# SARS-CoV-2 (2019-nCoV) Spike Protein (RBD, His Tag)

**Catalog Number:** **40592-V08H**

Sino Biological
Biological Solution Specialist

## General Information

**Synonym:** coronavirus spike Protein, 2019-nCoV; cov spike Protein, 2019-nCoV; ncov RBD Protein, 2019-nCoV; ncov s1 Protein, 2019-nCoV; ncov s2 Protein, 2019-nCoV; ncov spike Protein, 2019-nCoV; NCP-CoV RBD Protein, 2019-nCoV; NCP-CoV s1 Protein, 2019-nCoV; NCP-CoV s2 Protein, 2019-nCoV; NCP-CoV Spike Protein, 2019-nCoV; novel coronavirus RBD Protein, 2019-nCoV; novel coronavirus s1 Protein, 2019-nCoV; novel coronavirus s2 Protein, 2019-nCoV; novel coronavirus spike Protein, 2019-nCoV; RBD Protein, 2019-nCoV; S1 Protein, 2019-nCoV; S2 Protein, 2019-nCoV; Spike RBD Protein, 2019-nCoV

**Protein Construction:** A DNA sequence encoding the SARS-CoV-2 (2019-nCoV) Spike Protein (RBD) (YP_009724390.1) (Arg319-Phe541) was expressed with a polyhistidine tag at the C-terminus.

**Source:** 2019-nCoV

**Expression Host:** HEK293 Cells

## QC Testing

**Purity:** > 95 % as determined by SDS-PAGE.
> 95 % as determined by SEC-HPLC.

**Bio Activity:** **Measured by its binding ability in a functional ELISA.**
**Immobilized human ACE2 protein (Fc tag)(10108-H05H) at 10μg/mL (100μL/well) can bind SARS-CoV-2 (2019-nCoV) Spike Protein (RBD, His Tag)(40592-V08H), the $EC_{50}$ of SARS-CoV-2 (2019-nCoV) Spike Protein (RBD, His Tag)(40592-V08H) is 50-100 ng/mL.**

**Endotoxin:** < 1.0 EU per μg protein as determined by the LAL method.

**Predicted N terminal:** Arg 319

**Molecular Mass:** The recombinant SARS-CoV-2 (2019-nCoV) Spike Protein (RBD, His Tag) consists of 234 amino acids and predicts a molecular mass of 23.54 kDa.

**Formulation:** Lyophilized from sterile PBS, pH 7.4.

Normally 5 % - 8 % trehalose, mannitol and 0.01% Tween80 are added as protectants before lyophilization. Specific concentrations are included in the hardcopy of COA. Please contact us for any concerns or special requirements.

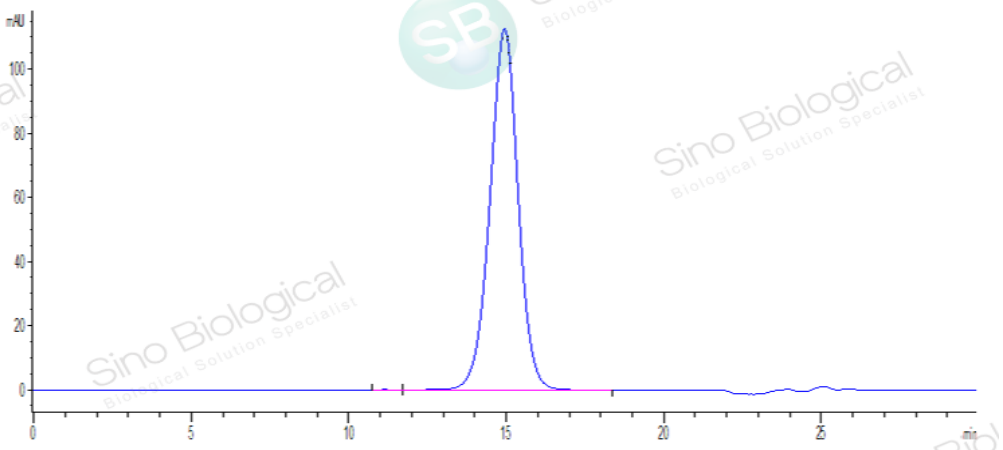
## Usage Guide

**Stability & Storage:** Samples are stable for 12 months from date of receipt at -20℃ to -80℃. Recommend to aliquot the protein into smaller quantities for optimal storage.
**Avoid repeated freeze-thaw cycles.**

