Derogation request to market BD Veritor™ System for Rapid Detection of SARS-CoV-2 and the BD Kit for Rapid Detection of SARS-CoV-2 as self-tests in The Netherlands

Becton Dickinson and Company (BD) is requesting a derogation to market the BD Veritor™ System for Rapid Detection of SARS-CoV-2 (catalog number 256089) and the BD Kit for Rapid Detection of SARS-CoV-2 (catalog number 256091) to be used as self-tests in The Netherlands. More specifically, BD requests a derogation in order that lay persons in a home environment can use the devices which are already CE marked for professional use.

To facilitate distribution of self-tests to individual users or families, BD is looking into packaging the existing devices specified above into a smaller pack size. BD is also requesting a derogation for the smaller packages of the devices mentioned above in order to market them as self-tests in The Netherlands before Notified Body certification has been obtained.

Today, no other European Member State has granted a derogation to market the BD Veritor™ System for Rapid Detection of SARS-CoV-2 or the BD Kit for Rapid Detection of SARS-CoV-2 as self-tests.

Both devices are CE marked to the European *In Vitro* Diagnostic Medical Device directive (IVDD) 98/79/EC for professional use following the Conformity Assessment Procedure laid out in Annex III of the IVD Directive.

Beginning of this year, BD has been in contact with several Notified Bodies (NB) to understand if it is possible to make a submission for the certification of a SARS-CoV-2 self-test under the IVDD. At least 2 NBs pointed out that they weren't accepting such submissions.
During the last month, the environment has rapidly changed as governments are looking for a safe strategy to lift confinement restrictions. Self-tests play a vital role in such strategy. Today NBs are more open to accept submissions of SARS-CoV-2 self-tests under the IVDD and BD has been able to initiate discussions with a NB in order to start the procedure for the devices to be certified for use as Self-Tests.

In case BD obtains the CE certification for the self-test for SARS-CoV-2, BD will notify IGJ and VWS/GMT via 5.1.2e minvws.nl.

BD acknowledges that every derogation will be made public through Rijksoverheid.nl.

Contents

1. Information on Manufacturer

a. Point of contact

5.1.2e
5.1.2e
BD Life Sciences -
Integrated Diagnostic Solutions
5.1.2e bd.com
Erembodegem-Dorp 86
BE-9320 Erembodegem
t:
c: 5.1.2e

5.1.2e
5.1.2e
BD Life Sciences -
Integrated Diagnostic Solutions
5.1.2e bd.com
Erembodegem-Dorp 86
BE-9320 Erembodegem
t: +
c: + 5.1.2e

b. Manufacturer

Becton, Dickinson and Company
7 Loveton Circle
Sparks, Maryland 21152 USA

c. European Authorized Representative

EC REP Benex Limited
Pottery Road, Dun Laoghaire
Co. Dublin, Ireland

d. ISO certification

Legal Manufacturer
Becton Dickinson and Company
7 Loveton Circle Sparks, Maryland 21152 USA
ISO 13485 :2016 and EN ISO 13485:2016 Ref: MD 595740

e. Post market surveillance

BD as manufacturer of *In Vitro Diagnostic* Medical Devices which are placed on the market in the European Union, has procedures in place to address the requirements regarding post market surveillance and vigilance reporting in their quality management systems as outlined in the current European Medical Devices Vigilance Guidance document MEDDEV 2.12-1, the European Directive 98/79/EC (as amended) and Regulation (EU) 2017/746 on *in vitro* diagnostics medical devices.

The post market surveillance process covers all the European markets in which the BD SARS-CoV-2 Reagents are sold 5.1.1c

5.1.1c

2. Product information BD Veritor™ System for Rapid Detection of SARS-CoV-2

a) Product Name

BD Veritor™ System for Rapid Detection of SARS-CoV-2

b) Product Reference

REF 256089

c) Product Picture

Figure 1: Picture of BD Veritor System for Rapid Detection of SARS-CoV-2

d) Listing on "A common list of COVID-19 rapid antigen tests" agreed by the Health Security Committee

The BD Veritor™ System for Rapid Detection of SARS-CoV-2 is included in the most recent version of "A common list of COVID-19 rapid antigen tests" (Feb 17, 2021) agreed by the Health Security Committee.

e) Intended purpose[1]

The BD Veritor™ System for Rapid Detection of SARS-CoV-2 is a chromatographic digital immunoassay intended for the direct and qualitative detection of SARS-CoV-2 nucleocapsid antigens in nasal swabs from individuals who are suspected of COVID-19 by their healthcare provider within the first five days of the onset of symptoms.

Results are for the identification of SARS-CoV-2 nucleocapsid antigen. This antigen is generally detectable in upper respiratory samples during the acute phase of infection.

- Positive results indicate the presence of viral antigens, but clinical correlation with patient history and other diagnostic information is necessary to determine infection status. Positive results do not rule out bacterial infection or co-infection with other viruses. The agent detected may not be the definite cause of disease. Laboratories within the United States and its territories are required to report all positive results to the appropriate public health authorities.
- Negative results should be treated as presumptive, do not rule out SARS-CoV-2 infection and should not be used as the sole basis for treatment or patient management decisions, including infection control decisions. Negative results should be considered in the context of a patient's recent exposures, history and the presence of clinical signs and symptoms consistent with COVID-19, and confirmed with a molecular assay, if necessary, for patient management.

The BD Veritor System for Rapid Detection of SARS-CoV-2 is intended for use in point of care settings by laboratory personnel and healthcare providers appropriately trained in the use of the BD Veritor System.

For more detailed information, please see Attachment 3: Instructions for Use of the BD Veritor™ System for Rapid Detection of SARS-CoV-2 with BD catalog number 256089

f) Principle of procedure

The BD Veritor System consists of a dedicated opto-electronic interpretation instrument and immunochromatographic assays for the qualitative detection of antigens from pathogenic organisms in samples processed from respiratory specimens. The BD Veritor System for Rapid Detection of SARS-CoV-2 is designed to detect the presence or absence of SARS-CoV-2 nucleocapsid proteins in respiratory samples from patients with signs and symptoms of infection who are suspected of COVID-19. When specimens are processed and added to the test device, SARS-CoV-2 antigens present in the specimen bind to antibodies conjugated to detector particles in the test strip. The antigen-conjugate complexes migrate across the test strip to the reaction area and are captured by a line of antibodies bound on the membrane. A positive result is determined by the BD Veritor Plus Analyzer when antigen-conjugate is deposited at the Test "T" position and the Control "C" position on the assay device. The instrument analyzes and corrects for non-specific binding and detects positives not recognized by the unaided eye to provide an objective result.

[1] Please note that the intended purpose included in the IFU will be updated shortly to include in addition the use on individuals who are without symptoms

g) Clinical performance of BD Veritor™ System for Rapid Detection of SARS-CoV-2[2]

The performance of the BD Veritor System for Rapid Detection of SARS-CoV-2 has been demonstrated in two studies. In both studies eligible subjects were 18 years and older and samples were collected by qualified personnel. Nasal swabs were collected following the dual nares method and handled as described in the collection device instructions for use. Specimens were collected and stored at -70 °C within 30 minutes of collection. All specimens within a pre-specified date range were selected and then sequentially tested in a blind fashion. As with all antigen tests, performance has been demonstrated to decrease as days since symptom onset increases.

Study 1 - Method & Results:

In the initial study, performance was established with 226 direct nasal swabs prospectively collected and enrolled from individual symptomatic patients who were suspected of COVID-19 (within 5 days of onset of one or more self-reported symptoms).[3] Samples were obtained from 21 geographically diverse areas across the United States. The performance of the BD Veritor System Assay was compared to results of a nasopharyngeal or oropharyngeal swab stored in 3 mL viral transport media tested with an Emergency Use Authorized molecular (RT-PCR) test for detection of SARS-CoV-2. For more detailed information, please consult the Instructions For Use (IFU).

Tabel 1: Summary of the Performance of the BD Veritor System for Rapid Detection of SARS-CoV-2 Compared to RT-PCR for Nasal Swabs

	Reference PCR Results		
BD Veritor Results	POS	NEG	Total
POS	26	0	26
NEG	5	195	200
Total	31	195	226

PPA: 84% (C.I. 67%–93%)
NPA: 100% (C.I. 98%–100%)
OPA: 98% (C.I. 95%–99%)

PPV: 100% (C.I. 89%, 100%)
NPV: 97.5% (C.I. 95%, 99%)

Study 2 – Method & Results:

In the second study, performance was established with 184 direct nasal swabs prospectively collected and enrolled from individual symptomatic patients (within 5 days of onset) with two or more self-reported symptoms‡ who were suspected of COVID-19. Samples were collected at 16 geographically diverse outpatient clinics only in the United States. The BD Veritor SARS-CoV-2 results from the direct nasal swab were compared to results from the NP or OP swab in UVT tested with an Emergency Use Authorized molecular (RT-PCR) test for detection of SARS-CoV-2.

[2] Will be updated shortly to include the performance in asymptomatic individuals.
[3] Symptoms included new loss of taste or smell, fever, shortness of breath or difficulty breathing, headache, cough, sore throat, muscle pain, chills and repeated shaking with chills.

Tabel 2: Summary of the Performance of the BD Veritor System for Rapid Detection of SARS-CoV-2 compared to RT-PCR for Nasal Swabs

	Reference PCR Results		
BD Veritor Results	POS	NEG	Total
POS	29	1	30
NEG	2	152	154
Total	31	153	184

PPA: 93.5% (C.I. 79.3%–98.2%)
NPA: 99.3% (C.I. 96.4%–99.9%)
OPA: 98.4% (C.I. 95.3%–99.4%)

PPV: 96.7% (C.I. 84.7%, 99.9%)
NPV: 98.7% (C.I. 95.9%, 99.8%)

h) Risk Management

The Risk Management plan was successfully executed through the assessment of product risk through the generation of the following risk assessment tools: Hazard Analysis and Process FMEAs. These tools were used to identify and verify risk control measures 5.1.1c

5.1.1c

All risks have been deemed acceptable.

