

## WHO Prequalification of In Vitro Diagnostics PUBLIC REPORT

**Product: VISITECT CD4 Advanced Disease**  
**WHO reference number: PQDx 0384-077-00**

**VISITECT CD4 Advanced Disease** with product codes **OD376**, manufactured by **Omega Diagnostics Ltd, RoW regulatory version**, was accepted for the WHO list of prequalified in vitro diagnostics and was listed on 20 August 2020.

### Summary of WHO prequalification assessment for VISITECT CD4 Advanced Disease

|  | Date        | Outcome |
|--|-------------|---------|
| <b>Prequalification listing</b>                        | 20-Aug-2020 | listed  |
| <b>Dossier assessment</b>                              | 17-Jul-2020 | MR      |
| <b>Site inspection(s) of quality management system</b> | 07-Jul-2020 | MR      |
| <b>Product performance evaluation</b>                  | Waived      | MR      |

MR: Meets Requirements

#### Intended use:

According to the claim of intended use from Omega Diagnostics Ltd, *“the VISITECT CD4 Advanced Disease Rapid Test is a manually operated semi-quantitative assay for the estimation of CD4 protein on the surface of CD4+ T cells in human whole blood (capillary or EDTA venous) to indicate whether the level is above or below 200 cells/μL within pre-diagnosed HIV patients. The VISITECT CD4 Advanced Disease in vitro diagnostic test is for use as an aid in the management of patients with advanced HIV disease (patients with CD4 count below 200 cells/μL). This visually read test is designed to be used at the point-of-care and therefore has utility in decentralised diagnostic settings.*

*VISITECT CD4 Advanced Disease is for professional use only.*

*VISITECT CD4 Advanced Disease is not intended for individuals <5 years of age.*

*VISITECT CD4 Advanced Disease is not intended for use in the determination of HIV status.*

*VISITECT CD4 Advanced Disease is not intended for self-testing.”*

#### Assay description:

According to the claim of assay description from Omega Diagnostics Ltd, *“the VISITECT CD4 Advanced Disease Rapid Test is an immunochromatographic assay that estimates full length*

*CD4 protein associated with CD4+ T cells in human whole blood, and is directly correlated with CD4+ T cell levels.*

*A capture monoclonal antibody (MAb) specific for the cytoplasmic domain of CD4 is applied as a line on the nitrocellulose membrane. Whole blood is added directly to the VISITECT CD4 Advanced Disease Rapid Test where red blood cells and monocytes are retained in the blood collection pad and following the addition of buffer, other white blood cells (including CD4+ T cells) migrate to a reaction area where cell lysis occurs, resulting in the release of full-length CD4 for capture in the test strip. Colloidal gold-labeled MAb conjugate against CD4 binds the captured CD4 and forms a test line. These complexes are visualised as a pink/purple line. A reference line (200 line) is included to allow estimation of CD4 levels by comparison to a set cut-off (equivalent to the signal level generated by samples containing 200 CD4+ T cells/ $\mu$ L). The 200 line and control line must be present for the assay result to be valid. The control line in the test device is not a sample addition control.*

*The VISITECT CD4 Advanced Disease test device has a results window where lines will appear. The Control line located in the results window marked "C".*

*The Reference line located in the results window marked "200" exhibits an intensity approximately equal to that seen with a sample containing 200 CD4+ T cells/ $\mu$ L.*

*The Test line located in the results window marked "T" exhibits an intensity that correlates to the number of CD4+ T cells in the sample.*

*The test result is interpreted by comparing the intensity of the Test (T) line with the Reference (200) line. If the Test (T) line has equal or weaker intensity than the Reference (200) line, the test result is "Below Reference" ( $\leq 200$  CD4+ T cells/ $\mu$ L).*

*If the Test (T) line has stronger intensity than the Reference (200) line, the test result is "Above Reference" ( $> 200$  CD4+ T cells/ $\mu$ L)."*

#### **Test kit contents:**

| <b>Component</b>                                | <b>25 tests<br/>(product code OD376)</b> |
|---|--|
| Foil pouch containing test device and desiccant | 25                                       |
| Buffer  | 7mL x 1 bottle                           |
| Sampling devices                                | 25                                       |
| Sterile retractable lancets                     | 25                                       |
| Alcohol swabs                                   | 25                                       |
| Job aid for venous whole blood specimens        | 1  |
| Job aid for capillary whole blood specimens     | 1  |
| Instructions for use                            | 1  |

#### **Items required but not provided:**

- New pair of disposable gloves
- Timer

- Pen
- Sharps/biohazard bin
- Dry gauze or tissue
- Precision pipette capable of delivering 30µL plus disposable tips (venous blood only)
- EDTA blood collection tube (venous blood only)
- Plaster

**Storage:**

The test kit should be stored at 2-30°C. DO NOT FREEZE

**Shelf-life upon manufacture:**

The shelf life of the product is currently 12 months based on accelerated studies; real-time stability studies are ongoing

**Warnings/limitations:**

Refer to current version of manufacturer's instructions for use.

**Prioritization for prequalification:**

Based on the established eligibility criteria, VISITECT CD4 Advanced Disease was given priority for WHO prequalification assessment.

**Dossier assessment**

Omega Diagnostics Ltd submitted a product dossier for VISITECT CD4 Advanced Disease as per the "*Instructions for compilation of a product dossier*" (PQDx\_018). The information (data and documentation) submitted in the product dossier was reviewed by WHO staff and external technical experts (assessors) appointed by WHO.

The manufacturer's responses to the nonconformities found during dossier screening and assessment findings were accepted on 17 July 2020.

**Commitments for prequalification**

1. Commitment to Prequalification 1: Please provide the Real Time Stability study reports ALV-018-STA08, ALV-018-STA10 and ALV-018-STA15 to WHO by 30 September 2020.

2. Commitment to Prequalification 2: Please provide an updated timeline for submission of Real Time Stability study report ALV-018-STA20-PRO when it becomes available.
3. Commitment to Prequalification 3: Please provide a commitment to submit the final study report for the multi-site evaluation, or a timeline for when this will be submitted.

Based on the product dossier screening and assessment findings, the product dossier for VISITECT CD4 Advanced Disease meets WHO prequalification requirements.