**Reconstitution:** Detailed reconstitution instructions are sent along with the products.

## SDS-PAGE:


## SEC-HPLC:



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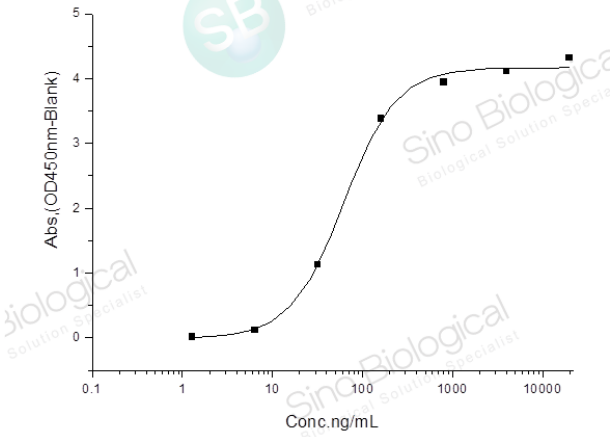
**ELISA Activity:**




Measured by its binding ability in a functional ELISA.
Immobilized human ACE2 protein (Fc tag)(10108-H05H) at 10μg/mL (100μL/well) can bind SARS-CoV-2 (2019-nCoV) Spike Protein (RBD, His Tag)(40592-V08H), the $EC_{50}$ of SARS-CoV-2 (2019-nCoV) Spike Protein (RBD, His Tag)(40592-V08H) is 50-100 ng/mL.

## Protein Description

The spike (S) glycoprotein of coronaviruses contains protrusions that will only bind to certain receptors on the host cell. Known receptors bind S1 are ACE2, angiotensin-converting enzyme 2; DPP4, dipeptidyl peptidase-4; APN, aminopeptidase N; CEACAM, carcinoembryonic antigen-related cell adhesion molecule 1; Sia, sialic acid; O-ac Sia, O-acetylated sialic acid. The spike is essential for both host specificity and viral infectivity. The term 'peplomer' is typically used to refer to a grouping of heterologous proteins on the virus surface that function together. The spike (S) glycoprotein of coronaviruses is known to be essential in the binding of the virus to the host cell at the advent of the infection process. It's been reported that 2019-nCoV can infect the human respiratory epithelial cells through interaction with the human ACE2 receptor. The spike protein is a large type I transmembrane protein containing two subunits, S1 and S2. S1 mainly contains a receptor binding domain (RBD), which is responsible for recognizing the cell surface receptor. S2 contains basic elements needed for the membrane fusion.The S protein plays key parts in the induction of neutralizing-antibody and T-cell responses, as well as protective immunity. The main functions for the Spike protein are summarized as: Mediate receptor binding and membrane fusion; Defines the range of the hosts and specificity of the virus; Main component to bind with the neutralizing antibody; Key target for vaccine design; Can be transmitted between different hosts through gene recombination or mutation of the receptor binding domain (RBD), leading to a higher mortality rate.

### References

Shen S, *et al*. (2007) Expression, glycosylation, and modification of the spike (S) glycoprotein of SARS CoV. Methods Mol Biol. 379: 127-35.
Du L, *et al*. (2009) The spike protein of SARS-CoV--a target for vaccine and therapeutic development. Nat Rev Microbiol. 7 (3): 226-36.
Xiao X, *et al*. (2004) The SARS-CoV S glycoprotein. Cell Mol Life Sci. 61 (19-20): 2428-30.