[4] Becton Dickinson and Company, located at 7 Loveton Circle, Sparks, Maryland 21152, USA, is the Legal Manufacturer of below products:

- 256082 BD Veritor™ System for Rapid detection of SARS-CoV-2
- 256089 BD Veritor™ System for Rapid detection of SARS-CoV-2

Both references apply to the same product, sold by BD under reference # 256082 on the Worldwide market and under reference # 256089 for the ex-US market. Therefore the risk management documentation that mentions the BD product with reference # 256082 is also applicable to the BD product with reference # 256089.

i) Kit components: Identification, Packaging & Labeling of BD Veritor™ System for Rapid Detection of SARS-CoV-2

i. Outer Box

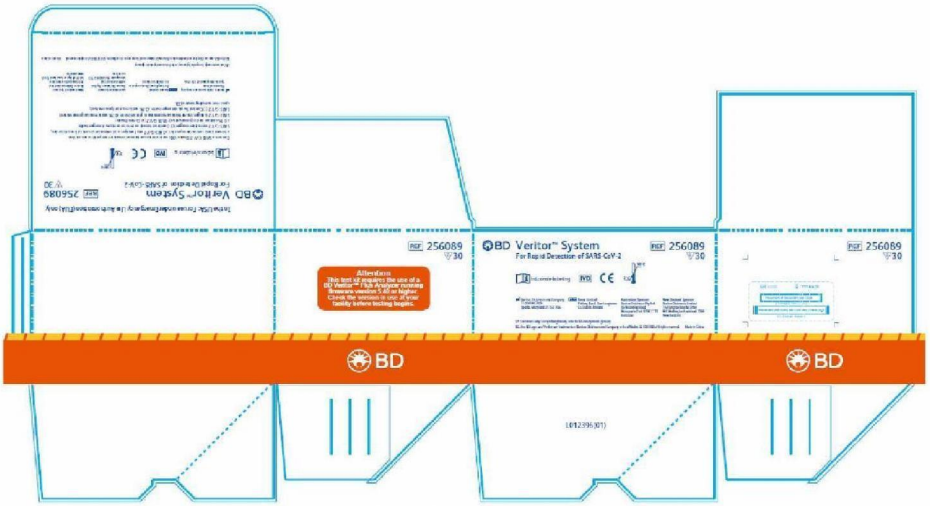


Figure 2: drawing of the box of BD Veritor™ System for Rapid Detection of SARS-CoV-2

Figure 3: Shelf Pack Label BD Veritor™ System for Rapid Detection of SARS-CoV-2

Figure 4: Barcode Label - BD Veritor™ System for Rapid Detection of SARS-CoV-2

ii. Test Device

Figure 5: Picture of BD Veritor System Test Devices

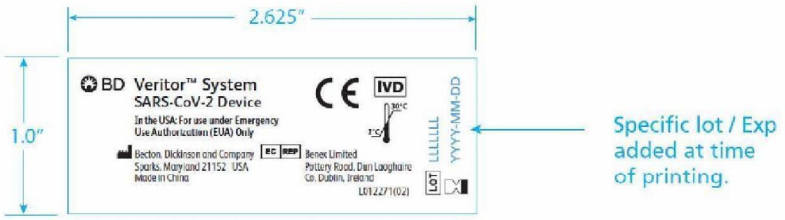


Figure 6: Pouch label BD Veritor™ SARS-CoV-2 Device

iii. Extraction reagent

Figure 7: Picture of Extraction Reagent

Figure 8: Picture of extraction tube holder

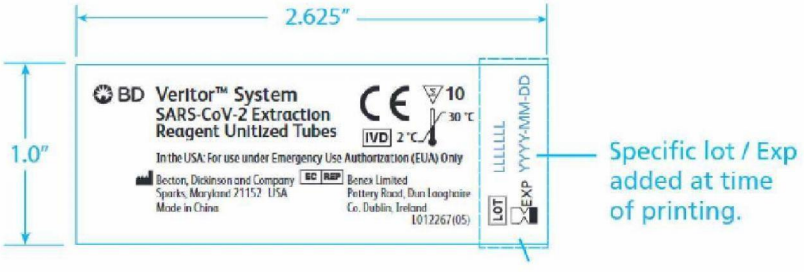


Figure 9: pouch label of Extraction reagent

iv. Sampling Swabs

Figure 10: Picture of Specimen sampling swabs

v. Control swabs

Figure 11: Picture of SARS-CoV-2 (+) Control Swab and SARS-CoV-2 (-) Control Swab

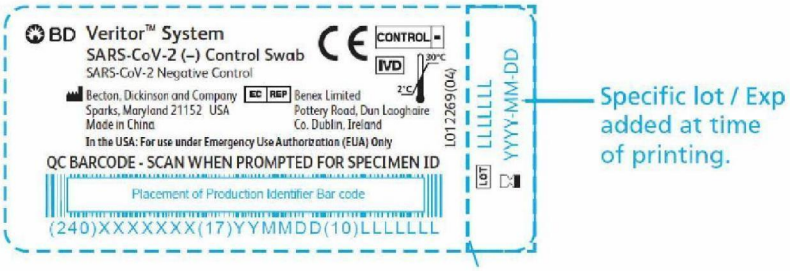


Figure 12: pouch label negative control swab

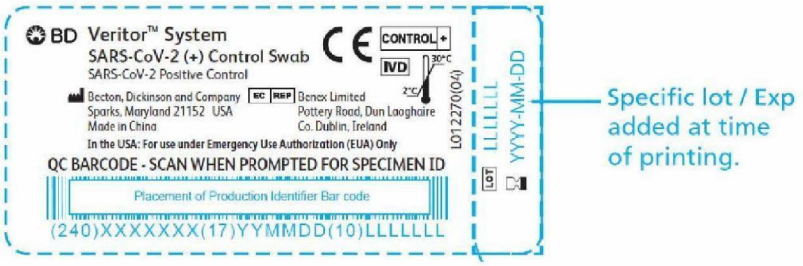


Figure 13: pouch label positive control swab

vi. Assay documentation

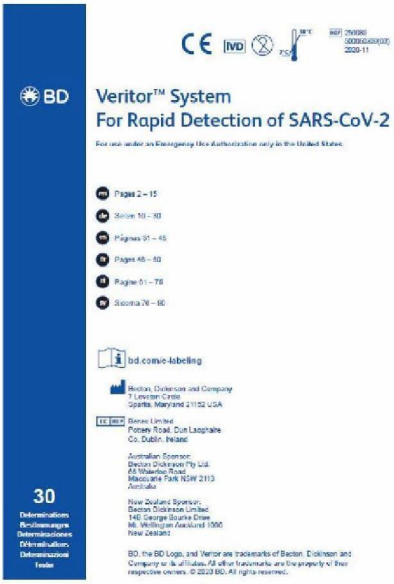


Figure 14: Instructions for Use assembly for the BD Veritor™ System for Rapid Detection of SRAS-CoV-2

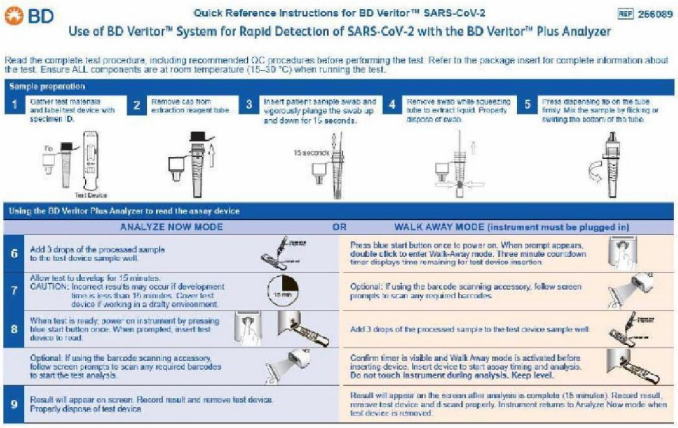


Figure 15: Quick reference instruction card for the BD Veritor™ System for Rapid Detection of SRAS-CoV-2

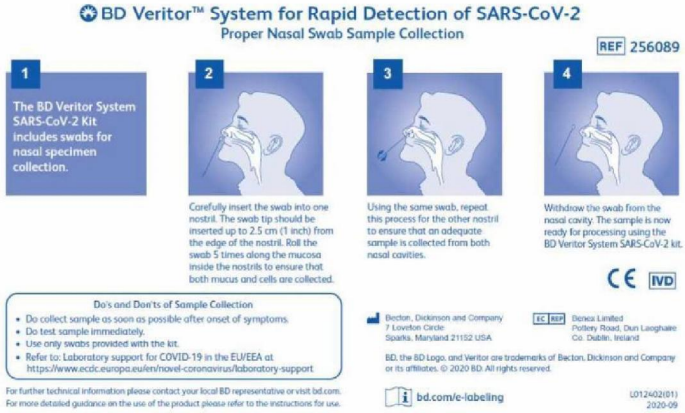


Figure 16: Proper Nasal Swab sample Collection for the BD Veritor™ System for Rapid Detection of SRAS-CoV-2

3. Use of the BD Veritor™ System for Rapid Detection of SARS-CoV-2 as a Self-Test

BD Veritor™ System for Rapid Detection of SARS-CoV-2 (catalog number 256089) was used without the BD Veritor™ Plus Analyzer in a study with objective to evaluate the performance of self-testing using rapid antigen detection Tests (RDT) without assistance. For more details, please consult the publication[5] Self-testing for the detection of SARS-CoV-2 infection with rapid antigen tests. J.J.J.M. Stohr *et al.* 2021

a) Study design and participants

This manufacturer-independent cross-sectional study was conducted from December 23, 2020, to January, 17, 2021, in the test center of the Municipal Health Services in Tilburg, Noord-Brabant, the Netherlands. In the Netherlands community testing for SARS-CoV-2 is coordinated by the MHS. Adults above the aged 18 years or older who presented at the test center, were able to understand the written instructions in Dutch (see Attachment 4: Instructions for the use of the BD Veritor™ System for Rapid Detection of SARS-CoV-2 with BD catalog number 256089 as self-test) and provided verbal informed consent procedure and contact information (e-mail address and telephone number) were deemed for inclusion.

b) Method

Participants visiting a municipal SARS-CoV-2 testing center, received self-testing kits containing either the BD Veritor System (BD RDT) or Roche SARS-CoV-2 antigen detection test (Roche RDT). Oronasopharyngeal swabs were collected from the participants for qRT-PCR testing. As a proxy for contagiousness, viral culture was performed on a selection of qRT-PCR positive samples to determine the Ct-value at which the chance of a positive culture was dropping below 0.5 (Ct-value cut-off). Sensitivity and specificity of self-testing were compared to qRT-PCR with a Ct-value below the Ct value cut-off. Determinants independently associated with a false-negative self-test result were determined.

Participants received a self-testing package containing either a BD RDT or a Roche RDT, a flocked swab, a foldable cardboard test frame, and a written and illustrated booklet including general information (see Attachment 4: Instructions for the use of the BD Veritor™ System for Rapid Detection of SARS-CoV-2 with BD catalog number 256089 as self-test) on the study and an instruction on how to collect a mid-turbinate nasal sample, how to perform the test and how to interpret the test result. This instruction included a QR-code link to a two-minute online video illustrating mid turbinate self-sampling and self-testing using the BD RDT (http://www.corona-test-instructies.nl/) and Roche RDT (http://www.coronatest-instructies.nl/)

c) Results

A total of 3,215 participants were included (BD RDT n=1604; Roche RDT n=1611). Sensitivity and specificity of self-testing compared to the qRT-PCR results with Ct-value below the Ct-value cut-off was 78.0% (95% CI:72.5-82.8) and 99.4% (95%CI: 99.0-99.6) respectively. Determinants independently associated with a false-negative self-testing results were: higher age, low viral load and finding self-testing difficult.

