# ReQuest® VZV IgG

REF **01-180** 96-Test Set IVD

**For in Vitro Diagnostic Use Only**

Intended Use: For the qualitative and semi-quantitative detection of human IgG antibodies to varicella zoster virus (VZV) in human serum by enzyme immunoassay. Individual serum specimens may be used for the determination of immune status. Paired (acute/convalescent) sera may be used to demonstrate seroconversion or significant rises in antibody level, as an aid in the diagnosis of primary infection, or reactivation of VZV. This assay has not been cleared / approved by the FDA for blood / plasma donor screening.

## Summary of Test

1. **Prepare 1:51 dilutions of Calibrator(s), Controls and samples in the test set Diluent. Mix well.**
2. **Place 100 µl of the dilutions in the Coated Wells; reserve one well for the reagent blank.**
3. **Incubate at room temperature for 30 ± 5 minutes.**
4. **Drain wells thoroughly. Wash wells 4 times with Wash Solution and drain.**
5. **Place 2 drops (or 100 µl) of Conjugate in wells.**
6. **Incubate at room temperature for 30 ± 5 minutes.**
7. **Drain wells thoroughly. Wash wells 4 times with Wash Solution and drain.**
8. **Place 2 drops (or 100 µl) of Substrate in wells.**
9. **Incubate at room temperature for 30 ± 5 minutes.**
10. **Stop the enzyme reaction with 2 drops (or 100 µl) of Stop Reagent.**
11. **Read absorbance at 405 nm against reagent blank.**

## Summary and Explanation of Test

Varicella-zoster virus is the etiological agent of varicella and herpes zoster. Varicella (chicken pox) is a mild, highly infectious disease, which occurs in hosts (usually children) without immunity. Zoster (shingles) is the recurrent form of the disease, occurring in adults previously infected with VZV (1, 2).
An important aspect of the control of varicella-zoster virus infection is the prevention of contact between susceptible individuals and those with active infection. Antibody to varicella-zoster has been determined by Complement Fixation (CF), immunodiffusion, neutralizing antibody, or fluorescent antibody techniques, including the fluorescent-antibody-membrane-antigen (FAMA) assay (3, 4, 5, 6). The FAMA assay has proven to be very sensitive in determining low levels of VZV antibody and immune status. However, it has the disadvantage of requiring tissue culture, and is performed only in specialized laboratories (7). The performance of EIA procedures is comparable to the FAMA assay (8).
The VZV IgG EIA test is an ELISA which utilizes a microwell format. Test results are obtained after one and one-half hour incubation time. They are objective and normalized as index values.

## Principle of the Test

Diluted samples are incubated in antigen-coated wells. VZV antibodies (if present) are immobilized in the wells. Residual sample is eliminated by washing and draining, and conjugate (enzyme-labeled antibodies to human IgG) is added and incubated. If IgG antibodies to VZV are present, the conjugate will be immobilized in the wells. Residual conjugate is eliminated by washing and draining, and the substrate is added and incubated. In the presence of the enzyme, the substrate is converted to a yellow end product which is read photometrically.

## Reagents

| | |
|---|---|
| Coated Wells | Coated with VZV antigen (Ellen strain). The antigen is a VZV glycoprotein enriched cell extract. 12 eight-well strips. |
| Well Support | One. |
| Diluent* | 25 mL (pink color). Phosphate-buffered saline with a protein stabilizer. |
| Calibrator 1* | 0.3 mL. Human serum. Strongly reactive for VZV IgG antibodies. Index value shown on vial label. |
| Calibrator 2* | 0.3 mL. Human serum. Moderately reactive for VZV antibodies. Index value shown on vial label. |
| Positive Control* | 0.3 mL. Human serum. Reactive for VZV antibodies. Index value range shown on vial label. |
| Negative Control* | 0.3 mL. Human serum. Non-reactive for VZV antibodies. |
| Conjugate | 12 mL (green color). Goat anti-human IgG labeled with alkaline phosphatase (calf). |
| Substrate | 12 mL. p-nitrophenyl phosphate. |