### **Manufacturing site inspection**

An inspection or A desk assessment of Omega Diagnostics Ltd located at Hillfoots Business Village, Alva, FK12 5DQ United Kingdom was conducted from 8 to 10 January 2020. At the time of considering the product application for Prequalification, the Manufacturer of the product had a well-established quality management system and manufacturing practices in place that would support the manufacture of a product of consistent quality. Routine inspections of the Manufacturing site will be conducted with copies of the WHO Public Inspection Report (WHOPIR) published on the WHO Prequalification web page as per Resolution WHA57.14 of the World Health Assembly. Note that a WHOPIR reflects the information on the most current inspection or desk assessment performed at a manufacturing site for in vitro diagnostic products and gives a summary of the inspection or desk assessment findings.

Information on the most current inspection or desk assessment can be found at:  
[https://www.who.int/diagnostics\\_laboratory/evaluations/PQDxSiteInspection/en/](https://www.who.int/diagnostics_laboratory/evaluations/PQDxSiteInspection/en/)

All published WHOPIRs are with the agreement of the manufacturer. The manufacturer's responses to the nonconformities found at the time of the inspection or desk assessment were accepted on 7 July 2020.

Based on the site inspection or desk assessment and corrective action plan review, the quality management system for VISITECT CD4 Advanced Disease meets WHO prequalification requirements.

### **Product performance evaluation**

Under the special circumstances linked to the Covid-19 pandemic, and considering that:

1. the product was assessed under full prequalification assessment, including review of the product dossier,

2. independent clinical evaluation data partly covering the requirements of the performance evaluation for prequalification assessment was provided,
3. the performance evaluation for this product requires prospective specimen collection, which is affected by the on-going pandemic,

WHO will allow the product performance evaluation to be undertaken as a commitment to prequalification.

### **Commitments to prequalification**

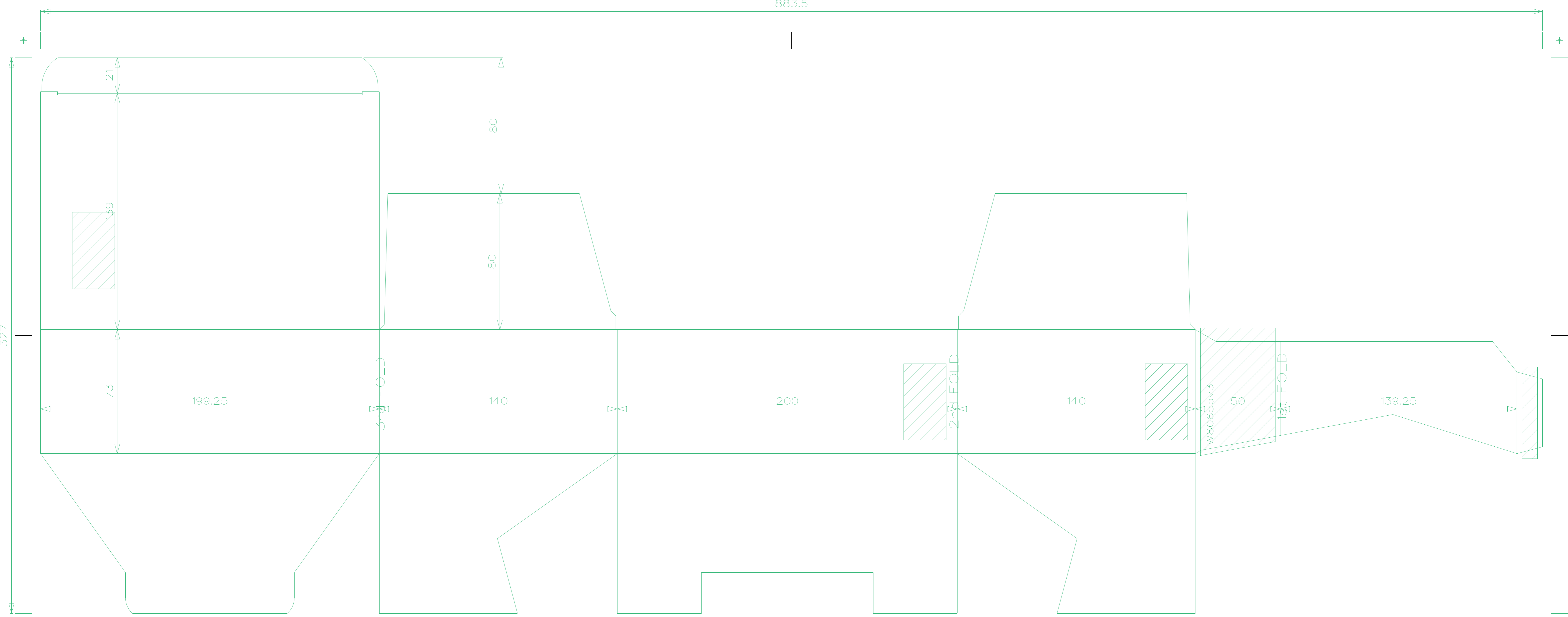
As a commitment to prequalification, the manufacturer is required to coordinate the prequalification performance evaluation for VISITECT CD4 Advanced Disease by 31 December 2020.

## **Labelling**

- 1. Labels**
- 2. Instructions for use**

## **1. Labels**

### **1.1 Carton artwork**



**PROOF APPROVAL**  
Please check that the instructions relating to this proof have been fully conformed with. To avoid production delays please complete and return as soon as possible. Production will not commence until we have received this proof as confirmation. This proof is **NOT ACCURATE FOR PANTONE or SPECIAL COLOURS**. APPROVED AS SUBMITTED FOR COLOUR & TEXT.