[5] J. J.J.M. Stohr, V. F. Zwart, G. Goderski, 5.1.2e, C. R.S. Nagel-Imming, 5.1.2e 5.1.2e, S. D. Pas, F. van den Oetelaar, M. Hellwich, K. H. Gan, 5.1.2e, J.J. Verweij, J. L. Murk, W. van den Bijllaardt, J. A. J. W. Kluytmans. Self-testing for the detection of SARS-CoV-2 infection with rapid antigen tests. Available from: https://www.medrxiv.org/content/10.1101/2021.02.21.21252153v1

d) Survey on usability

Participants were asked to respond to statements regarding the self-test procedure. The survey provides information on: ease of use, confidence in result interpretation, recommend self-testing, education level, watched video instruction, Instructions for Use were clear, confident in performing the nose sampling properly, confident in performing the RDT properly, would use this Rapid Test again.

e) Conclusion of this study

Self-testing using currently available RDT's has a high specificity and relatively high sensitivity to identify individuals with a high probability of contagiousness. The performance of two tests were comparable. This application has the potential for frequent and extensive testing which may be an aid to lift restrictions to society while controlling the spread of SARS-CoV-2.

4. Equivalency between BD Veritor™ System for Rapid Detection of SARS-CoV-2 and BD Kit for Rapid Detection of SARS-CoV-2

The BD Kit for Rapid Detection of SARS-CoV-2 (catalog number 256091) test device has the same formulation, is produced by an identical process as the BD Veritor™ System for Rapid Detection of SARS-CoV-2 (catalog number 256089) and uses the same antibodies. Only the reading and result interpretation of the devices are different. The BD Kit for Rapid Detection of SARS-CoV-2 is interpreted visually whereas the BD Veritor™ System for Rapid Detection of SARS-CoV-2 is interpreted by the BD Veritor™ Plus Analyzer system.

Because the devices are functionally the same, the analytical studies (cross reactivity, endogenous interfering substances, microbial interference, reproducibility and high dose hook effect) for the validation of BD Veritor™ System for Rapid Detection of SARS-CoV-2 test also apply to the BD Kit for Rapid Detection of SARS-CoV-2 visual read test. The clinical evaluation included both visual and BD Veritor Plus Analyzer read interpretation methods and showed equivalent clinical performance by both interpretation methods.

5. Product information BD Kit for Rapid Detection of SARS-CoV-2

a) Product Name

BD Kit for Rapid Detection of SARS-CoV-2

b) Product Reference

REF 256091

c) Product Picture

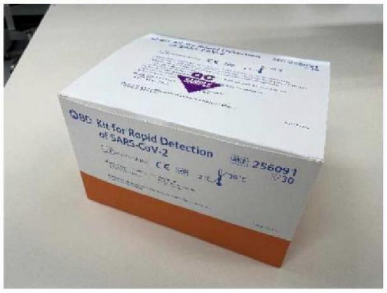


Figure 17: picture of BD Kit for Rapid Detection of SARS-CoV-2

d) Listing on "A common list of COVID-19 rapid antigen tests" agreed by the Health Security Committee

The BD Kit for Rapid Detection of SARS-CoV-2 (256091) is not included in the most recent version of "A common list of COVID-19 rapid antigen tests" (Feb 17, 2021) agreed by the Health Security Committee. Please note that both devices showed equivalent clinical performance as explained in section 4 and is CE marked to the IVD Directive 98/79/EC.

e) Intended purpose

The BD Kit for Rapid Detection of SARS-CoV-2 is a chromatographic immunoassay intended for the direct and qualitative detection of SARS-CoV-2 nucleocapsid antigens in nasal swabs from individuals who are without symptoms, or with symptoms, who are suspected of SARS-CoV-2 infection by their healthcare provider.

Visually read results are for the identification of SARS-CoV-2 nucleocapsid antigen. This antigen is generally detectable in upper respiratory samples during the acute phase of infection. Positive results indicate the presence of viral antigens, but clinical correlation with patient history and other diagnostic information is necessary to determine infection status.
The BD Kit for Rapid Detection of SARS-CoV-2 is intended for use in point of care settings by healthcare professionals or trained users specifically instructed in the use of the BD Kit for Rapid Detection of SARS-CoV-2 and proper infection control procedures. For more detailed information, please see

Attachment 5: Instructions for Use of the BD Kit for Rapid Detection of SARS-CoV-2

f) Principle of procedure

When specimens are processed and added to the test device, SARS-CoV-2 antigens present in the specimen bind to antibodies conjugated to detector particles in the test strip. The antigen-conjugate complexes migrate across the test strip to the reaction area and are captured by lines of antibodies bound on the membrane.

g) Clinical performance of BD Kit for Rapid Detection of SARS-CoV-2

The performance of the BD Kit for Rapid Detection of SARS-CoV-2 has been demonstrated in two studies. The first study is evaluated performance in symptomatic individuals and the second study assessed performance in asymptomatic individuals.

Study 1

In the symptomatic study, clinical performance of a visually-read assay was established with 319 direct nasal swabs prospectively collected and enrolled from individual symptomatic patients who were suspected of COVID-19 (within 5 days of onset of two or more self-reported symptoms[6]). Eligible subjects were 18 years or older and samples were collected by qualified personnel from 21 geographically diverse areas across the United States. Nasal swabs were collected following the dual nares method and handled as described in the collection device instructions for use. Specimens were frozen within 30 minutes of collection. All specimens within a pre-specified date range were selected and sequentially tested in a blind fashion. The BD Kit for Rapid Detection of SARS-CoV-2 was analyzed by visually reading the test device. The participants were blinded to the comparator result and recorded their observations manually. After every 50 specimens, a different participant performed the visual interpretation. Overall, there were seven different participants reading the devices. The performance of the BD Kit for Rapid Detection of SARS-CoV-2 was compared to results of a nasopharyngeal swab stored in 3 mL viral transport media tested with an Emergency Use Authorized molecular (RT-PCR) test for detection of SARS-CoV-2.

Table 3: Summary of the Performance of the BD Kit for Rapid Detection of SARS-CoV-2 Compared to RT-PCR for nasal swabs in Symptomatic Individuals

	Reference PCR Results		
BD Visual Results	POS	NEG	Total
POS	51	1	52
NEG	5	262	267
Total	56	263	319

PPA: 91.1% (C.I. 80.7%–96.1%)
NPA: 99.6% (C.I. 97.9%–99.9%)
OPA: 98.1% (C.I. 96.0%–99.1%)

PPV: 98.1% (C.I. 90.7%–99.9%)
NPV: 98.1% (C.I. 96.0%–99.4%)

[6] Symptoms included: new loss of taste or smell, fever, shortness of breath or difficulty breathing, diarrhea, GI upset, headache, extreme tiredness, fatigue, weakness, dry cough, sore throat, runny or stuffy nose, nasal congestion, muscle aches, body aches, chills, repeated shaking with chills

Study 2

In the asymptomatic study, performance was established with 370 direct nasal swabs prospectively collected and enrolled from individual asymptomatic patients who were receiving testing for COVID-19. Eligible subjects were all ages and samples were collected by qualified personnel from 3 geographically diverse outpatient clinics in the United States. Nasal swabs were collected following the dual nares method and handled as described in the collection device instructions for use. Specimens were stored frozen within 30 minutes of collection and stored until tested. All specimens within a pre-specified date range were selected and then sequentially tested in a blinded fashion. The BD Kit for Rapid Detection of SARS-CoV-2 was analyzed by visually reading the test device. Each device was read visually by a participant. The participant was blind to the comparator results. Overall, there were five different participants reading the devices. The performance of the BD Kit for Rapid Detection of SARS-CoV-2 was compared to results of a nasal swab stored in 3 mL viral transport media tested with an Emergency Use Authorized molecular (RT-PCR) test for detection of SARS-CoV-2. Using the cycle threshold (Ct) from the comparator assay, performance is presented overall and by Ct≤33 to demonstrate that positive agreement of the assay is higher with samples below this threshold. A lower Ct value corresponds to higher virus concentrations, therefore Ct value can be a surrogate for the amount of virus present in the sample. A Ct threshold of Ct≤33 was chosen due to evidence suggesting that patients with Ct value >30 are no longer contagious.

Table 4: Summary of the Performance of the BD Kit for Rapid Detection of SARS-CoV-2 compared to RT-PCR for Nasal Swabs in Asymptomatic Individuals

	Reference PCR Results		
BD Visual Results	POS	NEG	Total
POS	13	2	15
NEG	7	348	355
Total	20	350	370

OPA: 97.6% (C.I. 95.4%–98.7%)
PPV: 86.7% (C.I. 64.8%–98.5%)
NPV: 98.0% (C.I. 96.7%–99.1%)

h) Risk management

The Risk Management plan was successfully executed through the assessment of product risk through the generation of the following risk assessment tools: Hazard Analysis and Process FMEAs. These tools were used to identify and verify risk control measures. 5.1.1c

5.1.1c

5.1.1c

5.1.1c All risks have been deemed acceptable.

i) Kit components: Identification, Packaging & Labeling of BD Kit for Rapid Detection of SARS-CoV-2

The differences in the Identification, Packaging & Labeling of the BD Kit for Rapid Detection of SARS-CoV-2 (catalog number 256091) and the BD Veritor™ System for Rapid detection of SARS-CoV-2 (catalog number 256089) are listed below:

- Update of labels and box to include Product Reference 256091
- addition of N on the Test Device
- update of associated assay documentation (IFU and Quick Reference guides) explaining the visually read method

i. Outer box labeling – changed to include product reference for 256091

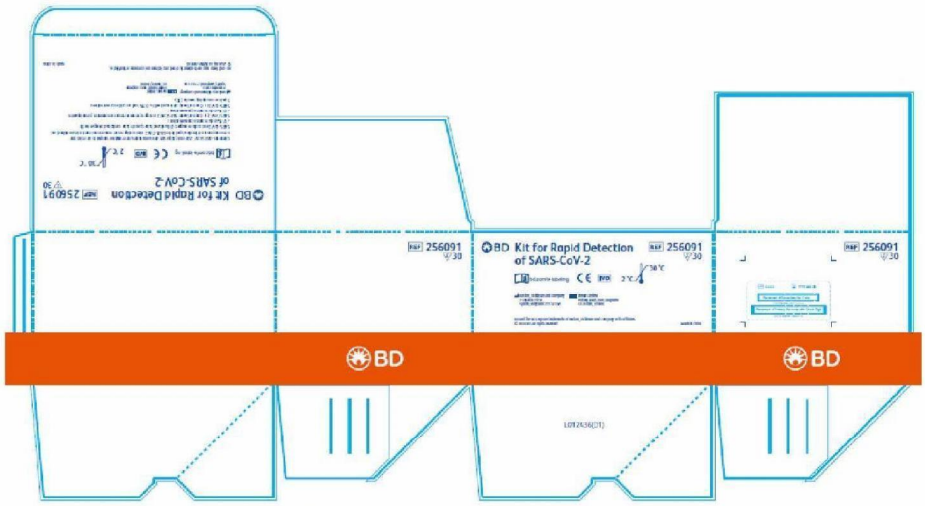


Figure 18: Drawing of outer box BD Kit for Rapid Detection of SARS-CoV-2

Figure 19: Shelf Pack Label BD Kit for Rapid Detection of SARS-CoV-2

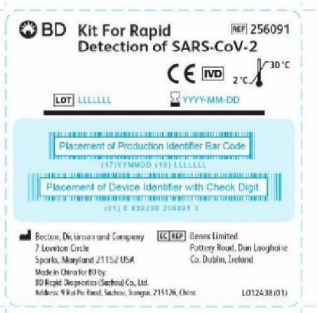


Figure 20: Barcode Label BD Kit for Rapid Detection of SARS-CoV-2

ii. Test Device – Addition of N (Non Specific Line)

The difference between the test device included in the BD Veritor™ System for Rapid Detection of SARS-CoV-2 (catalog number 256089) and the BD Kit of Rapid Detection of SARS-CoV-2 (catalog number 256091) is the addition of the N (indication for Non Specific line) on the test device. Please see picture below, indication with green arrow. The addition of the Non Specific Line helps the user to understand when test results are considered invalid. The test included in the BD Kit of Rapid Detection of SARS-CoV-2 (catalog number 256091) is considered invalid when the Non Specific line is present or when the Control line (C) is absent. In this case, the test must be repeated. If the result is still invalid, the specimen cannot be interpreted.

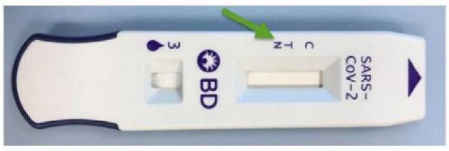


Figure 21: Picture of test device BD Kit for Rapid Detection of SARS-CoV-2

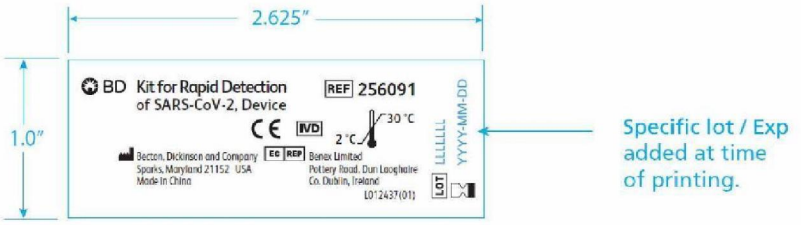
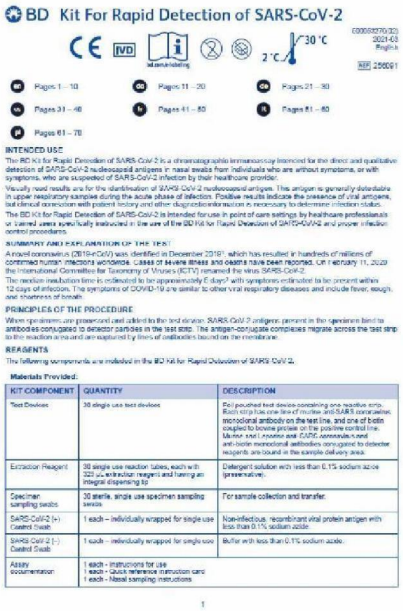


Figure 22: Foil Pouch Label BD Kit for Rapid Detection of SARS-CoV-2, Device

iii. Extraction reagent, sampling swabs, control swabs

Identical to BD Veritor™ system for Rapid Detection of SARS-CoV-2. Please see section 2.0 for pictures and labels of BD Veritor™ system for Rapid Detection of SARS-CoV-2

iv. Assay Documentation



BD Kit For Rapid Detection of SARS-CoV-2

INTENDED USE

SUMMARY AND EXPLANATION OF THE TEST

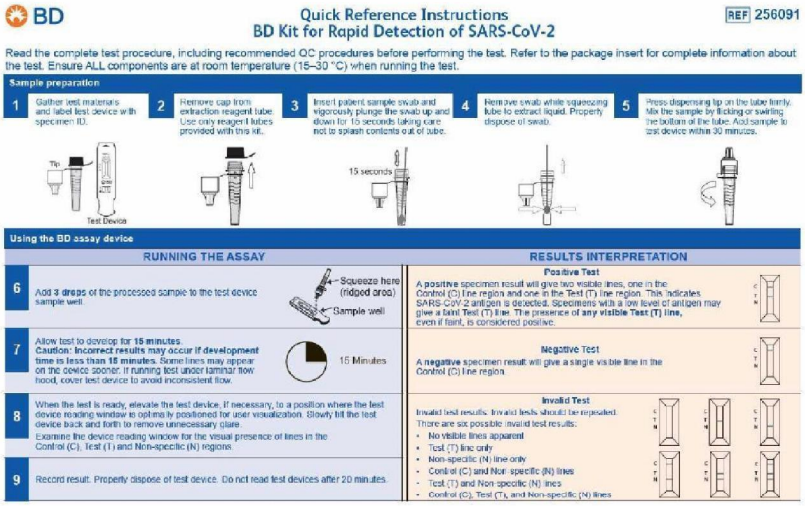
PRINCIPLES OF THE PROCEDURE

REAGENTS

Materials Provided:

KIT COMPONENT	QUANTITY	DESCRIPTION
Test Devices	30 single use test devices	
Extraction Reagent	30 single use reaction tubes, each with 320 µL extraction reagent and tuning an integral dispensing tip	Detergent solution with less than 0.1% sodium azide (preservative).
Specimen sampling swabs	30 sterile, single use specimen sampling swabs	For sample collection and transfer.
SARS-CoV-2 (+) Control Swab	1 each – individually wrapped for single use	Non-infectious, recombinant viral protein antigen with less than 0.1% sodium azide.
SARS-CoV-2 (-) Control Swab	1 each – individually wrapped for single use	Buffer with less than 0.1% sodium azide.
Assay documentation	1 each - Instructions for use 1 each - Quick reference instruction card 1 each - Nasal sampling instructions	

Figure 23: Instructions for Use assembly for the BD Kit for Rapid Detection of SARS-CoV-2 with BD catalog number 256091



BD

Quick Reference Instructions
BD Kit for Rapid Detection of SARS-CoV-2

REF 256091

Read the complete test procedure, including recommended QC procedures before performing the test. Refer to the package insert for complete information about the test. Ensure ALL components are at room temperature (15–30 °C) when running the test.

Sample preparation

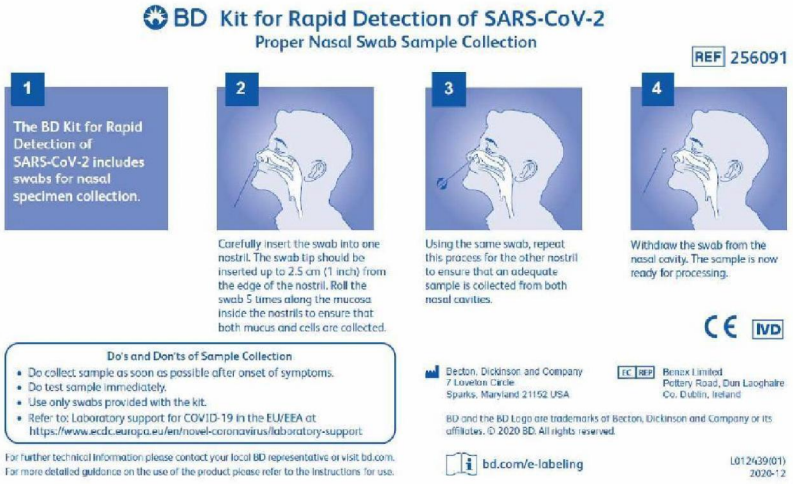
1. Gather test materials and label test device with specimen ID.
2. Remove cap from extraction reagent tube. Use only reagent tubes provided with this kit.
3. Insert patient sample swab and vigorously plunge the swab up and down for 15 seconds taking care not to splash contents out of tube.
4. Remove swab while squeezing tube to extract liquid. Properly dispose of swab.
5. Press dispensing tip on the tube firmly. Mix the sample by flicking or swirling the bottom of the tube. Add sample to test device within 30 minutes.

Tip; Test Device; 15 seconds

Using the BD assay device

RUNNING THE ASSAY	RESULTS INTERPRETATION
6 Add 3 **drops** of the processed sample to the test device sample well. (Squeeze here (ridged area); Sample well)	**Positive Test** A **positive** specimen result will give two visible lines, one in the Control (C) line region and one in the Test (T) line region. This indicates SARS-CoV-2 antigen is detected. Specimens with a low level of antigen may give a faint Test (T) line. The presence of **any visible Test (T) line,** even if faint, is considered positive.
7 Allow test to develop for **15 minutes**. **Caution: Incorrect results may occur if development time is less than 15 minutes.** Some lines may appear on the device sooner. If running test under laminar flow hood, cover test device to avoid inconsistent flow. (15 Minutes)	**Negative Test** A **negative** specimen result will give a single visible line in the Control (C) line region.
8 When the test is ready, elevate the test device. If necessary, to a position where the test device reading window is optimal by positioned for user visualization. Slowly tilt the test device back and forth to remove unnecessary glare. Examine the device reading window for the visual presence of lines in the Control (C), Test (T) and Non-specific (N) regions.	**Invalid Test** Invalid test results. Invalid tests should be repeated. There are six possible invalid test results: • No visible lines apparent • Test (T) line only • Non-specific (N) line only • Control (C) and Non specific (N) lines • Test (T) and Non-specific (N) lines • Control (C), Test (T), and Non-specific (N) lines
9 Record result. Properly dispose of test device. Do not read test devices after 20 minutes.	