*Note: The substrate may develop a slight yellow color during storage. One hundred microliters of substrate should yield an absorbance value less than 0.35, when read in a microwell against air or water.*

Wash Concentrate* 30 mL. Tris-buffered saline with Tween 20, pH 8.0. Prepare Wash Solution by adding the contents of the Wash Concentrate bottle to 1 liter of distilled or deionized water.
Stop Reagent 12 mL. Trisodium Phosphate 0.5 M.
* Contains 0.1 % sodium azide.
Store these reagents according to the instructions on the bottle labels. Do not allow them to contact the skin or eyes. If contact occurs, wash with copious amounts of water.

## Other Materials Required

1. Microplate washer
2. Pipettors for dispensing 4, 100 and 200 µl
3. Timer
4. 1 or 2 liter container for Wash Solution
5. Distilled or deionized water
6. Dilution tubes or microwells
7. Microwell reader capable of reading absorbance at 405 nm. Dual wavelength readers are recommended.



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## Precautions

1. For in vitro diagnostic use.
2. Test samples, Calibrator(s), Controls and the materials that contact them, should be handled as potential biohazards. The calibrators and controls have been found to be negative for HIV, hepatitis B surface antigen and HCV antibodies by licensed tests. However, because no method can offer complete assurance that HIV, hepatitis B virus, HCV or other infectious agents are absent, these materials should be handled at the Biosafety Level 2 as recommended for any potentially infectious serum or blood specimen in the Centers for Disease Control/National Institutes of Health Manual "Biosafety in Microbiological and Biomedical Laboratories", 1993, or latest edition.
3. The concentrations of anti-VZV IgG in a given specimen determined with assays from different manufacturers can vary due to differences in assay methods and reagent specificity.
4. Avoid contact with open skin.
5. Never pipet by mouth.
6. Certain of the test reagents contain sodium azide. Azides are reported to react with lead and copper in plumbing to form compounds that may detonate on percussion. When disposing of solutions containing sodium azide, flush drains with large volumes of water to minimize the build-up of metal-azide compounds. For further information, refer to product MSDS.
7. Do not interchange reagents from different reagent lots, except for Wash Concentrate, Substrate and Stop Reagent.
8. Do not use reagents beyond their stated expiration date.
9. Incubation times recommended in the Test Procedure section should be adhered to.
10. Unused Coated Wells should be kept in their resealable bag with dessicant, and stored in the refrigerator.

## Specimen Collection

Sera should be separated from clotted blood. If specimens are not tested within 8 hours, they should be stored at 2 to 8° C. for up to 48 hours. Beyond 48 hours specimens should be stored at -20° C. or below. Multiple freeze-thaw cycles should be avoided. Samples containing visible particulate matter should be clarified by centrifugation; and hemolyzed, icteric or grossly contaminated samples should not be used. Samples should not be heat-inactivated before testing.

## Test Procedure

Allow all reagents and patient samples to reach room temperature before use. Return them promptly to refrigerator after use. The test procedure follows:

1. Prepare 1:51 dilutions of test samples, Calibrator(s), Positive and Negative Controls, in the test set Diluent. For example: add 4 µl of sample to 200 µl of Diluent in a dilution well or tube, and mix well.

Note: For qualitative assays, a single Calibrator may be used; for semi-quantitative assays, use Calibrator 1 and Calibrator 2.

2. Place an appropriate number of Coated Wells in the Well Support.

Note: For combination testing (multiple assays per plate), the strips should be assembled on a white background with good lighting. Be sure to note the placement of each strip and the corresponding color.

3. Transfer 100 µl of each diluted Calibrator, Control and patient sample to the wells.

Note: Include one well which contains 100 µl of Diluent only. This will serve as the reagent blank and will ultimately be used to zero the photometer before reading the test results.

