

# PRODUCT INFORMATION



## SARS-CoV-2 nsp13 Helicase (*E. coli* expressed)

Item No. 30589

### Overview and Properties

**Synonyms:** 2019-nCoV Helicase, COVID-19 Helicase, NSP13, SARS-CoV-2 Helicase, COVID19 Helicase, Severe Acute Respiratory Syndrome Coronavirus 2 nsp13 Helicase

**Source:** Active recombinant N-terminal His-tagged nsp13 helicase expressed in *E. coli*

**Amino Acids:** 5,325-5,925

**Uniprot No.:** P0DTD1

**Molecular Weight:** 69.1 kDa

**Storage:** -80°C (as supplied)

**Stability:** ≥1 year

**Purity:** *batch specific* (≥70% estimated by SDS-PAGE)

**Supplied in:** 50 mM Tris-HCl, pH 7.5, with 5 μM zinc chloride, 1 mM DTT, 1 mM EDTA, and 15% glycerol

**Endotoxin Testing:** <1.0 EU/μg, determined by the LAL endotoxin assay

**Protein Concentration:** *batch specific* mg/ml

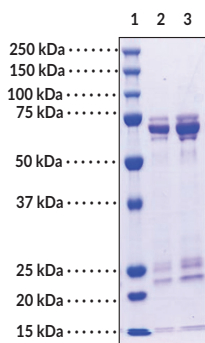
**Activity:** *batch specific* U/ml

**Specific Activity:** *batch specific* U/mg

**Unit Definition:** One unit is defined as the amount of enzyme required to release 1 pmol of fluorescein-labeled ssDNA from a fork DNA substrate containing a quencher on the complementary strand per minute at 25°C under the following conditions: 20 mM HEPES, pH 7.5, 20 mM NaCl, 5% glycerol, 5 mM MgCl<sub>2</sub>, 0.01% BSA, 2 mM DTT, 2 μM unlabeled complementary ssDNA, 1 mM ATP, and 200 nM forked DNA substrate.

Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

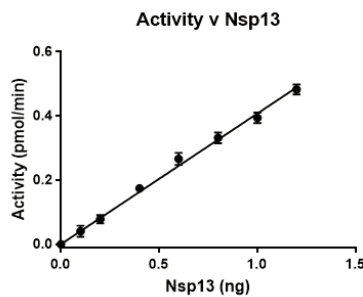
### Images



Lane 1: MW Markers  
Lane 2: SARS-CoV-2 nsp13 Helicase (2 μM)  
Lane 3: SARS-CoV-2 nsp13 Helicase (4 μM)

SDS-PAGE Analysis of SARS-CoV-2 nsp13 Helicase.

Representative gel image shown; actual purity may vary between each batch.



**Activity of Nsp13.** Nsp13 activity was determined using a fork DNA substrate containing a fluorophore on one strand and a quencher on the complementary strand in a fluorescence-based assay. Separation of the DNA substrate by the active helicase also separates the fluorophore from the quencher, thereby allowing activity to be monitored by measuring increases in fluorescence.

WARNING  
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA  
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

WARRANTY AND LIMITATION OF REMEDY  
Buyer agrees to purchase the material subject to Cayman's Terms and Conditions. Complete Terms and Conditions including Warranty and Limitation of Liability information can be found on our website.

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## Description

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is an enveloped positive-stranded RNA virus and the causative agent of COVID-19, a primarily respiratory illness characterized by fever, cough, and shortness of breath that can lead to life-threatening complications.<sup>1-5</sup> The SARS-CoV-2 genome contains approximately 30 kilobases and 14 open reading frames (ORFs) that encode four structural proteins: spike, envelope, membrane, and nucleocapsid, as well as 16 non-structural proteins and 9 accessory factors.<sup>6</sup> SARS-CoV-2 nsp13 helicase is a superfamily 1B helicase and component of replicase polyprotein 1a (PP1a), which is encoded by ORF1a in the viral genome. It is composed of two canonical RecA-like ATPase domains, 1A and 2A, and a zinc-binding domain, stalk region, and 1B domain.<sup>7,8</sup> SARS-CoV-2 nsp13 functions as both an RNA helicase and a nucleoside triphosphate hydrolase (NTPase), unwinding RNA in an NTP-dependent manner.<sup>9</sup> It inhibits IFN- $\beta$  reporter gene activation induced by the RIG-I 2CARD domain in 293FT cells, indicating a role for nsp13 helicase in suppression of the host immune response.<sup>10</sup> Cayman's SARS-CoV-2 nsp13 Helicase (*E. coli* expressed) protein can be used for enzyme assays and Western blot (WB) applications.

## References

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