Figure 24: Quick Reference Guide BD Kit for Rapid Detection of SARS-CoV-2



BD Kit for Rapid Detection of SARS-CoV-2
Proper Nasal Swab Sample Collection

REF 256091

1. The BD Kit for Rapid Detection of SARS-CoV-2 includes swabs for nasal specimen collection.
2. Carefully insert the swab into one nostril. The swab tip should be inserted up to 2.5 cm (1 inch) from the edge of the nostril. Roll the swab 5 times along the mucosa inside the nostrils to ensure that both mucus and cells are collected.
3. Using the same swab, repeat this process for the other nostril to ensure that an adequate sample is collected from both nasal cavities.
4. Withdraw the swab from the nasal cavity. The sample is now ready for processing.

CE IVD

Do's and Don'ts of Sample Collection

- Do collect sample as soon as possible after onset of symptoms.
- Do test sample immediately.
- Use only swabs provided with the kit.
- Refer to: Laboratory support for COVID-19 in the EU/EEA at https://www.ecdc.europa.eu/en/novel-coronavirus/laboratory-support

For further technical information please contact your local BD representative or visit bd.com.
For more detailed guidance on the use of the product please refer to the Instructions for use.

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Sparks, Maryland 21152 USA

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Co. Dublin, Ireland

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L012439(01)
2020-12

Figure 25: Quick Reference Guide proper Nasal Swab Sample Collection BD Kit for Rapid Detection of SARS-CoV-2

6. Use as Self-Test of the BD Kit for Rapid Detection of SARS-CoV-2

BD Veritor™ System for Rapid Detection of SARS-CoV-2 (Catalog number 256089) was used without the BD Veritor™ Plus Analyzer in a study with objective to evaluate the performance of self-testing using rapid antigen detection Tests (RDT) without assistance.

The BD Kit for Rapid Detection of SARS-CoV-2 (catalog number 256091) test device has the same formulation, is produced by an identical process as the BD Veritor™ System for Rapid Detection of SARS-CoV-2 (catalog number 256089) and uses the same antibodies. Only the reading and result interpretation of the devices are different. The BD Kit for Rapid Detection of SARS-CoV-2 is interpreted visually whereas the BD Veritor™ System for Rapid Detection of SARS-CoV-2 is interpreted by the BD Veritor™ Plus Analyzer system. (See section 4 Equivalency between BD Veritor™ System for Rapid Detection of SARS-CoV-2 and BD Kit for Rapid Detection of SARS-CoV-2.)

As the Self-Test study referenced in Section 3 was performed with the BD Veritor™ System for Rapid Detection of SARS-CoV-2 but without the use of the BD Veritor™ Plus Analyzer, we consider the results of the publication[7] also valid for the BD Kit for Rapid Detection of SARS-CoV-2.

naïve reader testing

In addition, BD has evaluated the analytical performance of the BD Kit for Rapid Detection of SARS-CoV-2 by having 11 inexperienced operators perform the test. Results are incorporated in the Instructions for use of the BD Kit for Rapid Detection of SARS-CoV-2, see Attachment 5: Instructions for Use of the BD Kit for Rapid Detection of SARS-CoV-2.

Risk assessment regarding self-testing

The benefit/risk assessment includes risks that are also relevant when the product is used as self-test. The risk of swallowing the test device, the processing tube and cap were evaluated and mitigated either through product design or available assay documentation.

[7] J. J.J.M. Stohr, V. F. Zwart, G. Goderski, 5.1.2e, C. R.S. Nagel-Imming, 5.1.2e 5.1.2e, S. D. Pas, F. van den Oetelaar, M. Hellwich, K. H. Gan, 5.1.2e, J.J. Verweij, J. L. Murk, W. van den Bijllaardt, J. A. J. W. Kluytmans. Self-testing for the detection of SARS-CoV-2 infection with rapid antigen tests. Available from: https://www.medrxiv.org/content/10.1101/2021.02.21.21252153v1

7. Definition of the Self-Test product and the differences with the existing professional use devices

Product

The SARS-CoV-2 self-test device marketed in The Netherlands will be based on the existing professional use devices:

- BD Veritor™ system for Rapid Detection of SARS-CoV-2 (catalog number 256089) as defined in section 2 Product information BD Veritor™ System for Rapid Detection of SARS-CoV-2 or
- BD Kit for Rapid Detection of SARS-COV-2 (catalog number 256091) as defined in section 5 Product information BD Kit for Rapid Detection of SARS-CoV-2.

Future differences between the self-test product and the existing professional use devices

Quantity of tests

A kit of 30 Test Devices is currently already available, but boxes including less Test Devices will be made available to facilitate distribution of self-tests to individual users or families.

Nasal swab specimen collection

The current product includes clear indication in the Instructions For Use (IFU) and a quick reference guide on how to collect specimen with a nasal swab. In future, the lay man IFU will include a step by step approach on how to collect specimen using a nasal swab. In addition, BD is evaluating the current swab design for inclusion of indication of the insertion depth.

Control swabs

Control swabs will not be included in the kits for self-testing.

Extraction tube holder

The extraction tube holder (3 each) currently included in the kit has space for 10 tubes. Currently the possibility of including a smaller extraction tube holder is being evaluated.

Lay man instructions for use

An instruction for use in Dutch, based on the leaflet provided for the self-test Study referenced in Section 3, will be made available.

Quick Reference Guides

Quick reference guides will not be included in the self-test product as everything will be explained step by step in the lay man IFU.

8. Regulatory pathway to self-test

CE marked for professional use

BD Veritor™ System for Rapid Detection of SARS-CoV-2 (catalog number 256089) and the BD Kit for Rapid Detection of SARS-CoV-2 (catalog number 256091) are CE marked to the European *In Vitro* Diagnostic Medical Device directive 98/79/EC for professional use following the Conformity Assessment Procedure laid out in Annex III of the IVD Directive[8].

Conformity Assessment for use as self-test by Notified Body

Beginning of this year, BD has been in contact with several Notified Bodies (NB) to understand if it is possible to make a submission for the certification of a SARS-CoV-2 self-test under the IVDD. At least 2 NBs pointed out that they weren't accepting such submissions.

During the last month, the environment has rapidly changed as governments are looking for a safe strategy to lift confinement restrictions. Self-tests play a vital role in such strategy. Today NBs are more open to accept submissions of SARS-CoV-2 self-tests under the IVDD and BD has been able to initiate discussions with a NB in order to start the procedure for the devices to be certified for use as Self-Tests.

In case we receive the CE certification of the above mentioned devices, BD will notify IGJ and VWS/GMT via [redacted]minvws.nl.

BD acknowledges that every derogation will be made public through Rijksoverheid.nl.

Derogation requests

Today, no other European Member State has granted a derogation to market the BD Veritor™ System for Rapid Detection of SARS-CoV-2 (catalog number 256089) or the BD Kit for Rapid Detection of SARS-CoV-2 (catalog number 256091) as self-tests.

[8] see **Attachment 1:** Declaration of Conformity of BD Veritor™ System for Rapid Detection of SARS-CoV-2 with BD catalog number 256089, **Attachment 2:** Declaration of Conformity of BD Kit for Rapid Detection of SARS-CoV-2 with BD catalog number 256091, **Attachment 6:** Essential Requirement Checklist for the BD Veritor™ System for Rapid Detection of SARS-CoV-2 with BD catalog number 256089 and **Attachment 7:** Essential Requirement Checklist for the BD Kit for Rapid Detection of SARS-CoV-2 with BD catalog number 256091

9. Conclusion

Based on the provided dossier, BD requests a derogation to market the devices mentioned below to be used as self-tests in The Netherlands.

- BD Veritor™ System for Rapid Detection of SARS-CoV-2 (catalog number 256089) packed with a lay man IFU in Dutch and
- BD Kit for Rapid Detection of SARS-CoV-2 (catalog number 256091) packed with a lay man IFU in Dutch and
- a smaller pack size of the BD Veritor™ System for Rapid Detection of SARS-CoV-2 (catalog number 256089) with the differences as listed in section 7 Definition of the Self-Test product and the differences with the existing professional use devices, and
- a smaller pack size of the BD Kit for Rapid Detection of SARS-CoV-2 (catalog number 256091) with a lay man IFU with the differences as listed in section 7 Definition of the Self-Test product and the differences with the existing professional use devices

Attachment 1: Declaration of Conformity of BD Veritor™ System for Rapid Detection of SARS-CoV-2 with BD catalog number 256089

BD Declaration of Conformity

Manufacturer	Becton, Dickinson and Company 7 Loveton Circle Sparks, MD 21152 USA
Authorized Representative	BENEX Limited Pottery Road, Dun Laoghaire, Co. Dublin, Ireland Tel. : + 353.1.202.5222 Fax : + 353.1.202.5388
Conformity Assessment Procedure	IVD Directive 98/79/EC, Annex III

Product(s):	**Product Name**	**Cat. No.**
	BD Veritor™ System for Rapid Detection of SARS-CoV-2	256089

We hereby declare that the above mentioned product(s) comply with the European In Vitro Diagnostic Directive and its relevant transposition into national laws of the member states into which we place the devices. This declaration is issued under the sole responsibility of Becton, Dickinson and Company.

Date	September 22, 2020
Name and Authority	[redacted]
Signature	5.1.2e

Attachment 2: Declaration of Conformity of BD Kit for Rapid Detection of SARS-CoV-2 with BD catalog number 256091

BD Declaration of Conformity

Manufacturer	Becton, Dickinson and Company 7 Loveton Circle Sparks, MD 21152 USA
Authorized Representative	BENEX Limited Pottery Road, Dun Laoghaire, Co. Dublin, Ireland Tel. : + 353.1.202.5222 Fax : + 353.1.202.5388
Conformity Assessment Procedure	IVD Directive 98/79/EC, Annex III

Product(s):	**Product Name**	**Cat. No.**
	BD Kit for Rapid Detection of SARS-CoV-2	256091

We hereby declare that the above mentioned product(s) comply with the European In Vitro Diagnostic Directive and its relevant transposition into national laws of the member states into which we place the devices. This declaration is issued under the sole responsibility of Becton, Dickinson and Company.

Date	December 17, 2020
Name and Authority	[redacted]
Signature	5.1.2e

Attachment 3: Instructions for Use of the BD Veritor™ System for Rapid Detection of SARS-CoV-2 with BD catalog number 256089

BD

CE IVD 30°C 2°C REF 256089 500050809(03) 2020-11

Veritor™ System For Rapid Detection of SARS-CoV-2

For use under an Emergency Use Authorization only in the United States.

bd.com/e-labeling

Becton, Dickinson and Company
7 Loveton Circle
Sparks, Maryland 21152 USA

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Pottery Road, Dun Laoghaire
Co. Dublin, Ireland

Australian Sponsor:
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Mt. Wellington Auckland 1060
New Zealand

30
Determinations
Bestimmungen
Determinaciones
Déterminations
Determinazioni
Tester

BD Veritor™ System For Rapid Detection of SARS-CoV-2

English

Kit configured for testing nasal swab samples freshly collected, processed and dispensed directly onto assay test device.