Signature:..... Date:.....

jobname : 168332\_OMEGA\_6081V2.ap  
MSO Cleland Limited, The Greenhill Press, 399 Carleburgh Road, Salford, Northern Ireland, BT5 5QP  
Tel: 028 9092 2200 Fax: 028 9092 2260 Email: 028 9091 1463

used separations :  
● Cyan ● cutter  
● Black  
● PANTONE 214 C  
● PANTONE 653 C  
● PANTONE 653 C  
Varnish: UV Gloss

MSO Cleland W.L.: 168332 Checked by Operator.....  
Repro Required : No  
Single Keyline: W8065av3\_VF1 (STANDING)  
Multi Drawing Ref: W8065av3.Lo (STANDING)  
Blanket Ref: W8065av2.Lo (STANDING)

**OMEGA DIAGNOSTICS LTD.**  
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Hillfoots Business Village  
Alva FK12 5DQ  
Scotland, United Kingdom  
Tel: +44 (0)1259 763030  
www.omegadiagnostics.com  
odi@omegadiagnostics.co.uk

**YOUR GLOBAL PARTNER IN DIAGNOSTICS**

**VISITECT® CD4 Advanced Disease**  
Rapid test for the estimation of CD4+ T cells in human whole blood

IFU Version :  
LOT

20°C  
30°C

CE  
IVD

6081V2 - W8065av3

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**VISITECT® CD4 Advanced Disease**  
Rapid test for the estimation of CD4+ T cells in human whole blood

25  
20°C  
30°C

Required but not provided :  
Timer  
Gloves  
Pen

Contents :  
25 Test Devices  
1 Bottle Containing Buffer  
25 Sampling Devices  
25 Retractable Lancets  
25 Alcohol Swabs  
1 Job Aid for Venous Blood  
1 Job Aid for Capillary Blood  
1 IFU

REF  
LOT

**VISITECT® CD4 Advanced Disease**  
Rapid test for the estimation of CD4+ T cells in human whole blood

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1 Job Aid for Venous Blood  
1 Job Aid for Capillary Blood  
1 IFU

REF  
LOT

W8065av3 6081V2

W8065av3 6081V2

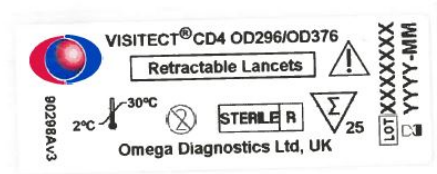


## 1.2 Kit and component labels

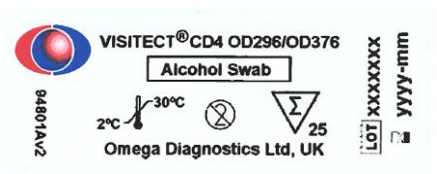
Buffer bottle label



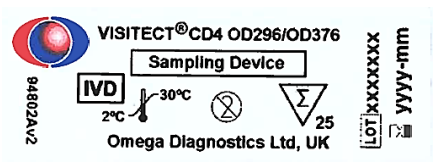
Retractable lancet label



Alcoholic swab label



Sampling device label



Cassette labelling

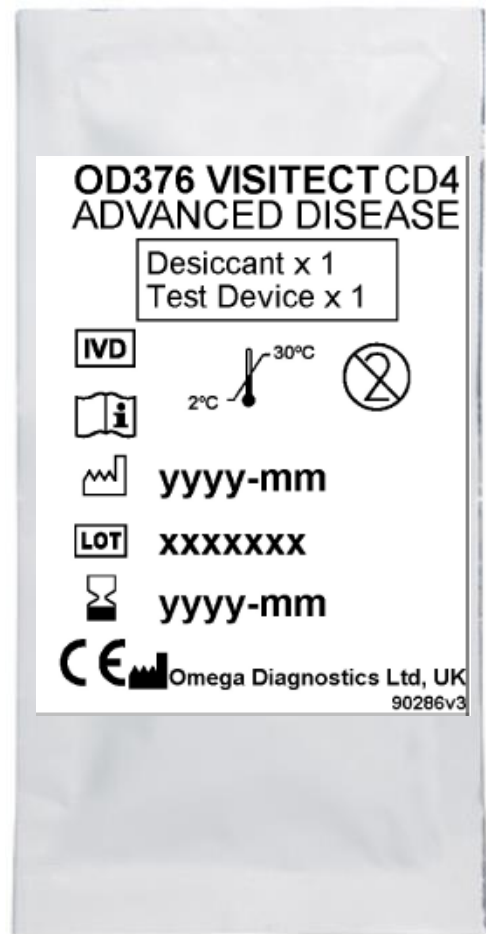


Foil pouch labelling

Front



Back



Kit labels - to align with labelling on carton artwork

|                 |                 |                 |
|-----------------|-----------------|-----------------|
| <b>OD376</b>    | <b>XXXXXXXX</b> |                 |
| <b>XXXXXXXX</b> | <b>XXXX-XX</b>  |                 |
| <b>yyyy-mm</b>  | <b>XXXX-XX</b>  |                 |
| <b>yyyy-mm</b>  | <b>X</b>        |                 |
| <b>OD376Av2</b> |                 | <b>OD376Bv1</b> |

## 2. Instructions for use and Job aid<sup>1</sup>

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<sup>1</sup> English version of the IFU was the one that was assessed by WHO. It is the responsibility of the manufacturer to ensure correct translation into other languages.



## VISITECT® CD4 Advanced Disease

Rapid test for the estimation of CD4+ T cells in human whole blood.

Store at 2–30°C. DO NOT FREEZE.

For professional use only.

REF OD376



### INTENDED USE

The VISITECT® CD4 Advanced Disease Rapid Test is a manually operated semi-quantitative assay for the estimation of CD4 protein on the surface of CD4+ T cells in human whole blood (capillary or EDTA venous) to indicate whether the level is above or below 200 cells/µL within pre-diagnosed HIV patients.

The VISITECT® CD4 Advanced Disease *in vitro* diagnostic test is for use as an aid in the management of patients with advanced HIV disease (patients with CD4 count below 200 cells/µL). This visually read test is designed to be used at the point-of-care and therefore has utility in decentralised diagnostic settings.

VISITECT® CD4 Advanced Disease is for professional use only.

VISITECT® CD4 Advanced Disease is not intended for individuals <5 years of age.

VISITECT® CD4 Advanced Disease is not intended for use in the determination of HIV status.

VISITECT® CD4 Advanced Disease is not intended for self-testing.