4. Incubate the wells at room temperature (20 to 25 °C.) for 30 ± 5 minutes.
5. Wash wells four times with at least 250 µL/well/wash. Do not allow the wells to soak between washes. Drain thoroughly after the last wash.
6. Place 2 drops (or 100 µl) of Conjugate into each well.
7. Incubate the wells at room temperature for 30 ± 5 minutes.
8. Wash wells four times with at least 250 µL/well/wash. Do not allow the wells to soak between washes. Drain thoroughly after the last wash.
9. Place 2 drops (or 100 µl) of Substrate into each well.
10. Incubate at room temperature for 30 ± 5 minutes.
11. Place 2 drops (or 100 µl) of Stop Reagent into each well.
12. Read and record the absorbance of the contents of each well at 405 nm against the reagent blank.

Note: Adjust the photometer to zero absorbance at 405 nm against the reagent blank. Readings should be made within 2 hours after the reactions have been stopped.

## Calculation of Results

Qualitative results may be calculated using a single calibrator. For semi-quantitative and quantitative results, use a calibration curve consisting of two or more calibrators.

Single Calibrator (Calibrator 2)

Determine the Index value for each test sample (or Control) using the following formula:

$$\frac{\text{Calibrator 2 Index}}{\text{Calibrator 2 Absorbance}} \times \text{Test Sample Absorbance} = \text{Test Sample Index}$$

If the Calibrator is run in duplicate, use the average absorbance value to calculate results.

Calibration Curve

Alternatively, test results may be calculated from a three-point curve comprised of: Calibrator 1 (high-point), Calibrator 2 (mid-point) and the reagent blank (zero / origin), using a point-to-point curve fit.

The upper range of the curve may be expanded by adding additional points. For example: the concentration of Calibrator 1 may be increased 1.5-fold, and 2-fold, by adding 6 µl and 8 µl of Calibrator 1 to 200 µl of the test set Diluent, and transferring 100 µl of each dilution to coated wells. The Index values, assigned to these points, should be 1.5 and 2 times respectively, the value shown on the Calibrator 1 label. The extent to which the upper range of the standard curve may be expanded, will be limited by the Calibrator being used.



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### Test Validation Criteria

1. The Calibrator(s), Positive and Negative Controls must be included in each test run.
2. The absorbance value of Calibrator 1 must be at least 0.6, when read against the reagent blank.
3. The absorbance value of the reagent blank should be less than 0.35.
4. The Negative Control must have an Index value less than 0.9. This control is used to validate the assay below the cutoff of the assay.
5. The Positive Control must have an Index value within the range printed on the labels. When performing qualitative tests, users may supply alternative positive controls if they wish.
6. To validate the upper range of the assay when performing the semi-quantitative procedures, the Positive Control may be run at higher concentrations. For example, the Positive Control may be assayed at 1.5-fold and 2-fold concentrations by adding 6 µl and 8 µl of the Positive Control, to 200 µl aliquots of the test set Diluent, and transferring 100 µl of each of these dilutions to the coated wells. The expected value ranges for these concentrated controls would be 1.5 times and 2 times respectively, the expected value range printed on the Positive Control label. The assay results for these controls must fall within the corrected ranges. Optionally, users may supply alternative positive controls if they wish.

If any of these criteria are not met, the test is invalid and should be repeated.

7. The Negative and Positive Controls are intended to monitor for substantial reagent failure. The Positive Control will not ensure precision at the assay cutoff. Users may wish to establish an in-house control, having a quantitative value determined by replicate testing, at or near the cutoff of the assay, to monitor the precision of the assay cutoff. Additional controls may be tested according to guidelines or requirements of local, state and/or federal regulations or accrediting organizations. For guidance on appropriate quality control practices, please refer to NCCLS document C24-A, *Internal Quality Control Testing: Principles and Definitions*.