For *In Vitro* Diagnostic Use.
For use with the BD Veritor™ Plus Analyzer running firmware version 5.4 or later.
For use under an Emergency Use Authorization only in the United States.
Please read these instructions completely before beginning to test specimens.

INTENDED USE

The BD Veritor™ System for Rapid Detection of SARS-CoV-2 is a chromatographic digital immunoassay intended for the direct and qualitative detection of SARS-CoV-2 nucleocapsid antigens in nasal swabs from individuals who are suspected of COVID-19 by their healthcare provider within the first five days of the onset of symptoms. In the United States, testing is limited to laboratories certified under the Clinical Laboratory Improvement Amendments of 1988 (CLIA), 42 U.S.C. §263a, that meet the requirements to perform moderate, high, or waived complexity tests. This test is authorized for use at the Point of Care (POC), i.e., in patient care settings operating under a CLIA Certificate of Waiver, Certificate of Compliance, or Certificate of Accreditation.

Results are for the identification of SARS-CoV-2 nucleocapsid antigen. This antigen is generally detectable in upper respiratory samples during the acute phase of infection. Positive results indicate the presence of viral antigens, but clinical correlation with patient history and other diagnostic information is necessary to determine infection status. Positive results do not rule out bacterial infection or co-infection with other viruses. The agent detected may not be the definite cause of disease. Laboratories within the United States and its territories are required to report all positive results to the appropriate public health authorities.
Negative results should be treated as presumptive, do not rule out SARS-CoV-2 infection and should not be used as the sole basis for treatment or patient management decisions, including infection control decisions. Negative results should be considered in the context of a patient's recent exposures, history and the presence of clinical signs and symptoms consistent with COVID-19, and confirmed with a molecular assay, if necessary, for patient management.

The BD Veritor System for Rapid Detection of SARS-CoV-2 is intended for use in point of care settings by laboratory personnel and healthcare providers appropriately trained in the use of the BD Veritor System. In the United States, the BD Veritor System for Rapid Detection of SARS-CoV-2 is only for use under the Food and Drug Administration's Emergency Use Authorization.

SUMMARY AND EXPLANATION OF THE TEST

A novel coronavirus (2019-nCoV) was identified in December 2019,[1] which has resulted in hundreds of thousands of confirmed human infections worldwide. Cases of severe illness and deaths have been reported. On February 11, 2020 the International Committee for Taxonomy of Viruses (ICTV) renamed the virus SARS-CoV-2.

The median incubation time is estimated to be approximately 5 days[2] with symptoms estimated to be present within 12 days of infection. The symptoms of COVID-19 are similar to other viral respiratory diseases and include fever, cough, and shortness of breath.

The BD Veritor System for Rapid Detection of SARS-CoV-2 is a rapid (approximately 15 minutes) chromatographic digital immunoassay for the direct detection of the presence or absence of SARS-CoV-2 antigens in respiratory specimens taken from patients with signs and symptoms who are suspected of COVD-19. The test is intended for interpretation in both laboratory and near patient testing environments only with the BD Veritor Plus Analyzer Instrument. The test is not intended to be interpreted visually. Procedures to evaluate test devices depend on the BD Veritor Plus Analyzer workflow configuration chosen. In **Analyze Now mode**, the instrument evaluates assay devices after manual timing of their development. In **Walk Away mode**, devices are inserted immediately after application of the specimen, and timing of assay development and analysis is automated. Additionally, connection of a BD Veritor Plus Analyzer to a printer or IT system is possible if desired. Additional result documentation capabilities are possible with the integration of a BD Veritor Barcode Scanning Enabled module. Please refer to the BD Veritor Plus Analyzer Instructions for Use for details on how to implement these features.

PRINCIPLES OF THE PROCEDURE

The BD Veritor System consists of a dedicated opto-electronic interpretation instrument and immunochromatographic assays for the qualitative detection of antigens from pathogenic organisms in samples processed from respiratory specimens. The BD Veritor System for Rapid Detection of SARS-CoV-2 is designed to detect the presence or absence of SARS-CoV-2 nucleocapsid proteins in respiratory samples from patients with signs and symptoms of infection who are suspected of COVID-19. When specimens are processed and added to the test device, SARS-CoV-2 antigens present in the specimen bind to antibodies conjugated to detector particles in the test strip. The antigen-conjugate complexes migrate across the test strip to the reaction area and are captured by a line of antibodies bound on the membrane. A positive result is determined by the BD Veritor Plus Analyzer when antigen-conjugate is deposited at the Test "T" position and the Control "C" position on the assay device. The instrument analyzes and corrects for non-specific binding and detects positives not recognized by the unaided eye to provide an objective result.

REAGENTS

The following components are included in the BD Veritor System for Rapid Detection of SARS-CoV-2 kit.

Materials Provided:

KIT COMPONENT	QUANTITY	DESCRIPTION
BD Veritor System Test Devices	30 single use test devices	Foil pouched test device containing one reactive strip. Each strip has one line of murine anti-SARS coronavirus monoclonal antibody on the test line, and one of biotin coupled to bovine protein on the positive control line. Murine and Leporine anti-SARS coronavirus and anti-biotin monoclonal antibodies conjugated to detector reagents are bound in the sample delivery area.
Extraction Reagent	30 single use reaction tubes, each with 325 µL extraction reagent and having an integral dispensing tip	Detergent solution with less than 0.1% sodium azide (preservative).
Specimen sampling swabs	30 sterile, single use specimen sampling swabs	For sample collection and transfer.
SARS-CoV-2 (+) Control Swab	1 each – individually wrapped for single use	Non-infectious, recombinant viral protein antigen with less than 0.1% sodium azide.
SARS-CoV-2 (–) Control Swab	1 each – individually wrapped for single use	Buffer with less than 0.1% sodium azide.
Assay documentation	1 each - Instructions for use 1 each - Quick reference instruction card 1 each - Nasal sampling instructions	

MATERIALS REQUIRED BUT NOT PROVIDED	OPTIONAL EQUIPMENT
• BD Veritor™ Plus Analyzer (Catalog number 256066) • BD Veritor™ System InfoScan Module (Catalog Number 258068)* • Timer • Tube rack for specimens • Any necessary personal protective equipment	• USB Printer cable for BD Veritor Plus Analyzer (Catalog number 443907) • Epson Printer model TM-T20 II • BD Veritor™ Plus Connect (contact your BD representative for details)

* If necessary to configure instrument display language

WARNINGS AND PRECAUTIONS

1. For *in vitro* diagnostic use. Only for use under an Emergency Use Authorization in the United States.
2. In the USA, this test has not been FDA cleared or approved; this test has been authorized by FDA under an EUA for use by authorized laboratories; use by laboratories certified under the CLIA, 42 U.S.C. §263a, that meet requirements to perform moderate, high, or waived complexity tests and at the Point of Care (POC), i.e., in patient care settings operating under a CLIA Certificate of Waiver, Certificate of Compliance, or Certificate of Accreditation.
3. This test has been authorized only for the detection of proteins from SARS-CoV-2, not for any other viruses or pathogens; and, in the USA, this test is only authorized for the duration of the declaration that circumstances exist justifying the authorization of emergency use of *in vitro* diagnostics for detection and/or diagnosis of the virus that causes COVID-19 under Section 564(b)(1) of the Act, 21 U.S.C. § 360bbb-3(b)(1), unless the authorization is terminated or revoked sooner.
4. Do not use this kit beyond the expiration date printed on the outside carton.
5. Do not use the kit to evaluate patient specimens if either the positive control swab or negative control swab fail to give expected results.
6. Test results are not meant to be visually determined. All test results must be determined using the BD Veritor Plus Analyzer.
7. To avoid erroneous results, specimens must be processed as indicated in the assay procedure section.
8. Do not reuse any BD Veritor System test device or kit components.
9. Do not use extraction reagents from other BD Veritor assay kits as assay performance could be affected.
10. When collecting a nasal swab sample, use the nasal swab supplied in the kit.
11. Other than the swabs used for specimen collection, kit components should not make contact with the patient.
12. Proper specimen collection, storage and transport are critical to the performance of this test.

13. Specific training or guidance is recommended if operators are not experienced with specimen collection and handling procedures. Wear protective clothing such as laboratory coats, disposable gloves, and eye protection when specimens are collected and evaluated.
14. Pathogenic microorganisms, including hepatitis viruses and Human Immunodeficiency Virus, may be present in clinical specimens. Standard precautions and institutional guidelines should always be followed in handling, storing, and disposing of all specimens and all items contaminated with blood or other body fluids.
15. The SARS-CoV-2 positive control swabs have been prepared from recombinant viral proteins and do not contain infectious material.
16. Dispose of all BD Veritor kit components (test devices, reagents, and control swabs) as biohazardous waste in accordance with federal, state, and local requirements.
17. Reagents contain sodium azide, which is harmful if inhaled, swallowed or exposed to skin. If there is contact with skin, wash immediately with plenty of water. Contact with acids produces very toxic gas. Do not flush reagents down the drain.
18. Test devices used in a laminar flow hood or in areas with high air flow should be covered during test development to ensure proper sample flow.
19. For additional information on hazard symbols, safety, handling and disposal of the components within this kit, please refer to the Safety Data Sheet (SDS) located at bd.com.

STORAGE

Kits may be stored at 2–30 °C. DO NOT FREEZE. **Reagents and devices must be at room temperature (15–30 °C) when used for testing.**

SPECIMEN COLLECTION AND HANDLING

Specimen Collection and Preparation

Acceptable specimens for testing with this kit include nasal swab specimens obtained by the dual nares collection method. It is essential that correct specimen collection and preparation methods be followed. Specimens obtained early during symptom onset will contain the highest viral titers; specimens obtained after five days of symptoms are more likely to produce negative results when compared to an RT-PCR assay. Inadequate specimen collection, improper specimen handling and/or transport may yield a falsely negative result; therefore, training in specimen collection is highly recommended due to the importance of specimen quality for generating accurate test results.

Specimen Transport and Storage

Freshly collected specimens should be processed as soon as possible, but no later than one hour after specimen collection. It is essential that correct specimen collection and preparation methods be followed.

Nasal Swab Specimen Collection

1. Insert swab into one nostril of the patient. The swab tip should be inserted up to 2.5 cm (1 inch) from the edge of the nostril. Roll the swab 5 times along the mucosa inside the nostril to ensure that both mucus and cells are collected.
2. Using the same swab, repeat this process for the other nostril to ensure that an adequate sample is collected from both nasal cavities.
3. Withdraw the swab from the nasal cavity. The sample is now ready for processing using the BD Veritor System SARS-CoV-2 kit. The swab should be processed in the extraction reagent vial within 1 hour.

