



## Hepatitis B Virus Surface Antigen (CLIA) PACKAGE INSERT



### [INTENDED USE]

Hepatitis B Virus Surface Antigen (CLIA) is a chemiluminescence immunoassay used for quantitative detection of hepatitis B virus surface antigen (HBsAg) in human plasma or serum. It is mainly used as an auxiliary diagnostic tool for hepatitis B virus infection in clinical practice.

The test must be performed on the ACCRE series analyzers (including ACCRE 6, ACCRE 8, ACCRE 90, ACCRE 100, ACCRE 120, and all other ACCRE series analyzers).

For *in vitro* diagnostic use only. For professional use only.

### [SUMMARY]

Hepatitis B virus surface antigen (HBsAg) is a preferred immunological marker. HBsAg can be detected in the serum of infected individuals in the days or weeks prior to the onset of clinical symptoms. Both acute and chronic hepatitis B patients have HBsAg in their bodies, but very few HBV infected people cannot detect HBsAg in their bodies due to hepatitis B virus mutation or immune factors. HBsAg detection is used to diagnose HBV infection, monitor the course of disease of acute and chronic hepatitis B patients, and even observe the therapeutic effect of anti hepatitis B virus treatment.

### [ASSAY PRINCIPLES]

Hepatitis B Virus Surface Antigen (CLIA) hereinafter also referred to as the “HBsAg” is an antibody sandwich immunoassay. The principle is described as following: Reagents for the assay are ready-to-use and pre-dispensed in the sealed reagent cartridge. All the assay steps are performed automatically by the ACCRE analyzer. The first step is to add the sample and sample treatment solution to the magnetic beads coated with Mouse derived monoclonal antibody against Hepatitis B virus surface antigen, and then mix, incubate and wash. The second step is to react with the Mouse derived monoclonal antibody against Hepatitis B virus surface antigen labeled with alkaline phosphatase, and then mix and incubate to form a double antibody sandwich immune complex. After the reaction is completed, the magnetic beads are adsorbed by the magnetic field, and unbound substances are removed by washing. After the substrate solution is added, the luminescence intensity is detected by a photomultiplier tube (PMT). After calculating the luminescence signal value of the sample, the IU/mL value of Hepatitis B virus surface antigen in the sample is obtained.

### [CONTENT OF THE KIT]

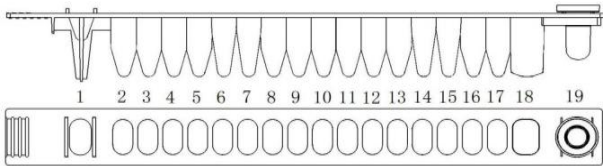
**Package: 60 tests/kit with quality controls, 36 tests/kit with quality controls. Traceability: The calibrators of this kit can be traced to the internal reference substance. For specific calibrator concentration values, see the Calibrator Barcode Sheet for each lot.**

| Contents                             | Quantities   |              | Notice                                    |
|--------------------------------------|--------------|--------------|-------------------------------------------|
|                                      | REF<br>W82A  | REF<br>W82C  |                                           |
| HBsAg reagent cartridge              | 60 strips    | 36 strips    | Ready to use                              |
| HBsAg Calibrator 1 (CAL 1)           | 1.0mL×1 vial | 1.0mL×1 vial | Tris buffer, ProClin300, BND, BSA, HBsAg. |
| HBsAg Calibrator 2 (CAL 2)           | 1.0mL×1 vial | 1.0mL×1 vial | Tris buffer, ProClin300, BND, BSA, HBsAg. |
| HBsAg Quality Control level 1 (QC 1) | 1.0mL×1 vial | 1.0mL×1 vial | Tris buffer, ProClin300, BND, BSA.        |
| HBsAg Quality Control level 2 (QC 2) | 1.0mL×1 vial | 1.0mL×1 vial | Tris buffer, ProClin300, BND, BSA, HBsAg. |
| Instruction for Use                  | 1            | 1            | N/A                                       |
| Reagent Registration Card            | 1            | 1            | N/A                                       |
| Calibrator Barcode Sheet             | 1            | 1            | N/A                                       |
| Quality Control Sheet                | 1            | 1            | N/A                                       |

**Note: Refer to the target value list of the controls from Quality Control Sheet within the kit.**

### The Reagent Cartridge

The strip consists of 19 wells. The 1st well is the sample well and the last 19th well is the reading well for chemiluminescent signal. From the 2nd to the 18th well are all covered with a labeled, aluminum foil seal. The label comprises a barcode which mainly indicates the reagent assay information, reagent lot number and expiration date. All reagents components needed for the assay are ready-to-use and pre-dispensed in the cartridges. And please do not interchange integral component from different reagents or lots.