### Interpretation of Results

| Index Value | Interpretation |
|---|---|
| < 0.9 | Negative for VZV IgG, presumed non-immune to VZV infection. |
| ≥ 0.9 to < 1.1 | Equivocal. |
| ≥ 1.1 | Positive for VZV IgG, presumed immune to VZV infection. |

When equivocal results are obtained, another specimen should be obtained ten to fourteen days later, and tested in parallel with the initial specimen. If the second specimen is also equivocal, the patient is negative for primary or recent infection, and equivocal for antibody status. If the second sample is positive, the patient can be considered to have a primary infection. The conversion of an individual patient's serum from negative to positive for antibodies to the infectious agent in question, is defined as seroconversion, and indicates active or recent infection.

Differences in the antibody levels observed in acute/convalescent serum pairs which are greater than the imprecision of the assay, i.e. > 20% (Mean intra-assay CV + 3 SD, see tables 5, 6 and 7), are considered significant. To determine a significant difference between acute/convalescent serum pairs, both specimens should be assayed concurrently. Dose response experiments performed at Laboratory C (Miami, FL), have shown that a 70 to 90 percent difference in the VZV IgG EIA Index value, corresponds to a two-fold difference in the VZV IgG antibody level; and a 140 to 180 percent difference in VZV IgG EIA Index value, corresponds to a four-fold difference in the VZV IgG antibody level. Use the following formula to calculate the percentage difference between acute/convalescent specimens:

$$\left| \frac{\text{Index}_{\text{(Convalescent)}} - \text{Index}_{\text{(Acute)}}}{\text{Index}_{\text{(Acute)}}} \right| \times 100 = \text{Percent Difference}$$

To interpret the differences observed between acute/ convalescent paired sera, use the table below:

**Interpretation of Differences for Acute / Convalescent Serum Pairs**

| Percent Difference (Index Value) | Equivalent Difference (Antibody Level) |
|---|---|
| < 70 | < 2 - fold |
| ≥ 70 ≤ 90 | 2 - fold |
| > 90 < 140 | > 2 - fold < 4 - fold |
| ≥ 140 ≤ 180 | 4 - fold |
| > 180 | > 4 - fold |

Specimens which yield absorbance values above the range of the test set calibrator(s), may be reported as greater than the Index value of the uppermost point of the calibration curve. Alternatively, such specimens may be pre-diluted in the test set Diluent and reassayed. The resulting Index value must be multiplied by the dilution factor for reporting. *Example: If the specimen has been pre-diluted 1:5 before testing, the resulting Index value should be multiplied by 5.*

Values obtained with different manufacturer's assay methods may not be used interchangeably. The magnitude of the reported IgG level cannot be correlated to an endpoint titer. When the assay is used qualitatively, the magnitude of results above the cut-off is not an indicator of total antibody present.

### Limitations

The results obtained with the VZV IgG EIA test serve only as an aid to diagnosis and should not be interpreted as diagnostic in themselves.

A single positive result only indicates previous immunologic exposure; the level of antibody response or class of antibody response may not be used to determine active infection or disease stage.

Paired specimens should be collected during the acute and convalescent stages of infection, and tested concurrently to detect significant antibody increases. The acute phase sample should be collected early in the infection, preferably within 7 days of the onset of symptoms, and the convalescent phase sample one to two weeks after the first sample, but not earlier than 10 days after the onset of symptoms. The semi-quantitative procedure should be used when testing paired sera. Serum specimens obtained during the acute phase of infection may be negative by serological tests.

Timing of specimen collection for paired sera may be critical. In some patients, antibody titers may rise to significant levels and fall to lower or undetectable levels within a month. Other patients may not develop significant antibody levels. Culture results, serology and antigen detection methods should all be appropriately used along with clinical findings for diagnosis.

The assay performance characteristics have not been established for matrices other than serum.

The assay performance characteristics of vaccinees have not been established.