NOTE: The BD Veritor System Kit includes swabs for nasal specimen collection.

DO'S AND DON'TS OF SPECIMEN COLLECTION

- Do collect sample as soon as possible after onset of symptoms
- Do test sample immediately.
- Use only swabs provided with the kit.
- In the United States, refer to: Interim Guidelines for Collecting, Handling and Testing Clinical Specimens from persons for COVID-19 at https://www.cdc.gov/coronavirus/2019-ncov/lab/guidelines-clinical-specimens.html.
- For laboratory support for COVID-19 in the EU/EEA, visit https://www.ecdc.europa.eu/en/novel-coronavirus/laboratory-support.

TEST PROCEDURE

Reagents, specimens and devices must be at room temperature (15–30 °C) for testing.

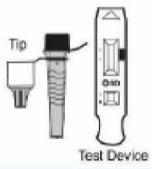
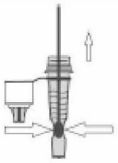
This BD Veritor System assay kit is only intended for nasal swab specimens that are collected and tested directly (i.e., swabs that have NOT been placed in transport media). The kit includes a pre-diluted processing reagent in a ready to use "unitized" tube. This kit IS NOT INTENDED for testing liquid samples such as wash or aspirate samples or swabs in transport media as results can be compromised by over dilution.

Getting ready to test

The following steps assume that the BD Veritor Plus Analyzer is ready to use. To choose or change any BD Veritor Plus Analyzer settings, see the BD Veritor Plus Analyzer Instructions for Use, section 4.7. A printer is not necessary to display results. However, if your facility has chosen to connect the BD Veritor Plus Analyzer to a printer, check that the BD Veritor Plus Analyzer is plugged into a power source, paper supply is adequate and any necessary network connections are enabled before testing.

Once the nasal swab has been collected from the nostrils, the swab should be processed within 1 hour.

Procedural steps for Nasal Swabs or control swabs:

1 • Remove one extraction reagent tube/tip and one BD Veritor System test device from its foil pouch immediately before testing. • Label one test device and one extraction reagent tube for each specimen or control to be tested. • Place the labeled extraction reagent tube(s) in a rack in the designated area of the workspace.	
2 Remove and discard the cap from the extraction reagent tube. The extraction reagent is formulated for use with this kit. Do not use reagent tubes from other BD Veritor kits as assay performance could be impacted.	
3 Insert the swab into the tube and plunge the swab up and down in the fluid for a minimum of 15 seconds, taking care not to splash contents out of the tube.	
4 Remove the swab while squeezing the sides of the tube to extract the liquid from the swab.	
5 Press the attached tip firmly onto the extraction reagent tube containing the processed sample (threading or twisting is not required). Mix thoroughly by swirling or flicking the bottom of the tube.	
NOTE: Do not use tubes or tips from any other product, including other products from BD or other manufacturers. **Once the swab has been processed in the extraction reagent and the tube has been capped, the sample should be added to the test device within 30 minutes.**	

5

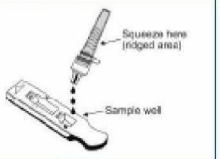
After step 5, choose from the BD Veritor Plus Analyzer workflow option below before continuing to step 6:				
	BD Veritor Plus Analyzer in **Analyze Now** mode	BD Veritor Plus Analyzer in **Walk Away** mode	BD Veritor Plus Analyzer with the BD Veritor Barcode Scanning Enabled Module	
			in **Analyze Now** mode	in **Walk Away** mode
Instructions in section:	**A**	**B**	**C**	**D**

A Using a BD Veritor Plus Analyzer in "*Analyze Now*" mode*:

6A **Adding the specimen to the test device**

- Invert the extraction reagent tube and hold it vertically (approximately 1 inch above the sample well).
- Gently squeeze the ridged body of the tube, dispensing three (3) drops of the processed specimen into the sample well.
- Excess volume remains for retesting if necessary.

NOTE: Squeezing the tube too close to the tip may cause leakage.



7A **Timing test development**

- After adding the sample, allow the test to run for **15 minutes** before inserting the test device into the BD Veritor Plus Analyzer.
- During incubation time, turn the BD Veritor Plus Analyzer on by pressing the blue power button once.

NOTE: If running test under laminar flow hood, cover test device to avoid inconsistent flow.

8A **Using the BD Veritor Plus Analyzer**

- The BD Veritor Plus Analyzer will complete a self-test before it is ready for use. After the self-test the display window shows "INSERT TEST DEVICE OR DOUBLE-CLICK BUTTON FOR WALKAWAY MODE". During incubation time, turn the BD Veritor Plus Analyzer on by pressing the blue power button once.
- INSERT THE TEST DEVICE when the 15-minute assay development time is complete.
- The status of the assay analysis process appears in the display window. Follow the on-screen prompts to complete the procedure. Do not touch the instrument or remove the test device until the result appears.
- When analysis is complete, the test result appears in the display window.

9A **Record the result before removing the test device.**

***ATTENTION: TEST Results are NOT maintained in the display window when the device is removed or if the BD Veritor Plus Analyzer is left unattended for more than 15 minutes (60 minutes if AC power adapter is connected).**

B **Using the BD Veritor Plus Analyzer in "*Walk Away*" mode*: with no barcode scanning module installed**

To use Walk Away mode - connect the AC power adapter to the Analyzer and a power source

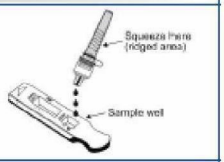
6B **Starting Walk Away Mode**

- Turn the BD Veritor Plus Analyzer on by pressing the blue power button once
- When the display window reads: "INSERT TEST DEVICE OR DOUBLE-CLICK FOR WALK AWAY MODE", Double-click the blue power button.
- The display window reads "ADD SPECIMEN TO TEST DEVICE AND INSERT IMMEDIATELY".

7B **Adding the specimen to the test device**

- Invert the extraction reagent tube and hold it vertically (approximately 1 inch above the sample well).
- Gently squeeze the ridged body of the tube, dispensing three (3) drops of the processed specimen into the sample well.
- Excess volume remains for retesting if necessary.

NOTE: Squeezing the tube too close to the tip may cause leakage.



CAUTION: A countdown timer displays the time remaining for test insertion. Walk Away mode must be activated again when this timer expires. Confirm timer is visible and Walk Away mode is activated before inserting test device.

8B **Starting the development and reading sequence**

- Insert the test device into the slot on the right side of the BD Veritor Plus Analyzer.

The test device must remain horizontal to prevent spilling the specimen out of the sample well.

- "DO NOT DISTURB TEST IN PROGRESS" appears in the display window. Automatic timing of the assay development, image processing and result analysis begins. The status of the assay analysis process appears in the display window. Follow the on-screen prompts to complete the procedure. Do not touch the instrument or remove the test device until the result appears.
- The display window shows the remaining analysis time.

Do not touch the BD Veritor Plus Analyzer or remove the test device during this process.

Doing so will abort the assay analysis.

9B **Record the result before removing the test device.**

- When analysis is complete, the test result appears in the display window. Record the result and discard the test device appropriately.

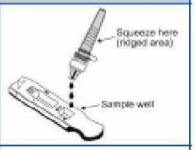
***ATTENTION: TEST Results are NOT maintained in the display window when the device is removed or if the BD Veritor Plus Analyzer is left unattended for more than 15 minutes (60 minutes if AC power adapter is connected).**

C Using the BD Veritor Plus Analyzer In "*Analyze Now*" mode with a barcode scanning module installed

6C **Adding the specimen to the test device**

- Invert the extraction reagent tube and hold it vertically (approximately 1 inch above the sample well).
- Gently squeeze the ridged body of the tube, dispensing three (3) drops of the processed specimen into the sample well.
- Excess volume remains for retesting if necessary.

NOTE: Squeezing the tube too close to the tip may cause leakage.



7C **Timing test development**

- Allow the test to develop for **15 minutes**.

Caution: Incorrect results may occur if development time is less than 15 minutes. Some lines may appear on the device sooner. Do not read device visually.

- If running the test in a laminar flow hood or in an area with heavy ventilation, cover test device to avoid inconsistent flow.

8C **Using the BD Veritor Plus Analyzer**

During the incubation time, turn on the BD Veritor Plus Analyzer by pressing the blue button once.

The display window briefly shows "SCAN CONFIG BARCODE". This is an opportunity to change the configuration of the BD Veritor Plus Analyzer. Ignore this message and postpone this process when an assay is awaiting analysis. Please refer to the BD Veritor Plus Analyzer Instructions for Use for configuration steps.

- When assay development time is complete and the BD Veritor Plus Analyzer display window reads "INSERT TEST DEVICE OR DOUBLE-CLICK FOR WALK AWAY MODE", insert the BD Veritor System SARS-CoV-2 device into the slot on the right side of the BD Veritor Plus Analyzer.

9C **Using the barcode scanner**

- Follow the prompts on the display screen to complete any required barcode scans of:

— OPERATOR ID
— SPECIMEN ID and/or
— KIT LOT NUMBER

- **Prompts for each scanning step appear in the display window for only 30 seconds. Failure to complete scans during that time will cause the BD Veritor Plus Analyzer to default to the beginning of step 8C. To restart this step, remove and reinsert the test device to initiate a new reading sequence.**
- **Move barcodes slowly toward the window until a confirmation tone sounds. The scanned barcode value appears in the next display window.**
- **The BD Veritor Plus Analyzer can record the Kit Lot Number and expiration date in the test record but does not restrict the use of expired or inappropriate reagents. Management of expired materials is the responsibility of the user.**

After required scans are completed, the BD Veritor Plus Analyzer displays a countdown timer and test analysis begins.

- **Do not touch the BD Veritor Plus Analyzer or remove the test device during this process. Doing so will abort the assay analysis.**
- When analysis is complete a result appears in the display window. If configured to display, the specimen ID barcode value also appears. If a printer is connected, specimen ID and result are automatically printed.

If the printer is not connected, record the result before removing the assay device.

ATTENTION: TEST Results are NOT maintained in the display window when the device is removed or if the BD Veritor Plus Analyzer is left unattended for more than 15 minutes (60 minutes if AC power adapter is connected).

