

# **SARS-CoV-2 Spike Trimer (Wild Type) Specific ELISA Kit (For Vaccine Development)**

**Pack Size: 96 tests**

**Catalog Number: RAS-A115**

**IMPORTANT: Please carefully read this manual before performing your experiment.**

***For Research Use Only. Not For Use In Diagnostic Or Therapeutic Procedures***

**INTENDED USE**

This kit is developed for detecting SARS-CoV-2 Spike Trimer (Wild Type) in vaccine samples. Which can detect Alpha, Beta and Gamma, but cannot detect Delta and Omicron. It is intended for research use only (RUO).

**PRINCIPLE OF THE ASSAY**

The newly identified Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) is posing a serious threat to human health. A rapid and effective assay kit detecting the levels of SARS-CoV-2 Spike Trimer is urgently needed to accelerate the development of COVID-19 vaccines.

This assay kit is used to measure the levels of SARS-CoV-2 Spike Trimer (Wild Type) by employing a standard sandwich-ELISA format. The microplate in the kit has been pre-coated with Anti-SARS-CoV-2 Spike Trimer Antibody. First add the standard samples provided in kit and your samples to the plate, incubate and wash the wells. Next add Secondary antibody HRP-Anti-SARS-CoV-2 Spike Trimer Antibody to the plate, incubate and wash the wells. Lastly load the substrate into the wells and monitor color development in proportion with the amount of Spike Trimer (Wild Type) present. The reaction is stopped by the addition of a stop solution and the intensity of the absorbance can be measured at 450 nm and 630 nm. The OD Value reflects the amount of Spike Trimer bound.

**MATERIALS PROVIDED**

**TABLE 1. MATERIALS PROVIDED**

| Catalog    | Components  | Size<br>(96 tests) | Format | Storage            |                    |
|------------|---|--------------------|--------|--------------------|--------------------|
|            |   |                    |        | Unopened           | Opened             |
| RAS115-C01 | Pre-coated Anti-SARS-CoV-2 Spike Trimer Antibody Microplate | 1 plate            | Solid  | 2-8°C              | 2-8°C              |
| RAS115-C02 | SARS-CoV-2 Spike Trimer (Wild Type)                         | 10 µg              | Powder | 2-8°C              | -70°C              |
| RAS115-C03 | HRP-Anti-SARS-CoV-2 Spike Trimer Antibody                   | 20 µg              | Powder | 2-8°C, avoid light | -70°C, avoid light |
| RAS115-C04 | 10xWashing Buffer   | 50 mL              | Liquid | 2-8°C              | 2-8°C              |
| RAS115-C05 | Dilution Buffer   | 50 mL              | Liquid | 2-8°C              | 2-8°C              |
| RAS115-C06 | Substrate Solution  | 12 mL              | Liquid | 2-8°C, avoid light | 2-8°C, avoid light |
| RAS115-C07 | Stop Solution   | 7 mL               | Liquid | 2-8°C              | 2-8°C              |

## **REAGENTS/EQUIPMENT NEEDED BUT NOT SUPPLIED**

Single or dual wavelength microplate reader with 450 nm and 630 nm filter;

Centrifuge;

37°C Incubator;

10 µL, 200 µL and 1000 µL precision pipettes;

10 µL, 200 µL and 1000 µL pipette tips;

Multichannel pipettes;

Tubes;

Graduated cylinder to prepare Wash Solution;

Deionized or distilled water to dilute 10× Washing Buffer;

## **SHIPPING AND STORAGE**

1. The unopened kit is stable for 12 months from the date of manufacture if stored at 2°C to 8°C.
2. The opened kit should be stored per TABLE 1. The shelf life is 30 days from the date of opening.
3. The kit shipped at room temperature that had been validated. Please contact us if you need blue ice shipping, but additional freight may be followed.

*Note:* a. Do not use reagents past their expiration date.

b. Find the expiration date on the outside packaging.

## **REAGENT PREPARATION**

1. Bring all reagents and samples to room temperature (20°C-25°C) before use. If crystals have formed in buffer solution, place the sample in an 37 °C incubator until the crystals have completely dissolved and bring the solution back to room temperature before use.
2. Reconstitute the provided lyophilized materials to stock solutions with distilled, sterile water as recommended in Table 2 and place the materials for 15 to 30 min at room temperature with occasional gentle mixing. Avoid vigorous shaking. The reconstituted stock solutions should be stored at -70°C. It is recommended not to freeze-thaw more than 3 times, the packing specification shall not be less than 5 µg.

**TABLE 2. RECONSTITUTION METHODS FOR 96 TESTS**

| ID         | Components                                | Size  | Stock Solution Con. | Reconstitution Buffer and Vol. |
|------------|---|-------|---------------------|--------------------------------|
| RAS115-C02 | SARS-CoV-2 Spike Trimer (Wild Type)       | 10 µg | 100 µg/mL           | 100 µL water                   |
| RAS115-C03 | HRP-Anti-SARS-CoV-2 Spike Trimer Antibody | 20 µg | 100 µg/mL           | 200 µL water                   |

**RECOMMENDED SAMPLE PREPARATION**

**1. Working fluid preparation**

1.1 Preparation of 1×Washing Buffer:

Dilute 50 mL 10×Washing Buffer with ultrapure water/deionized water to 500 mL.