### Description of the reagent cartridge

| Well              | Component                      | Content                                                             | Volume |
|-------------------|--------------------------------|---------------------------------------------------------------------|--------|
| 5                 | Enzyme Label (R2)              | ALP (alkaline phosphatase) labeled Anti-HBs, MES Buffer, ProClin300 | 100μL  |
| 7                 | Magnetic Particles (R1)        | Anti-HBs coated magnetic particles, Tris buffer, ProClin300         | 50μL   |
| 9                 | Sample Treatment Solution (R3) | BSA, Tris buffer, ProClin300                                        | 50uL   |
| 2, 3, 10, 11, 12, | Wash Solutions                 | Tris buffer, ProClin300, BND                                        | 350μL  |

|    |                    |                                                                                        |       |
|----|--------------------|----------------------------------------------------------------------------------------|-------|
| 16 | Substrate Solution | Disodium [[4-chlorophenyl)sulfanyl] (10-methyl-9(10H)-acridinylidene) methyl phosphate | 200μL |
|----|--------------------|----------------------------------------------------------------------------------------|-------|

Note: Well 1,4,6,8,13,14, 15,17,18 are empty.

### [MATERIALS AND DISPOSABLES REQUIRED BUT NOT PROVIDED]

- Sample diluent (manufactured by Tisenc), if needed.
- Pipette with disposable tip to dispense 200 μL.
- Powderless and disposable gloves.
- Disposable tips for ACCRE analyzer
- For other specific materials and disposables, please refer to the Instrument User Manual.
- Instruments of the ACCRE series analyzers.

### [WARNINGS AND PRECAUTIONS]

- For *in vitro* diagnostic use only.
- For professional use only by qualified laboratory personnel.
- This kit contains products of animal origin. Certified knowledge of the origin and/or sanitary state of the animals does not totally guarantee the absence of transmissible pathogenic agents. It is therefore recommended that these products be treated as potentially infectious, and handled observing the usual safety precautions (do not ingest; do not inhale).
- Do not use reagents after the expiration date indicated on the box label.
- Do not use if the packaging of reagent cartridge is damaged or leaked.
- Do not use the reagents if the quantity is obviously insufficient.
- If any component adheres to inside wall of wells or aluminum film of the reagent cartridge, please gently switch the reagent cartridge to let the component back the wells.
- Do not reverse the reagent cartridge. Otherwise, the result will be unreliable.
- Package insert instructions must be carefully followed. Reliability of assay results cannot be guaranteed if there are any deviations from the instructions in this package insert.
- Use powderless gloves, as powder has been reported to cause false results for certain enzyme immunoassay tests.

### [STORAGE]

- Store the Hepatitis B Virus Surface Antigen (CLIA) upright at 2-8 °C, and kit can be stored for 18 months from manufactured date . After the reagent cartridge is taken out from the refrigerator to equilibrate, the testing should be completed within 2 hours.
- Store the calibrators and quality controls at 2-8 °C till expiry date. When opened, the calibrators and/or controls will be stable for 30 days at 2-8 °C.
- Keep away from sunlight.
- Do not freeze reagents cartridge.

### [SAMPLES]

The sample volume for Hepatitis B Virus Surface Antigen (CLIA) assay is 100μL, please note that at least 125μL of sample has to be pipetted manually into the reagent cartridge.

### Sample type and collection

Human serum or plasma (Heparin lithium/Heparin sodium/Sodium citrate/EDTA-K<sub>2</sub>/EDTA-Na<sub>2</sub>)

Types of tubes:

- Plastic tube with clot activator,
- Plastic tube with clot activator and separation gel,
- Plastic tube with heparin lithium,

- Plastic tube with heparin sodium,
- Plastic tube with sodium citrate,
- Plastic tube with EDTA-K<sub>2</sub>,  
Plastic tube with EDTA-Na<sub>2</sub>.

It is recommended to validate collection tubes before using them as some may contain substances which interfere with test results.