### INTRODUCTION

The CD4+ T cell count has made a critical contribution to assessing the immune and clinical status of HIV patients over the last 35 years.<sup>1</sup>

Although the annual number of people dying of AIDS-related causes has reduced, this decline has stalled in recent years due to the challenges of advanced HIV disease, defined by WHO as <200 CD4+ T cells/µL or clinical stage III and IV disease.<sup>2</sup> Patients presenting with advanced HIV disease are at high risk of opportunistic infection and death, the risk increases with decreasing CD4 cell counts.

The role of CD4 cell counts has been re-assessed.<sup>3</sup> Current WHO guidelines for the management of advanced HIV disease recommend a package of care be offered to those presenting with advanced HIV disease depending on age and CD4 cell counts.<sup>2</sup> A HIV patient who has advanced disease requires additional testing and prophylaxis or treatment for opportunistic infections in order to safely initiate ART and decrease risk of death.<sup>4</sup>

The VISITECT® CD4 Advanced Disease *in vitro* diagnostic test is a rapid, instrument-free test, that provides actionable results at the point-of-care. The test provides an estimation of CD4 protein levels associated with T cells and indicates whether the patients' CD4+ T cell count is above or below 200 cells/µL and so HIV disease status.

### PRINCIPLE OF THE TEST

The VISITECT® CD4 Advanced Disease Rapid Test is an immunochromatographic assay that estimates full length CD4 protein associated with CD4+ T cells in human whole blood, and is directly correlated with CD4+ T cell levels.

A capture monoclonal antibody (MAb) specific for the cytoplasmic domain of CD4 is applied as a line on the nitrocellulose membrane. Whole blood is added directly to the VISITECT® CD4 Advanced Disease Rapid Test where red blood cells and monocytes are retained in the blood collection pad and following the addition of buffer, other white blood cells (including CD4+ T cells) migrate to a reaction area where cell lysis occurs, resulting in the release of full-length CD4 for capture in the test strip. Colloidal gold-labeled MAb conjugate against CD4 binds the captured CD4 and forms a test line. These complexes are visualised as a pink/purple line. A reference line (200 line) is included to allow estimation of CD4 levels by comparison to a set cut-off (equivalent to the signal level generated by specimens containing 200 CD4+ T cells/µL). The 200 line and control line must be present for the assay result to be valid. The control line in the test device is not a specimen addition control.

The VISITECT® CD4 Advanced Disease test device has a results window where lines will appear.

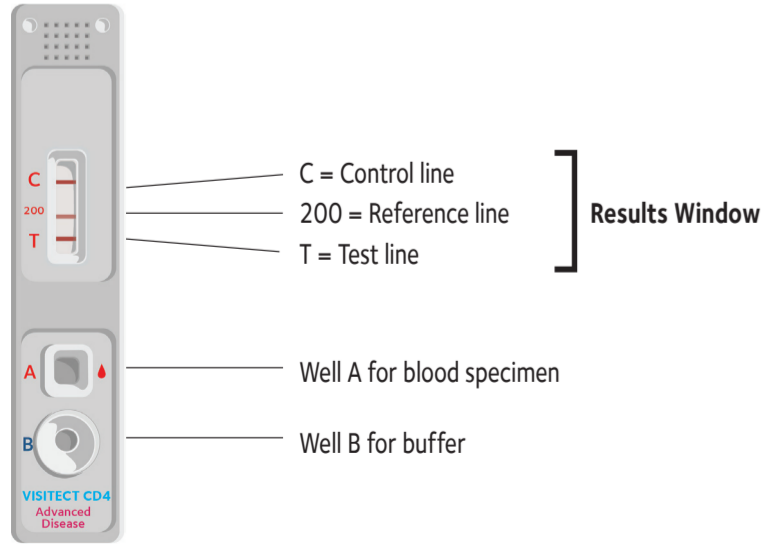
The **Control line**, located in the **results window marked “C”**.

The **Reference line**, located in the **results window marked “200”** exhibits an intensity approximately equal to that seen with a specimen containing 200 CD4+ T cells/µL.

The **Test line**, located in the **results window marked “T”** exhibits an intensity that correlates to the number of CD4+ T cells in the specimen.

**The test result is interpreted by comparing the intensity of the Test (T) line with the Reference (200) line.** If the **Test (T) line** has **equal or weaker intensity** than the Reference (200) line, the test result is **“Below Reference” (≤200 CD4+ T cells/µL)**.

If the **Test (T) line** has **stronger intensity** than the Reference (200) line, the test result is **“Above Reference” (>200 CD4+ T cells/µL)**.



### CONTENTS OF THE VISITECT® CD4 ADVANCED DISEASE KIT

#### Materials provided:

- 25 foil pouches containing: one test device and one desiccant sachet
- 1 bottle with 7mL buffer containing 0.05% sodium azide
- 25 sampling devices
- 25 sterile retractable lancets
- 25 alcohol swabs
- 1 job aid for venous blood

- 1 job aid for capillary blood
- 1 instructions for use

#### Materials required, but not provided:

- New pair of disposable gloves
- Timer
- Pen
- Sharps/biohazard bin
- Dry gauze or tissue
- Precision pipette capable of delivering 30µL plus disposable tips (venous blood only)
- EDTA blood collection tube (venous blood only)
- Plaster

### KIT STORAGE

The kit will perform within specification until the stated expiry date when stored at 2–30°C out of direct sunlight. Do not use the test device or buffer beyond the date of expiration. Do not freeze.

### QUALITY CONTROL

The VISITECT® CD4 Advanced Disease test device contains an internal control which should exhibit a pink/purple coloured line independent of the Test (T) and Reference (200) lines. The Control (C) line must be present for the assay result to be valid. The Control (C) line in the test device is not a specimen addition control. There is no quality control standard available, however it is recommended that a specimen greater than 200 CD4+ T cells/µL (characterised by flow cytometry) is run and three pink/purple lines are visible. It is recommended that such a control is run on a regular basis according to local guidelines.

### SPECIMEN COLLECTION AND TEST PROCEDURE

This assay is designed to be used only with peripheral whole blood collected by venepuncture into EDTA tubes or by finger-prick. **Capillary or venous blood** is transferred directly into Well A of the device. Read carefully the limitations, warnings and safety and handling precautions within these instructions for use. Long term kit storage is 2–30°C. Assay components must be run at 15–35°C. Place the test device on a horizontal surface.