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The assay performance characteristics of individuals have not been established with the OKA strain of varicella zoster virus.
If the assay is used with cord blood as the specimen source, positive results should be interpreted with caution. The presence of IgG antibodies to VZV in cord blood may be the result of passive transfer of maternal antibody to the fetus. A negative result however, may be helpful in ruling out infection. Performance characteristics have not been determined with neonatal or cord blood.
The performance characteristics of the VZV IgG EIA test with specimens obtained from immunosuppressed individuals have not been established.
Titration experiments (please see Figure 2) have shown that the upper limit of linearity for VZV IgG EIA Index values is approximately 3.

## Expected Values

The incidence antibodies to VZV may vary according to patient age and geographical location. Ninety-seven percent of healthy adult donors in the United States exhibit serologic evidence of prior VZV infection. In temperate climates, the peak period of VZV infection occurs during the winter and spring, with the highest incidence of infection occurring in children age 5 to 9. In tropical and subtropical regions, VZV infection typically occurs later in life and a higher proportion of adults remains negative for VZV antibody (9).
IgG antibodies to VZV usually reach detectable levels in the sera of infected individuals within four days after the onset of symptoms (10). Patients with herpes zoster show a rise in antibody level. Most patients with disseminated zoster present with high levels of antibody immediately after the appearance of localized lesions. Antibody levels normally peak at four to eight weeks and remain elevated for at least six to eight months. The level of antibody may subsequently decline two to three-fold, but low levels of antibody persist indefinitely. VZV antibody levels after immunization may be four to eight-fold lower than antibody levels following natural infection (11).
Serum samples obtained randomly from 90 normal adult South Florida blood donors (62 % male and 38% female) were assayed at Laboratory C, Miami, FL, using the VZV IgG EIA test. Eighty-eight samples (98 %) were positive for IgG antibodies to VZV, two (2 %) were equivocal, and none were negative. The positive samples yielded Index values between 2.2 and 13.5. The mean Index value was 8.3. The incidence of these values is shown in table 1.

**Table 1. Results of tests of 90 Random Specimens (100% frozen), from Normal Adult South Florida Donors, Performed at Laboratory C (Miami, FL), Using the VZV IgG EIA Test. Twenty-nine Percent of the Specimens Tested were Obtained from Women of Childbearing Age.**

| Index Value Ranges | Specimens | |
|---|---|---|
| < 1.1 | 2 {1} | 2.2 % |
| ≥ 1.1 to < 5 | 8 {1} | 8.8 % |
| ≥ 5 to < 10 | 55 {16} | 61.2 % |
| ≥ 10 to < 15 | 25 {8} | 27.8 % |
| ≥ 15 | 0 | 0 % |

{ } Number of specimens obtained from women of childbearing age.

## Performance Characteristics

Comparative Testing
VZV IgG EIA test results correlate well with results of other serological tests. Sera from normal blood donors were assayed for the presence of VZV IgG antibodies, using the VZV IgG EIA test and two other commercial EIA tests, at two independent laboratories (Lab A, Miami, FL, and Lab B, W. Columbia, SC), and at Laboratory C (Miami, FL). These results are shown below in tables 2, 3 and 4, respectively.

**Table 2. Results of Tests of 150 Specimens (73% frozen and 27% fresh), from South Florida, Performed at Laboratory A (Miami, FL), Using the VZV IgG EIA Test and Another Commercial EIA Test.**

| Comparative Test #1 | VZV IgG EIA Positive | Equivocal | Negative | | % | 95%CI |
|---|---|---|---|---|---|---|
| Positive | 97 | 5 | 3 | Relative sensitivity* | 97.0 | 91.5 to 99.4** |
| Equivocal | 0 | 0 | 2 | | | |
| Negative | 3 | 3 | 37 | Relative specificity* | 92.5 | 79.6 to 98.4** |
| * Excluding equivocal results | | | | Overall agreement* | 95.7 | 92.4 to 99.1*** |

