alinity s HBsAg Confirmatory Reagent Kit

Abbott

2°C – 8°C

IVD

LOT Exp.

REF 06P0359 Σ 1 x 42

www.abbottdiagnostics.com/IFU

Exp.

LOT

2°C – 8°C

G72874R01

PRE-TREATMENT 1 1 x 4.2 mL

PRE-TREATMENT 2 1 x 23.3 mL

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CONTAINS: AZIDE

INFORMATION FOR USA ONLY

REF 06P0359

Alinity s HBsAg Confirmatory Reagent Kit

The Alinity s HBsAg Confirmatory assay is used to confirm the presence of hepatitis B surface antigen (HBsAg) in human serum and plasma by means of specific antibody neutralization on the Alinity s System. The assay is intended to be used for confirmation of samples found to be repeatedly reactive by the Alinity s HBsAg assay.

- PRE-TREATMENT 1 Recalcified sheep plasma reactive for anti-HBs and recalcified human plasma. Preservatives: ProClin 950 and sodium azide. Infection risk.
- PRE-TREATMENT 2 Recalcified human plasma and recalcified sheep plasma. Preservatives: ProClin 950 and sodium azide. Infection risk.

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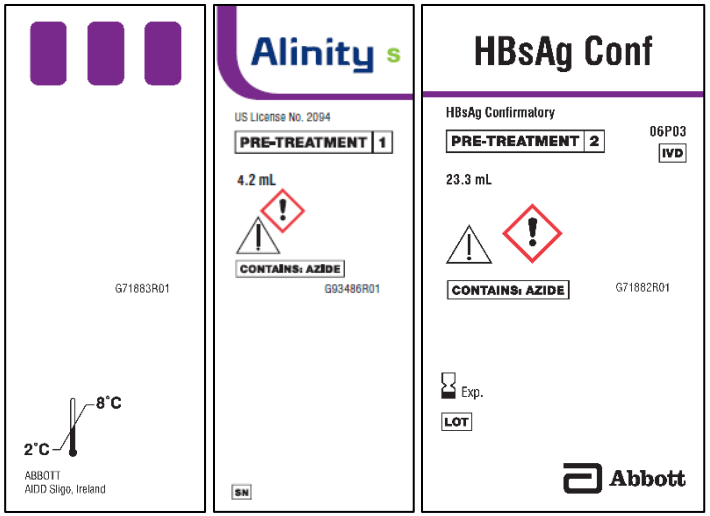
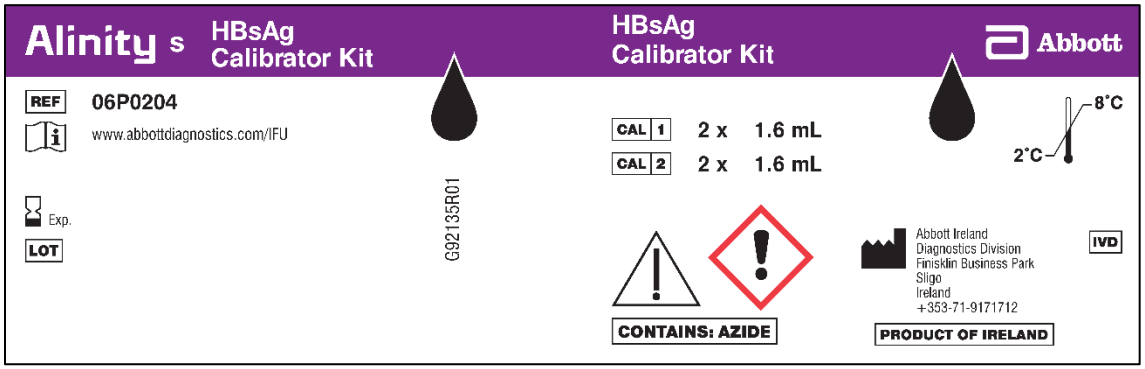
G92005R02

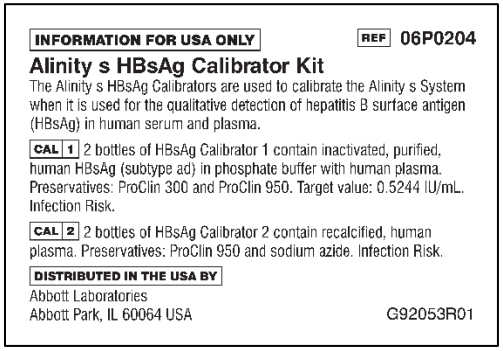
Alinity s HBsAg Confirmatory Reagent Kit (Continued)