#### Preparing for the test

1. Allow the test kit to come to operating temperature (15–35°C) before use. Check expiry on foil pouch and kit components are within date.
2. When you are ready to perform the test, tear open the foil pouch and remove materials. (VISITECT® CD4 Advanced Disease test devices should not be used more than 30 minutes after removal from the foil pouch.) Ensure a desiccant is present and discard. If no desiccant is present discard test device and use another test device. Dispose of all packaging in a general waste bin.
3. Write the patient's name or patient identifier on the test device.
4. Put on the disposable gloves. Use new gloves for each patient.

#### Specimen collection

5. Proceed to capillary or venous blood sampling, depending on blood collection type.

#### Capillary Blood Specimen

- i. Take a supplied retractable lancet. Check the cap seal is not broken before use. Ask the patient which is their non-dominant hand and clean the side of the finger with the alcohol swab where the prick will be performed. Allow the finger to air dry, twist off lancet cap and pierce the skin of the fingertip to the side of the ball of the finger. Dispose of the retractable lancet into the sharps/ biohazard bin immediately.
- ii. Wipe away the first drop of blood with a piece of dry gauze or tissue and dispose in the sharps/ biohazard bin.
- iii. Take a supplied sampling device. Gently squeeze the finger until a full drop of blood develops. DO NOT squeeze the finger too hard. Hold the sampling device provided horizontally and touch the tip of the sampling device to the blood specimen. Capillary action will draw blood to the black line (30µL). Do not squeeze the bulb to draw blood into the tube. Use immediately.

#### EDTA Venous Blood

- i. Collect a venous specimen of blood using established techniques. Prepare the precision pipette volume to 30µL and attach a disposable tip.
- ii. Mix the EDTA blood specimen by gentle inversion at least 8 times and ensure fully mixed. Open the EDTA blood tube.
- iii. Press the plunger button of the pipette to the first stop. Immerse the disposable tip vertically into the EDTA tube. Smoothly release plunger button, drawing the blood into the disposable tip.

#### Test procedure

6. Touch the centre of **Well A** lightly and squeeze the bulb of the sampling device/depress the pipette plunger gently to ensure the full 30µL specimen is released into **Well A**.
7. Discard the sampling device/disposable tip into a sharps/ biohazard bin.
8. Wait for **3 minutes**.
9. Hold the buffer bottle **vertically 1cm above Well A**. Add **1 drop** of buffer to **Well A** where the blood has been added.
10. Wait for **17 minutes**.
11. Hold the buffer bottle **vertically 1cm above Well B**. Carefully add **3 drops** of buffer to **Well B** allowing each drop to absorb into the well before adding the next drop.
12. Wait for **20 minutes**. After the test is complete, interpret the results within **5 minutes**.

### INTERPRETATION OF RESULTS

13. Refer to examples of results on reverse.
  - The Control (C) line and Reference (200) line must be present when reading the test results for the test to be valid. Results are interpreted visually by comparing the colour intensity of the Test (T) line with the Reference (200) line.

| Line Intensity                                  | Interpretation of the test result |
|---|-----------------------------------|
| Test (T) line EQUAL to Reference (200) line     | BELOW REFERENCE                   |
| Test (T) line MISSING                           | BELOW REFERENCE                   |
| Test (T) line LIGHTER than Reference (200) line | BELOW REFERENCE                   |
| Test (T) line DARKER than Reference (200) line  | ABOVE REFERENCE                   |
| Reference (200) line MISSING                    | INVALID, REPEAT THE TEST          |
| Control (C) line MISSING                        | INVALID, REPEAT THE TEST          |

14. Dispose of test device and gloves in a sharps/ biohazard bin.

### LIMITATIONS

- VISITECT® CD4 Advanced Disease is not intended for individuals less than 5 years of age.
- EDTA blood specimens must not be used more than 24 hours post collection when stored at 2–30°C.
- The presence of the Control (C) line only means that flow of the test has occurred. It does not guarantee that:
  - i. the correct specimen has been used
  - ii. the specimen has been applied correctly
  - iii. the specimen and test have been correctly stored
  - iv. the test procedure was followed correctly

- There is no re-use protocol for this product.
- VISITECT® CD4 Advanced Disease test devices should not be used more than 30 minutes after removal from the foil pouch.

### WARNINGS

- Read the instructions carefully before performing the test. Failure to follow the instructions may lead to inaccurate test results.
- Use of any other buffer or fluid except the buffer supplied with the kit will invalidate the results.
- Do not use the kit beyond the expiry date.
- Do not use if any kit components are damaged.
- Check the lancet cap seal is not broken before use.
- Do not use if the product has been exposed to excessive heat or humidity.
- Check for the presence of a desiccant immediately after opening the pouch. If no desiccant is present, do not use the test device and discard as appropriate.
- The test device, alcohol swab, lancet and sampling device are each intended for single use only.
- For finger-prick specimens, the use of any other sampling device except the sampling device supplied with the kit will invalidate the results.
- The use of specimens other than capillary or EDTA whole blood specimens have not been validated in this test.
- Clinical decisions should not be made solely on the findings of one test. When making an interpretation of the test all clinical data should be taken into consideration.
- Do not touch the test strip within the test device with your fingers.
- Do not use haemolysed, lipemic, coagulated or frozen bloods.
- No other anticoagulants other than EDTA can be used as they may give incorrect results.

### SAFETY AND HANDLING PRECAUTIONS

- Safety Precautions
  - i. Handle all specimens as potentially infectious.
  - ii. Wear gloves and protective clothing while handling specimens and running the test.
  - iii. Do not smoke, eat or drink while handling specimens or performing the test procedure.
  - iv. Apply standard biosafety precautions for handling and disposal of potentially infective material. Dispose of all packaging in a general waste bin.
  - v. Avoid splashing and aerosol formation.
  - vi. Clean up spills thoroughly using an appropriate disinfectant.
- Handling Precautions
  - i. Do not use if any kit components are damaged.
  - ii. Do not use if the desiccant package is missing or damaged. Discard device and use a new test.
  - iii. The test device, alcohol swab, lancet and sampling device are each intended for single use only.
  - iv. Do not use kit components beyond the expiry date printed on the label. Always check expiry date prior to testing.
  - v. Adequate lighting is required to read a test result.
  - vi. All reagents and used test device should be treated as potential biohazards in use and disposal. Final disposal must be in accordance with local legislation. Do not ingest.
  - vii. VISITECT® CD4 Advanced Disease buffer contains 0.05% sodium azide as a preservative which may be hazardous to health if ingested. Sodium azide may react with lead and copper plumbing to form highly explosive salts. On disposal, flush with large quantities of water.