** Calculated by the Exact Method.
*** Calculated by the Normal Method (12).

**Table 3. Results of tests of 160 Specimens (7% frozen and 93% fresh), Performed at Laboratory B (W. Columbia, SC), Using the VZV IgG EIA Test and Another Commercial EIA Test.**

| Comparative Test #2 | VZV IgG EIA Positive | Equivocal | Negative | | % | 95%CI |
|---|---|---|---|---|---|---|
| Positive | 139 | 0 | 2 | Relative sensitivity* | 98.5 | 95.0 to 99.8** |
| Equivocal | 0 | 0 | 2 | | | |
| Negative | 0 | 0 | 17 | Relative specificity* | 100 | 80.5 to 100** |
| * Excluding equivocal results | | | | Overall agreement* | 98.7 | 95.5 to 99.8** |

** Calculated by the Exact Method.

**Table 4. Results of tests of 129 Specimens (100% frozen), from South Florida, Performed at Laboratory C (Miami, FL), Using the VZV IgG EIA Test and Another Commercial EIA Test.**

| Comparative Test #1 | VZV IgG EIA Positive | Equivocal | Negative | | % | 95%CI |
|---|---|---|---|---|---|---|
| Positive | 108 | 0 | 0 | Relative sensitivity | 100 | 96.6 to 100** |
| Equivocal | 0 | 0 | 1 | | | |
| Negative | 0 | 2 | 18 | Relative specificity* | 100 | 81.5 to 100** |
| * Excluding equivocal results | | | | Overall agreement* | 100 | 97.1 to 100** |

** Calculated by the Exact Method.



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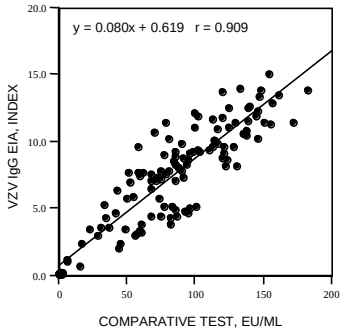
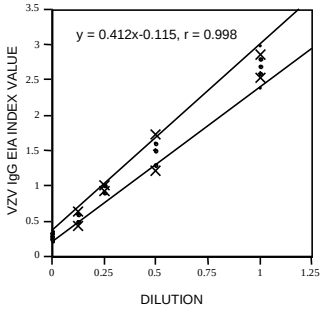
**Figure 1. Results of Tests of 129 Serum Specimens Performed at Laboratory C (Miami, FL) Using the VZV IgG EIA Test and Another Commercial EIA Test.**




Titration curve

Several strongly positive serum specimens were serially diluted (two-fold) in triplicate, and assayed by the VZV IgG EIA test. Typical results are shown in Figure 2.

**Figure 2. Titration Curve for a Strongly Positive Specimen.**




*The triplicate data for each dilution are shown as points, the 95 % confidence limits for each set of triplicate data are indicated by (x's), and the 95 % confidence limits for the slopes and y-intercepts are represented by straight lines. The formula for the linear regression for the triplicate data is shown in Figure 2.*

Specificity

The VZV IgG EIA test is specific for IgG antibodies directed against varicella-zoster virus, and does not cross-react with the other herpes viruses. Of eight specimens which were unreactive in the VZV IgG EIA test, 2 were shown to contain moderate to high levels of IgG antibody directed against cytomegalovirus, 8 against herpes simplex virus, and 8 against Epstein-Barr virus. The IgG antibodies directed against cytomegalovirus, herpes simplex virus, and Epstein-Barr virus were detected using commercially available enzyme immunoassays.

Precision

Eight serum specimens (2 negative and 6 positive) and the VZV IgG EIA Positive and Negative Controls, were assayed in triplicate, on three separate occasions. The precision experiments were performed at two independent laboratories (Lab A and Lab B), and at Laboratory C. These results are shown below in tables 5 through 8, respectively.