Note: Blood sampling tube results may vary from one manufacturer to another depending on the materials and additives used.

It is the responsibility of each laboratory to validate the type of sample tube used and to follow the manufacturer's recommendations for use.

### Sample preparation

The current revision of the WHO/DIL/LAB/99.1 document provides recommendations for the preparation of samples.

For use of the sample tubes, follow the tube manufacturer's instructions for use.

The pre-analytical step, including the preparation of blood samples, is an essential part of medical analyses. In accordance with Good Laboratory Practice, this step is performed under the responsibility of the laboratory manager.

Insufficient clot time can result in the formation of fibrin with micro-clots that are invisible to the naked eye. The presence of fibrin, red blood cells, or suspended particles can lead to erroneous results.

Samples containing suspended fibrin particles or erythrocyte stroma should be centrifuged before testing.

If there is a lipid layer over the sample after centrifuging, please transfer the clear sample into a new sample tube without transferring the lipid layer.

Severe hemolysis samples or heat-inactivated samples are not recommended for applying on the reagents.

Preparation of frozen-stored samples: after thawing, these samples must be thoroughly mixed before testing.

Mix using a vortex-type mixer. If necessary, clarify samples by centrifuging before testing.

### Sample stability

Samples (serum and plasma) can be stored at room temperature (15-30 °C ) for up to 8 hours or at 2-8 °C for up to 14 days; if longer storage is required, freeze the serum or plasma at -20 °C or below -20 °C, without exceeding 3 freeze/thaw cycle.

### [INSTRUCTIONS FOR USE]

**For complete instructions, see the Instrument User Manual.**

**When using the assay for the first time.** Register the assay using the registration code in the reagent kit before any assay is used in the ACCRE analyzer for the first time. Calibration, QC and sample test are only available after assay was registered successfully.

**When opening a new lot of reagents.** Each new lot of reagent must be registered by using the registration code in Reagent Registration Card within the reagent kit.

### Calibration

Calibration must be performed with the reagents and calibrators from Manufacturer.

Calibration is necessary under the following conditions:

- (1) New reagent lot number applied;
- (2) Same lot of reagents used more than 4 weeks;
- (3) QC out of control;
- (4) When necessary, for example: system maintenance or repair that may affect the analytic performance.

### Test Procedure

1. Remove the kit from storage at 2-8 °C and take out the required number of reagent cartridges. Allow the reagent cartridges, specimens, calibrators, and/or controls to equilibrate to room temperature (15-30°C) prior to testing.

2. Use each assay strips for each sample, calibrator or control, respectively.
  3. Place the reagent cartridges into the reagent rack.
  4. Manually pipette the Sample, Calibrator, or Control into the sample well of each reagent cartridge .
- Please note that at least 125µL sample has to be pipetted manually into the reagent cartridge and 100µL sample is needed for each test.**
- \* Before pipetting: Mix the samples using a vortex-type mixer if necessary, and ensure that the samples and sample diluent (if applicable) DO NOT have any bubbles. The same for calibrators and controls.*
5. Put the sample rack into the reagent chamber of ACCRE analyzer.
  6. Place the assay tips into the reagent chamber of ACCRE analyzer.
  7. Input Sample ID, sample type, dilution etc. into the software as directed by USER MANUAL.
  8. Hepatitis B Virus Surface Antigen (CLIA)) assay will be performed automatically by the ACCRE analyzer.
  9. After assay is completed, remove the reagent rack from the ACCRE analyzer. Dispose the used reagent cartridge into an appropriate recipient.

#### Quality control

Quality control should be performed in accordance with local regulations or requirements related to accreditation, as well as requirements defined in the laboratory's quality control procedure.

#### [RESULTS AND INTERPRETATION]

##### Calculation of Results

The results are automatically calculated by the ACCRE analyzer using stored calibration curve which generate by 2-point calibration, and calculated according to a predefined mathematical model, the results expressed in IU/mL.

##### Interpretation of Results

The detection range is from 0.10 IU/mL to 100.00 IU/mL. For samples with Hepatitis B virus surface antigen below the upper limit (100.00 IU/mL), quantitative determination can be performed; if the sample is lower than the lower limit (0.10 IU/mL), the reported result is < 0.10 IU/mL; if the sample is higher than the upper limit (100.00 IU/mL), the reported result is >100.00 IU/mL (if the result is higher than the upper limit, then the final result is obtained by multiplying the test result after proportional dilution by the dilution factor).