### PERFORMANCE CHARACTERISTICS

#### Performance Evaluation Data

All performance evaluations were carried out by hospital clinic sites.

Sensitivity: specimens ≤200 cells/µL correctly identified against Flow Cytometry (95% confidence intervals)

Specificity: specimens >200 cells/µL correctly identified against Flow Cytometry (95% confidence intervals)

#### VISITECT® Batch 1

VISITECT® CD4 Advanced Disease performance evaluation with venous blood performed in India (n=245).

|                              |                              |
|------------------------------|------------------------------|
| <b>Sensitivity</b> (44/51)   | <b>86.3%</b> (73.7% - 94.3%) |
| <b>Specificity</b> (180/194) | <b>92.8%</b> (88.2% - 96.0%) |

|                      |      |         |         |         |      |
|----------------------|------|---------|---------|---------|------|
| Category (cells/µL)  | ≤100 | 101-200 | 201-350 | 351-500 | >500 |
| Correctly classified | 100% | 63%     | 75%     | 98%     | 100% |

#### VISITECT® Batch 2

VISITECT® CD4 Advanced Disease performance evaluation with capillary blood performed in India (n=144).

|                              |                              |
|------------------------------|------------------------------|
| <b>Sensitivity</b> (25/29)   | <b>86.2%</b> (68.3% - 96.1%) |
| <b>Specificity</b> (109/115) | <b>94.8%</b> (89.0% - 98.1%) |

|                      |      |         |         |         |      |
|----------------------|------|---------|---------|---------|------|
| Category (cells/µL)  | ≤100 | 101-200 | 201-350 | 351-500 | >500 |
| Correctly classified | 100% | 81%     | 74%     | 100%    | 100% |

#### VISITECT® Batch 3

VISITECT® CD4 Advanced Disease performance evaluation with capillary blood performed in Zimbabwe (n=145).

|                              |                              |
|------------------------------|------------------------------|
| <b>Sensitivity</b> (25/27)   | <b>92.6%</b> (75.7% - 99.1%) |
| <b>Specificity</b> (107/118) | <b>89.8%</b> (82.9% - 94.6%) |

|                      |      |         |         |         |      |
|----------------------|------|---------|---------|---------|------|
| Category (cells/µL)  | ≤100 | 101-200 | 201-350 | 351-500 | >500 |
| Correctly classified | 100% | 80%     | 67%     | 100%    | 94%  |

### Other external test results

VISITECT® CD4 Advanced Disease test performance at several clinical sites in the UK, Zimbabwe and India with 1232 venous blood specimens demonstrated a sensitivity of 92% (88.0%-95.1%) and a specificity of 89.5% (87.4%-91.4%)

|                      |      |         |         |         |      |
|----------------------|------|---------|---------|---------|------|
| Category (cells/µL)  | ≤100 | 101-200 | 201-350 | 351-500 | >500 |
| Correctly classified | 97%  | 87%     | 60%     | 92%     | 99%  |

### Repeatability

Within run repeatability of the VISITECT® CD4 Advanced Disease test was determined by running ten replicates with an above and below reference specimens on one batch of devices by a single operator. All results were identified correctly 100% of the time.

### Reproducibility

Within run reproducibility of the VISITECT® CD4 Advanced Disease test was determined by running three replicates with an above and below reference specimens on one batch by three operators in three separate locations.

Between batch reproducibility of the VISITECT® CD4 Advanced Disease test was determined by running ten replicates with an above and a below reference specimens on three batches of test devices. All results were identified 100% of the time.

### Interfering Substances

No interference in the performance of the VISITECT® CD4 Advanced Disease was evident when above and below reference blood specimens were spiked with the following endogenous interferents: Bilirubin (conjugated) up to 30µmol/L, Bilirubin (Unconjugated) up to 48µmol/L, Total Protein up to 120mg/mL, Lipids up to 37mmol/L, Rheumatoid Factor up to 100IU/mL and Haemoglobin at 2g/L. Additionally, no interference was observed with Biotin at 50ng/mL, Soluble CD4 at 12ng/mL, Human Anti-Mouse Antibody at 300ng/mL and Monocytes up to 1000cells/µL.

### SYMBOL LEGEND

The following symbols may have been used within the labelling of this product.

|  |  |  |   |
|--|--|--|---|
|  | This product fulfils the requirements of Directive 98/79/EC on <i>in vitro</i> diagnostic medical devices. |  | Harmful                                   |
|  | Batch code   |  | <i>In vitro</i> diagnostic medical device |
|  | Biological risks   |  | Keep dry                                  |
|  | Catalogue number   |  | Keep away from sunlight                   |
|  | Caution  |  | Manufacturer                              |
|  | Consult instructions for use   |  | Serial number                             |
|  | Contains sufficient for "n" tests  |  | Sterilised using irradiation              |
|  | Date of manufacture  |  | Temperature limit                         |
|  | Do not re-use  |  | Use-by date                               |

### REFERENCES

1. D Barnett et al. CD4 immunophenotyping in HIV infection. Nat Rev Microbiol. 2008; 6: S7-S15.
2. World Health Organization. Guidelines for managing advanced HIV disease and rapid initiation of antiretroviral therapy. Geneva, Switzerland: WHO, 2017.
3. N Ford et al. The evolving role of CD4 cell counts in HIV care. Curr Opin HIV AIDS. 2017;12: 123-128.
4. N Ford et al. Managing Advanced HIV Disease in a Public Health Approach. Clin Infect Dis. 2018; 66: (S2): S106-S110.