**Table 5. Results of Intra-assay and Interassay Precision Tests Performed at Lab A. Values were calculated from the VZV IgG EIA Index values.**

| | INTRA-ASSAY | | | INTERASSAY | | |
|---|---|---|---|---|---|---|
| SAMPLE | MEAN INDEX | S.D | C.V. % | MEAN INDEX | S.D | C.V. % |
| Pos. Control | 2.4 | 0.078 | 3.2 | 2.2 | 0.252 | 11.3 |
| Neg. Control | 0.4 | 0.040 | NA | 0.4 | 0.000 | NA |
| 1 | 0.3 | 0.045 | NA | 0.3 | 0.053 | NA |
| 2 | 0.3 | 0.067 | NA | 0.3 | 0.067 | NA |
| 3 | 2.8 | 0.305 | 10.8 | 2.7 | 0.327 | 12.2 |
| 4 | 2.0 | 0.071 | 3.5 | 1.9 | 0.179 | 9.3 |
| 5 | 3.3 | 0.168 | 5.1 | 3.2 | 0.165 | 5.1 |
| 6 | 2.6 | 0.214 | 8.3 | 2.4 | 0.274 | 11.2 |
| 7 | 1.9 | 0.110 | 6.0 | 1.8 | 0.120 | 6.9 |
| 8 | 3.3 | 0.080 | 2.3 | 3.1 | 0.230 | 7.4 |



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**Table 6. Results of Intra-assay and Interassay Precision Tests Performed at Lab B. Values were calculated from the VZV IgG EIA Index values.**

| | INTRA-ASSAY | | | INTERASSAY | | |
|---|---|---|---|---|---|---|
| SAMPLE | MEAN INDEX | S.D | C.V. % | MEAN INDEX | S.D | C.V. % |
| Pos. Control | 2.1 | 0.051 | 2.4 | 2.2 | 0.173 | 7.9 |
| Neg. Control | 0.3 | 0.017 | NA | 0.3 | 0.137 | NA |
| 1 | 0.1 | 0.000 | NA | 0.1 | 0.059 | NA |
| 2 | 0.1 | 0.023 | NA | 0.2 | 0.097 | NA |
| 3 | 2.3 | 0.049 | 2.2 | 2.6 | 0.331 | 12.6 |
| 4 | 1.8 | 0.047 | 2.7 | 2.0 | 0.274 | 14.0 |
| 5 | 3.9 | 0.268 | 7.0 | 3.3 | 0.535 | 16.3 |
| 6 | 2.5 | 0.033 | 1.3 | 2.5 | 0.229 | 9.0 |
| 7 | 1.6 | 0.125 | 7.6 | 1.9 | 0.275 | 14.4 |
| 8 | 3.0 | 0.209 | 7.0 | 3.0 | 0.121 | 4.0 |

**Table 7. Results of Intra-assay and Interassay Precision Tests Performed at Lab C. Values were calculated from the VZV IgG EIA Index values.**

| | INTRA-ASSAY | | | INTERASSAY | | |
|---|---|---|---|---|---|---|
| SAMPLE | MEAN INDEX | S.D | C.V. % | MEAN INDEX | S.D | C.V. % |
| Pos. Control | 1.9 | 0.153 | 7.9 | 2.1 | 0.180 | 8.7 |
| Neg. Control | 0.4 | 0.000 | NA | 0.4 | 0.000 | NA |
| 1 | 0.1 | 0.000 | NA | 0.1 | 0.053 | NA |
| 2 | 0.3 | 0.058 | NA | 0.3 | 0.033 | NA |
| 3 | 2.6 | 0.208 | 8.1 | 2.7 | 0.154 | 5.7 |
| 4 | 1.8 | 0.153 | 8.3 | 2.1 | 0.226 | 10.7 |
| 5 | 3.3 | 0.265 | 8.0 | 3.2 | 0.150 | 4.6 |
| 6 | 2.3 | 0.265 | 11.5 | 2.4 | 0.196 | 8.1 |
| 7 | 1.7 | 0.120 | 6.7 | 1.9 | 0.190 | 9.7 |
| 8 | 3.9 | 0.200 | 5.1 | 3.6 | 0.300 | 8.5 |