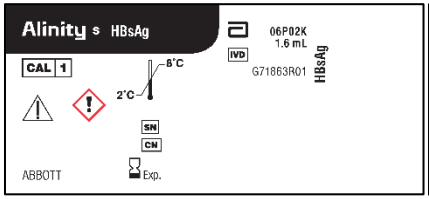
The Alinity s HBsAg Confirmatory Reagent Kit is composed of 1 reagent cartridge. The cartridge is composed of 2 component bottles (Pre-Treatment 1 and Pre-Treatment 2) and a spacer bottle bound as a single unit. The spacer is in position 1, Pre-Treatment 1 is in position 2, and Pre-Treatment 2 is in position 3 as shown below. Each bottle has a label, and the 3 labels together contain all the required labeling elements for a container label.

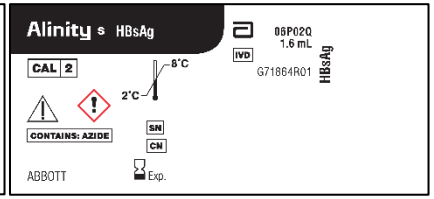


Alinity s HBsAg Calibrator Kit

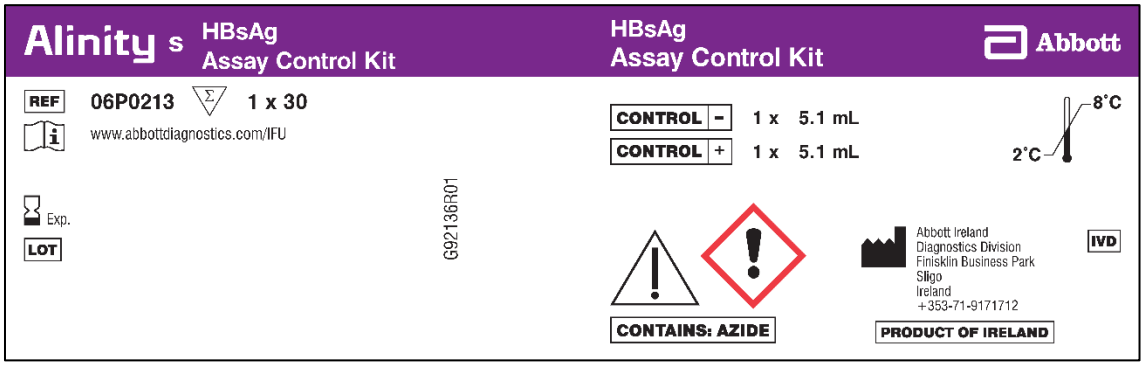


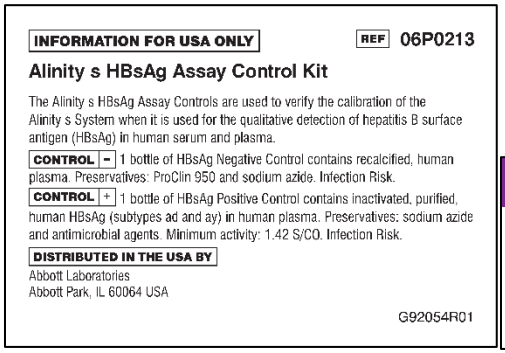


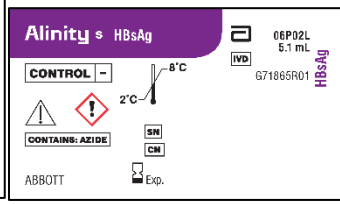


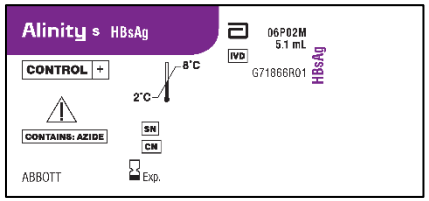


Alinity s HBsAg Assay Control Kit









Alinity s HBsAg Release Control Kit