8376 V6 JULY 2020  
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## MATERIALS PROVIDED



## Do's and Don'ts

**DO NOT RE-USE THE TEST**

### BUFFER BOTTLE

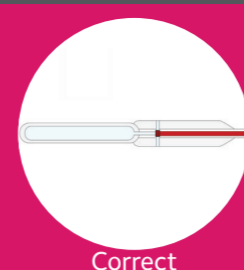


Correct

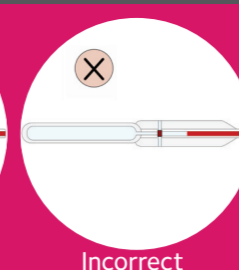


Incorrect

### SAMPLING DEVICE



Correct

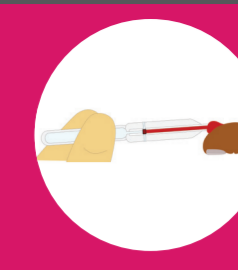


Incorrect

### FINGER WIPE



Do not wipe first drop of blood with alcohol swab but with a piece of clean dry gauze or tissue



Do not squeeze bulb of sampling device to draw the blood

### BLOOD DRAW

## MATERIALS REQUIRED, BUT NOT PROVIDED

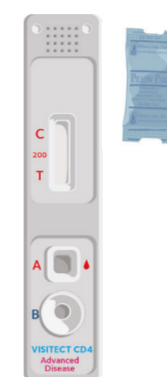


## PREPARING FOR THE TEST

**1** Check expiry on foil pouch, and that kit components are within date and are at operating temperature (15-35 °C) before use.



**2** Tear open foil pouch and remove materials. Discard desiccant sachet. Dispose of all packaging in a general waste bin.



**3** Write patient's identifier on device.



**4** Put on a new pair of disposable gloves.



COLLECT ALL THE REQUIRED MATERIALS BEFORE STARTING THE TEST. READ INSTRUCTIONS CAREFULLY

## SPECIMEN COLLECTION

**5** Proceed to capillary or venous blood sampling, depending on blood collection type.

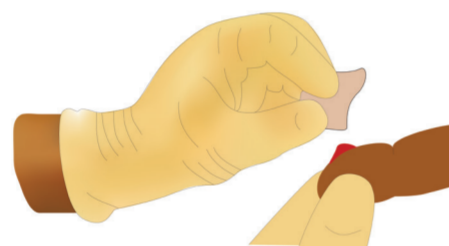
### CAPILLARY

**i** Ask patient which is their non-dominant hand, clean side of finger with alcohol swab where prick will be performed.

Allow finger to air dry, twist off lancet cap and pierce skin of fingertip to the side of the ball of the finger.

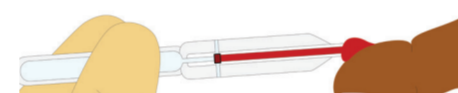
Dispose of the retractable lancet into a sharps/biohazard bin immediately.

**ii** Wipe away first drop of blood with piece of dry gauze or tissue, dispose of in sharps/biohazard bin.



**iii** Gently squeeze the finger until a full drop of blood develops.

Hold sampling device horizontally and touch the tip to the blood specimen. Capillary action will draw blood to the black line (30µL). Do not squeeze the bulb to draw blood into the tube. Use immediately.

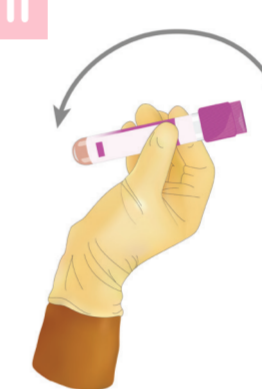


### EDTA VENOUS BLOOD

**i** Collect venous specimen of blood using established techniques. Prepare precision pipette volume to 30µL and attach disposable tip.



**ii** Mix the EDTA blood specimen by gentle inversion at least 8 times and ensure fully mixed. Open the EDTA blood tube.

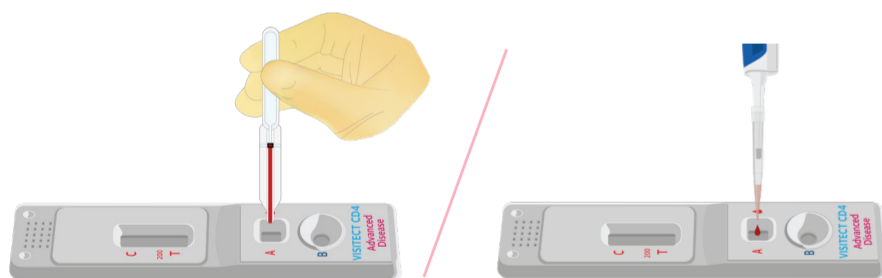


**iii** Press the plunger button of the pipette to the first stop. Immerse the disposable tip vertically into the EDTA tube. Smoothly release plunger button, drawing the blood into the disposable tip.



## TEST PROCEDURE

**6** Touch the centre of **Well A** lightly and squeeze the bulb/depress the plunger gently to ensure the full 30µL specimen is released into **Well A**.



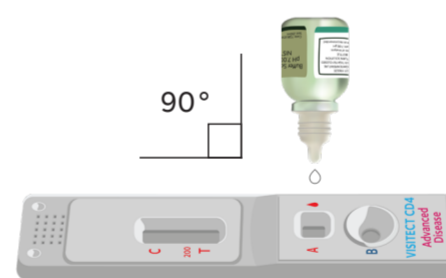
**7** Discard the sampling device/disposable tip into a sharps/biohazard bin.



**8** Wait for **3 MINUTES**.



**9** Hold the buffer bottle vertically 1cm above **Well A**. Add 1 drop of buffer to **Well A**.



**10** Wait for **17 MINUTES**.



**11** Hold the buffer bottle vertically 1cm above **Well B**. Add 3 drops of buffer to **Well B**.



**12** Wait for **20 MINUTES**.



Interpret the results within **5 MINUTES**.

## INTERPRETATION OF RESULTS

**13** The Control (C) line and the Reference (200) line must be present when reading the test results for the test to be valid. Results are interpreted visually by comparing the colour intensity of the Test (T) line with the Reference (200) line.