**Table 8. Interlaboratory Precision. Tests Were Performed at Lab A, Lab B and Lab C. Values were calculated from the VZV IgG EIA Index values.**

| | INDEXES | | |
|---|---|---|---|
| SAMPLE | MEAN | S.D | C.V. % |
| Low Pos. Control | 2.2 | 0.202 | 9.3 |
| Neg. Control | 0.4 | 0.046 | NA |
| 1 | 0.2 | 0.055 | NA |
| 2 | 0.2 | 0.066 | NA |
| 3 | 2.7 | 0.271 | 10.1 |
| 4 | 2.0 | 0.227 | 11.3 |
| 5 | 3.2 | 0.283 | 8.7 |
| 6 | 2.5 | 0.233 | 9.5 |
| 7 | 1.9 | 0.195 | 10.4 |
| 8 | 3.2 | 0.219 | 6.8 |

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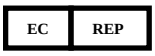
Manufacturer:
Quest International, Inc.
8127 NW 29th Street
Miami, FL 33122
USA


EMERGO EUROPE
Prinsessegracht 20
2514 AP The Hague
The Netherlands

Symbols Glossary

| Symbol | Standard Title and Number | Title of Symbol | Symbol reference # | Explanatory Text |
|---|---|---|---|---|
|  | ISO 15223-1: Medical Devices – Symbols to be used with medical device labels, labeling, and information to be supplied | Manufacturer | 5.1.1 | Indicates the medical device manufacturer, as defined in EU Directives 90/385/EEC, 93/42/EEC and 98/79/EC. |
|  | ISO 15223-1: Medical Devices – Symbols to be used with medical device labels, labeling, and information to be supplied | Authorized representative in the European Community | 5.1.2 | Indicates the Authorized representative in the European Community. |
|  | ISO 15223-1: Medical Devices – Symbols to be used with medical device labels, labeling, and information to be supplied | Use-by-date | 5.1.4 | Indicates the date after which the medical device is not to be used. |
|  | ISO 15223-1: Medical Devices – Symbols to be used with medical device labels, labeling, and information to be supplied | Batch code | 5.1.5 | Indicates the manufacturer's batch code so that the batch or lot can be identified. |
|  | ISO 15223-1: Medical Devices – Symbols to be used with medical device labels, labeling, and information to be supplied | Catalog number | 5.1.6 | Indicates the manufacturer's catalogue number so that the medical device can be identified. |
|  | ISO 15223-1: Medical Devices – Symbols to be used with medical device labels, labeling, and information to be supplied | Temperature limit | 5.3.7 | Indicates the temperature limits to which the medical device can be safely exposed. |
|  | ISO 15223-1: Medical Devices – Symbols to be used with medical device labels, labeling, and information to be supplied | Consult instruction for use | 5.4.3 | Indicates the need for the user to consult the instructions for use. |
|  | ISO 15223-1: Medical Devices – Symbols to be used with medical device labels, labeling, and information to be supplied | *In vitro* diagnostic medical device | 5.5.1 | Indicates a medical device that is intended to be used as an *in vitro* diagnostic medical device. |
|  | ISO 15223-1: Medical Devices – Symbols to be used with medical device labels, labeling, and information to be supplied | Contains sufficient for 96 tests | 5.5.5 | Indicates the total number of IVD tests that can be performed with the IVD kit reagents. |
| Rx Only | Guidance for Industry and FDA on Alternative to Certain Prescription Device Labeling Requirements | Rx Only | N/A | Caution: Federal law prohibits dispensing without prescription. |





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