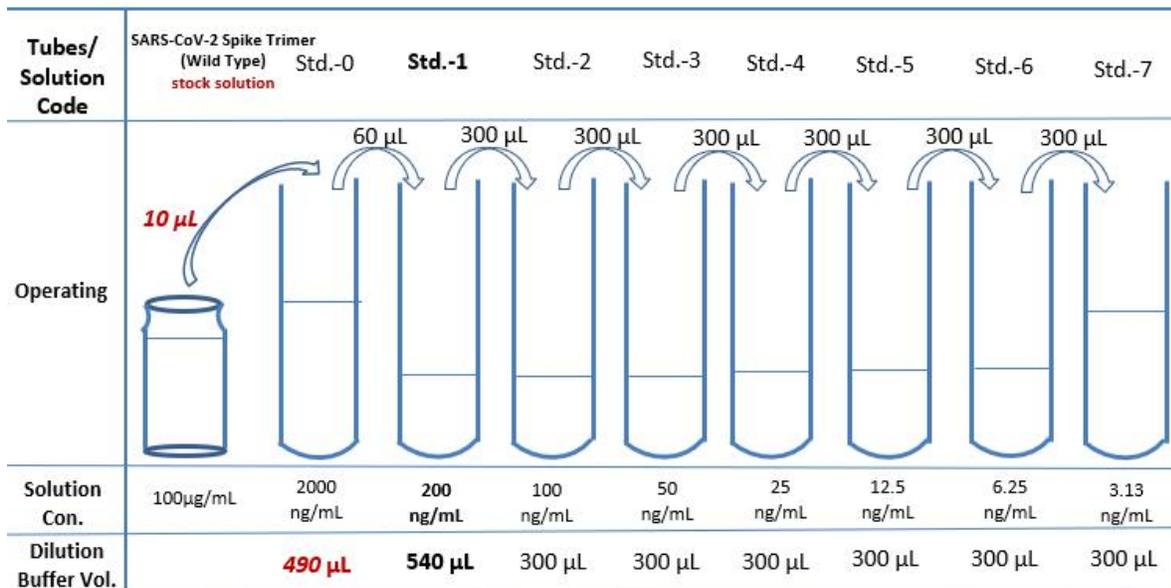
1.2 Preparation of HRP-Anti-SARS-CoV-2 Spike Trimer Antibody working fluid:

Dilute HRP-Anti-SARS-CoV-2 Spike Trimer Antibody at 1:100 with Dilution Buffer. The prepared working fluid should avoid light. Please prepare it for one-time use only.

**2. Preparation of Standard curve**

Make serial dilutions of the SARS-CoV-2 Spike Trimer as a Standard curve with Dilution Buffer as recommended in Figure 1.

**FIGURE 1. PREPARATION OF 1:1 SERIAL DILUTIONS OF THE SARS-CoV-2 Spike Trimer (Wild Type)**



### 3. Add Samples

Add 100µL serially diluted SARS-CoV-2 Spike Trimer (Wild Type) Standard curve and samples to each well. For blank Control wells, please add 100µL Dilution Buffer. Seal the plate with microplate sealing film and incubate at 37°C for 1 hour.

### 4. Washing

Remove the remaining solution by aspiration, add 300 µL of 1×Washing Buffer to each well, gently tap the plate for 1 min, remove any remaining 1×Washing Buffer: by aspirating or decanting, invert the plate and blot it against paper towels. Repeat the wash step above for three times.

### 5. Add HRP-Anti-SARS-CoV-2 Spike Trimer Antibody

For all wells, add 100 µL HRP-Anti-SARS-CoV-2 Spike Trimer Antibody working solution. Seal the plate with microplate sealing film and incubate at 37°C for 1 hour, avoid light.

### 6. Washing

Repeat step 4.

### 7. Substrate Reaction

Add 100 µL **Substrate Solution** to each well. Seal the plate with microplate sealing film and incubate at 37°C for 20 min, avoid light.

### 8. Termination

Add 50 µL **Stop Solution** to each well, and tap the plate gently for 3 min to allow thorough mixing.

*Note: the color in the wells should change from blue to yellow.*

### 9. Data Recording

Read the absorbance at 450 nm and 630 nm using UV/Vis microplate spectrophotometer.

*Note: To reduce the background noise, subtract the value read at OD<sub>450 nm</sub> with the value read at OD<sub>630 nm</sub>.*

## **CALCULATION OF RESULTS**

1. Normal range of Standard curve:  $R^2 \geq 0.9900$ , detection range: 3.13-200 ng/mL.
2. If the OD value of the sample to be tested is higher than the highest standard, the sample shall be diluted with

dilution buffer and assay repeated.

3. To calibrate absorbance value obtained by the standard curve, the OD value of the sample to be measured is subtracted to the OD value of the blank control. The standard curve is plotted with the standard concentration as x-axis and the calibrated absorbance value as y-axis. Linear regression equation or Four parameters logistic are used to draw the standard curve and calculate the sample concentration.

**PRECAUTIONS**

1. This kit is for research use only and is not for use in diagnostic or therapeutic applications.
2. This kit should be used according to the provided instructions.
3. Do not mix reagents from different lots.
4. Bring all reagents and samples to room temperature (20°C-25°C) before use. If crystals have formed in the buffer solution, incubate until the crystals have completely dissolved. Before use, bring the solution back to room temperature.
5. This kit should be stored at 2°C -8°C.
6. Please prepare the working solution of each component according to the needs of the experiment. Except for 1xWashing Buffer, all prepared working solution is for one-time use and cannot be stored.

**TYPICAL DATA**

*The following data is for reference only. The sample concentration was calculated based on the results of the standard curve.*

| SARS-Cov-2 Spike Trimer (Wild Type) (ng/mL) | OD <sub>450-630nm</sub> -Blank |
|---|--------------------------------|
| 200   | 2.010                          |
| 100   | 1.168                          |
| 50  | 0.660                          |
| 25  | 0.355                          |
| 12.5  | 0.180                          |
| 6.25  | 0.092                          |
| 3.125                                       | 0.042                          |