By detecting samples of 238 Hepatitis B infected individuals and 528 normal individuals, the positive judgment value is determined using the receiver operating characteristic curve (ROC) method as follows:

IU/mL < 0.1, indicates negative result.

IU/mL ≥ 0.1, indicates positive result.

*\* Please note that results may differ between laboratories due to variations in population and test method. If necessary, each laboratory should establish its own reference range.*

*In interpreting the results, patient's clinical condition including symptoms, diseases history, and other relevant data and information should be considered.*

#### [LIMITATIONS]

1. The test results of this reagent kit are for clinical reference only and should not be used as the sole basis for clinical diagnosis and treatment. They should be used in conjunction with other clinical tests, medical history, and laboratory test results.
2. This reagent kit has not yet established performance indicators for body fluid samples other than serum and plasma.
3. If the test results are inconsistent with clinical evidence, additional testing is suggested to confirm the result.
4. Unreasonable sample collection, transportation, processing, and improper experimental operations and environments may lead to false negative or false positive results.

#### [PERFORMANCE CHARACTERISTICS]

##### Detection Limit

Limit of Blank (LoB): 0.05 IU/mL

Limit of Detection (LoD): 0.10 IU/mL

The Limit of Blank was determined in accordance with the CLSI® EP17-A2 recommendations.

##### Measurement Range

The measurement range of the Hepatitis B Virus Surface Antigen (CLIA) assay is from 0.10 IU/mL to 100.00 IU/mL.

##### Reportable Range

Assessment is made in accordance with method in CLSI® EP34 recommendations. The reportable range of the Hepatitis B Virus Surface Antigen (CLIA) assay is from 0.10 IU/mL to 100.00 IU/mL (or the upper limit is up to 50000.00 IU/mL for 500-fold diluted samples).

##### Linearity

Linearity was evaluated according to CLSI® EP06-A recommendations. The Hepatitis B Virus Surface Antigen (CLIA) assay is linear between 0.10 IU/mL to 100.00 IU/mL. The linear correlation coefficient (r) should be bigger than 0.9900.

##### Precision

The precision study was performed according to CLSI® EP05-A3 recommendations. The within-lot precision CV% is less than 10%.

##### Interfering Substances

Potential interference substances were studied according to CLSI® EP07-A3 recommendations. No significant interference was detected up to the maximum concentrations tested.

| Substance         | Concentration |
|-------------------|---------------|
| Hemoglobin        | ≤ 500 mg/dL   |
| Bilirubin         | ≤ 20 mg/dL    |
| Triglyceride      | ≤ 3000 mg/dL  |
| Rheumatoid factor | ≤ 200 IU/mL   |

##### Cross-reactivity

No cross-reactivity with positive samples for human immunodeficiency virus (HIV), hepatitis C virus (HCV), macrophage virus (CMV), herpes simplex virus (HSV), hepatitis A virus (HAV),etc.

#### [WASTE DISPOSAL]

Dispose used or unused reagents as well as any other contaminated disposable materials following procedures for infectious or potentially infectious products. It is the responsibility of each laboratory to handle waste and effluents produced according to their nature and degree of hazardousness and to treat and dispose of them (or have them treated and disposed of) in accordance with any applicable regulations.

#### [INDEX OF SYMBOLS]

| Symbol                                                                              | Meaning                            | Symbol                                                                               | Meaning                           | Symbol                                                                                | Meaning                                       |
|-------------------------------------------------------------------------------------|------------------------------------|--------------------------------------------------------------------------------------|-----------------------------------|---------------------------------------------------------------------------------------|-----------------------------------------------|
|  | Consult instructions for use       |  | Contains sufficient for <n> tests |  | Date of manufacture                           |
|  | In vitro diagnostic medical device |  | Use-by date                       |  | Do not re-use                                 |
|  | Temperature limit                  |  | Batch code                        |  | Catalogue number                              |
|  | Keep away from sunlight            |  | Keep dry                          |  | Manufacturer                                  |
|  | Do not roll                        |  | Do not use if package is damaged  |  | Contains biological material of animal origin |
|  | Biological risks                   |  | Caution                           |  | Control                                       |
|  | Upright                            |  | Fragile, handle with care         |                                                                                       |                                               |

#### [REFERENCES]

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