**Test (T) line EQUAL INTENSITY to Reference (200) line**  
CD4 count equal to or below 200 cells/µL  
Test result is **BELOW REFERENCE**

**Test (T) line MISSING**  
CD4 count below 200 cells/µL  
Test result is **BELOW REFERENCE**

**Test (T) line LIGHTER than Reference (200) line**  
CD4 count below 200 cells/µL  
Test result is **BELOW REFERENCE**

**Test (T) DARKER than Reference (200) line**  
CD4 count above 200 cells/µL  
Test result is **ABOVE REFERENCE**

**Reference (200) line MISSING**  
Test result is **INVALID**  
**Repeat the test**

**Control (C) line MISSING**  
Test result is **INVALID**  
**Repeat the test**

**14** Dispose of the test device and gloves in a sharps/biohazard bin.



**VISITECT®** OD376  
CD4 Advanced Disease

**MATERIALS PROVIDED**



**MATERIALS REQUIRED, BUT NOT PROVIDED**



**COLLECT ALL THE REQUIRED MATERIALS BEFORE STARTING THE TEST. READ INSTRUCTIONS CAREFULLY.**

**PREPARING FOR THE TEST**

**1** Check expiry on foil pouch and kit components are within date and are at operating temperature (15-35°C) before use.

**2** Tear open foil pouch and remove materials. Discard desiccant sachet. Dispose of all packaging in a general waste bin.

**3** Write patient's identifier on device.

**4** Put on a new pair of disposable gloves.

**SPECIMEN COLLECTION**

**5 i** Ask patient which is their non-dominant hand, clean side of finger with alcohol swab where prick will be performed. Allow finger to air dry, twist off lancet cap and pierce skin of fingertip to the side of the ball of the finger. Dispose of the retractable lancet into a sharps/biohazard bin immediately.

**ii** Wipe away first drop of blood with piece of dry gauze or tissue, dispose of in sharps/biohazard bin.

**iii** Gently squeeze the finger until a full drop of blood develops. Hold sampling device horizontally and touch the tip to the blood specimen. Capillary action will draw blood to the black line (30µL). Do not squeeze the bulb to draw blood into the tube. Use immediately.

**TEST PROCEDURE**

**6** Touch the centre of **Well A** lightly and squeeze the bulb gently to ensure the full 30µL specimen is released into **Well A**.

**7** Discard the sampling device into a sharps/biohazard bin.

**8** Wait for **3 MINUTES**.

**9** Hold the buffer bottle vertically 1 cm above **Well A**. Add 1 drop of buffer to **Well A**.

**10** Wait for **17 MINUTES**.

**11** Hold the buffer bottle vertically 1 cm above **Well B**. Add 3 drops of buffer to **Well B**.

**12** Wait for **20 MINUTES**. Interpret the results within **5 MINUTES**.

**INTEPRETATION OF RESULTS**

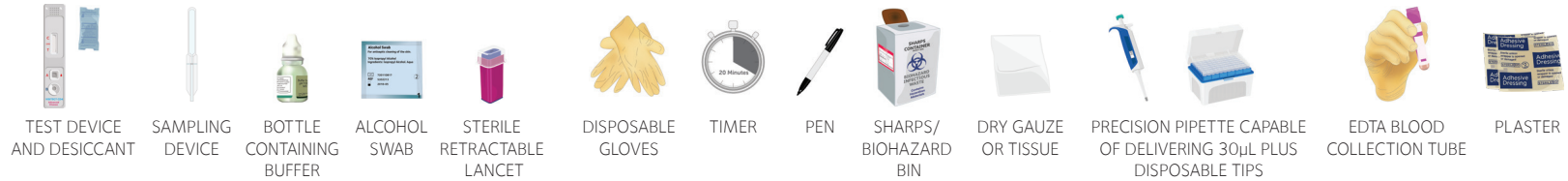
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|  |  |  |  |  |  |
|--|--|--|--|--|--|
|  |  |  |  |  |  |
|--|--|--|--|--|--|

**14** Dispose of the test device and gloves in a sharps/biohazard bin.



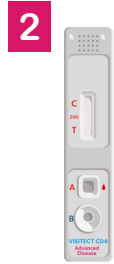
**VISITECT®** OD376  
CD4 Advanced Disease



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**PREPARING FOR THE TEST**

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Tear open foil pouch and remove materials.  
Discard desiccant sachet.  
Dispose of all packaging in a general waste bin.

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**4** Put on a new pair of disposable gloves.

**SPECIMEN COLLECTION**

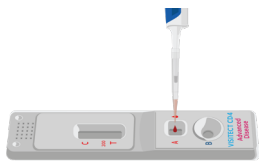
**5 i** Collect venous specimen of blood using established techniques.  
Prepare precision pipette volume to 30µL and attach disposable tip.

**ii** Mix the EDTA blood specimen by gentle inversion at least 8 times and ensure fully mixed.  
**iii** Open the EDTA blood tube.

Press the plunger button of the pipette to the first stop.  
Immerse the disposable tip vertically into the EDTA tube. Smoothly release plunger button, drawing the blood into the disposable tip.

**TEST PROCEDURE**

**6** Touch the centre of **Well A** lightly and depress the plunger gently to ensure the full 30µL specimen is released into **Well A**.



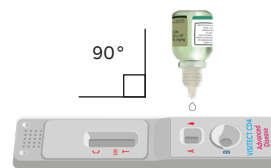
**7** Discard the disposable tip into a sharps/biohazard bin.



**8** Wait for **3 MINUTES**.



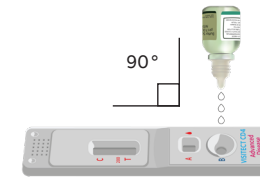
**9** Hold the buffer bottle vertically 1 cm above **Well A**. Add 1 drop of buffer to **Well A**.



**10** Wait for **17 MINUTES**.



**11** Hold the buffer bottle vertically 1 cm above **Well B**. Add 3 drops of buffer to **Well B**.



**12** Wait for **20 MINUTES**.



Interpret the results within **5 MINUTES**.

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**Test (T) DARKER than 200 line**  
CD4 count above 200 cells/µL  
Test result is **ABOVE REFERENCE**

**Reference (200) line MISSING**  
Test result is **INVALID**  
**Repeat the test**

**Control (C) line MISSING**  
Test result is **INVALID**  
**Repeat the test**

**14** Dispose of the test device and gloves in a sharps/biohazard bin.