10C **Remove the test device**

Remove and then discard the test device appropriately. The display will show "INSERT TEST DEVICE OR DOUBLE-CLICK BUTTON FOR WALK AWAY MODE" to indicate the BD Veritor Plus Analyzer is ready to perform another test. If the BD Veritor Plus Analyzer is connected to an LIS, a steady ENVELOPE symbol will appear to indicate that results are awaiting transmission. If a network connection is not detected while the ENVELOPE symbol is still displayed, the BD Veritor Plus Analyzer will queue all untransmitted results and attempt to transmit them when reconnected. If it is powered off during this time, it will attempt to transmit as soon as power is restored, and connection is re-established. A flashing envelope indicates that data are in the process of being transmitted.

8

D Using the BD Veritor Plus Analyzer In "*Walk Away*" mode with a barcode scanning module installed

To use Walk Away mode - connect the AC power adapter to the BD Veritor Plus Analyzer and a power source

6D **Starting Walk Away Mode**

- Turn the BD Veritor Plus Analyzer on by pressing the blue power button once. The display window will briefly show "SCAN CONFIG BARCODE". This is an opportunity to change the configuration of the BD Veritor Plus Analyzer. Please refer to the BD Veritor Plus Analyzer Instructions for Use for configuration steps. Ignore this message and postpone this process when an assay is awaiting analysis. When the display window reads: "INSERT TEST DEVICE OR DOUBLE-CLICK FOR WALK AWAY MODE", Double-click the blue power button.
- When the display window reads "INSERT TEST DEVICE OR DOUBLE-CLICK FOR WALK AWAY MODE", double-click the blue power button.

7D **Using the barcode scanner**

- Follow the prompts on the display screen to complete any required barcode scans of:

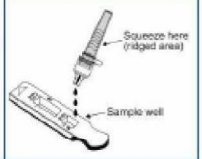
— OPERATOR ID
— SPECIMEN ID and/or
— KIT LOT NUMBER

- **Prompts for each scanning step appear in the display window for only 30 seconds. Failure to complete scans during that time will cause the BD Veritor Plus Analyzer to default to the beginning of step 6D. To restart this step, remove and reinsert the test device to initiate a new reading sequence.**
- **Move barcodes slowly toward the window until a confirmation tone sounds. The scanned barcode value appears in the next display window.**
- **The BD Veritor Plus Analyzer can record the Kit Lot Number and expiration date in the test record but does not restrict the use of expired or inappropriate reagents. Management of expired materials is the responsibility of the user.**

8D **Adding the specimen to the test device**

- When the display window reads: "ADD SPECIMEN TO TEST DEVICE AND INSERT IMMEDIATELY": "WALK AWAY MODE", double-click the blue power button.

— Invert the tube, holding it vertically (approximately 1 inch above the BD Veritor System SARS-CoV-2 device sample well).
— Gently squeeze the ridged portion of the tube, dispensing three (3) drops of the processed specimen into the sample well.
— Excess volume remains for retesting if necessary.



NOTE: Squeezing the tube too close to the tip may cause leakage.

CAUTION: A countdown timer displays the time remaining for test insertion. Walk Away mode must be activated again when this timer expires. Confirm timer is visible and Walk Away mode is activated before inserting test device.

9D **Starting the development and reading sequence**

- Insert the test device into the slot on the right side of the BD Veritor Plus Analyzer. The test device must remain horizontal to prevent spilling the specimen out of the sample well.
- "DO NOT DISTURB TEST IN PROGRESS" appears in the display window. Automatic timing of the assay development, image processing and result analysis begins.
- The display window shows the remaining analysis time.

Do not touch the BD Veritor Plus Analyzer or remove the test device during this process. Doing so will abort the assay analysis.

- When analysis is complete, a result appears in the display window. If configured to display, the Specimen ID barcode value also appears. If a printer is connected, specimen ID and result are automatically printed.

If the printer is not connected, record the result before removing the assay device.

ATTENTION: TEST Results are NOT maintained in the display window when the device is removed or if the BD Veritor Plus Analyzer is left unattended for more than 15 minutes (60 minutes if AC power adapter is connected).

10D **Remove the test device**

Remove and then discard the test device appropriately. The display will show "INSERT TEST DEVICE OR DOUBLE-CLICK BUTTON FOR WALK AWAY MODE" to indicate the BD Veritor Plus Analyzer is ready to perform another test.

If the BD Veritor Plus Analyzer is connected to an LIS, a steady ENVELOPE symbol will appear to indicate that results are awaiting transmission. If a network connection is not detected while the ENVELOPE symbol is still displayed, the BD Veritor Plus Analyzer will queue all untransmitted results and attempt to transmit them when reconnected. If it is powered off during this time, it will attempt to transmit as soon as power is restored, and connection is re-established. A flashing envelope indicates that data are in the process of being transmitted.

9

INTERPRETATION OF RESULTS

The BD Veritor Plus Analyzer (provided separately) must be used for interpretation of all test results. Operators should not attempt to interpret assay results directly from the test strip contained within the BD Veritor assay device.

Display	Interpretation
CoV2: +	Positive Test for SARS-CoV-2 (antigen present)
CoV2: -	Presumptive Negative Test for SARS-CoV-2 (no antigen detected)
CONTROL INVALID	Test Invalid.* Repeat the test.

*Invalid Test – If the test is invalid, the BD Veritor System Instrument will display "CONTROL INVALID" and the test or control must then be repeated. If the "CONTROL INVALID" reading recurs, contact BD.

REPORTING OF RESULTS

Positive Test – Positive for the presence of SARS-CoV-2 antigen. Positive results indicate the presence of viral antigens, but clinical correlation with patient history and other diagnostic information is necessary to determine infection status. Positive results do not rule out bacterial infection or co-infection with other viruses. The agent detected may not be the definite cause of disease. Laboratories within the United States and its territories are required to report all positive results to the appropriate public health authorities.

Negative Test – Negative results are presumptive. Negative test results do not preclude infection and should not be used as the sole basis for treatment or other patient management decisions, including infection control decisions, particularly in the presence of clinical signs and symptoms consistent with COVID-19, or in those who have been in contact with the virus. It is recommended that these results be confirmed by a molecular testing method, if necessary, for patient management.

Control Invalid – Do not report results. Repeat the test.

QUALITY CONTROL

Each BD Veritor System SARS-CoV-2 test device contains both positive and negative internal/procedural controls:

- The internal positive control line validates the immunological integrity of the device, proper reagent function, and assures correct test procedure.
- The membrane area surrounding test lines functions as a background check on the assay device.

The BD Veritor System Instrument evaluates the positive and negative internal/procedural controls after insertion of each test device. The BD Veritor Plus Analyzer prompts the operator if a quality issue occurs during assay analysis. Failure of the internal/procedural controls will generate an invalid test result. NOTE: The internal controls do not assess proper sample collection technique.

EXTERNAL POSITIVE AND NEGATIVE CONTROLS

Positive and Negative control swabs are supplied with each kit. These controls provide additional quality control material to assess that the test reagents and the BD Veritor System Instrument perform as expected. Prepare kit control swabs and test using the same procedure as used for patient specimens.

BD recommends controls be run once for:

- each new kit lot,
- each new operator,
- as required by internal quality control procedures and in accordance with local, state and federal regulations or accreditation requirements.

If the kit controls do not perform as expected, do not report patient results. Contact your local BD representative.

LIMITATIONS OF THE PROCEDURE

- Clinical performance was evaluated with frozen samples, and test performance may be different with fresh samples.
- Users should test specimens as quickly as possible after specimen collection.
- Positive test results do not rule out co-infections with other pathogens.
- Results from the BD Veritor System for Rapid Detection of SARS-CoV-2 test should be correlated with the clinical history, epidemiological data, and other data available to the clinician evaluating the patient.
- A false-negative test result may occur if the level of viral antigen in a sample is below the detection limit of the test or if the sample was collected or transported improperly; therefore, a negative test result does not eliminate the possibility of SARS-CoV-2 infection.
- The amount of antigen in a sample may decrease as the duration of illness increases. Specimens collected after day 5 of illness are more likely to be negative compared to a RT-PCR assay.
- Failure to follow the test procedure may adversely affect test performance and/or invalidate the test result.
- The contents of this kit are to be used for the qualitative detection of SARS-CoV-2 antigens from nasal swab specimens only.
- The BD Veritor System for Rapid Detection of SARS-Cov-2 can detect both viable and non-viable SARS-CoV-2 material. The BD Veritor System for Rapid Detection of SARS-CoV-2 performance depends on antigen load and may not correlate with other diagnostic methods performed on the same specimen.
- Negative test results are not intended to rule in other non-SARS-CoV-2 viral or bacterial infections.

- Positive and negative predictive values are highly dependent on prevalence rates. Positive test results are more likely to represent false positive results during periods of little/no SARS-CoV-2 activity when disease prevalence is low. False negative test results are more likely when prevalence of disease caused by SARS-CoV-2 is high.
- This device has been evaluated for use with human specimen material only.
- Monoclonal antibodies may fail to detect, or detect with less sensitivity, SARS-CoV-2 viruses that have undergone minor amino acid changes in the target epitope region.
- The performance of this test has not been evaluated for use in patients without signs and symptoms of respiratory infection and performance may differ in asymptomatic individuals.
- Sensitivity of the test after the first five days of the onset of symptoms has been demonstrated to decrease as compared to a RT-PCR SARS-CoV-2 assay.
- Negative results should be treated as presumptive and confirmed with an FDA authorized molecular assay cleared for diagnostic use in region of use. Outside the United States, a molecular assay cleared for diagnostic use in the country of use is recommended.
- Users should test specimens as quickly as possible after specimen collection, within 1 hour after specimen collection and within 30 minutes of placing the swab into the extraction reagent.
- The validity of the BD Veritor System for Rapid Detection of SARS-CoV-2 test has not been proven for identification/confirmation of tissue culture isolates and should not be used in this capacity.

CONDITIONS OF AUTHORIZATION FOR THE LABORATORY (APPLICABLE IN THE USA)

The BD Veritor System for Rapid Detection of SARS-CoV-2 Letter of Authorization, along with the authorized Fact Sheet for Healthcare Providers, the authorized Fact Sheet for Patients, and authorized labeling are available on the FDA website: https://www.fda.gov/medical-devices/emergency-use-authorizations-medical-devices/coronavirus-disease-2019-covid-19-emergency-use-authorizations-medical-devices.

However, to assist clinical laboratories using the BD Veritor System for Rapid Detection of SARS-CoV-2 ("your product" in the conditions below), the relevant Conditions of Authorization are listed below.

- Authorized laboratories* using your product will include with test result reports, all authorized Fact Sheets. Under exigent circumstances, other appropriate methods for disseminating these Fact Sheets may be used, which may include mass media.
- Authorized laboratories using your product will use your product as outlined in the "BD Veritor System for Rapid Detection of SARS-CoV-2" Instructions for Use. Deviations from the authorized procedures, including the authorized instruments, authorized clinical specimen types, authorized control materials, authorized other ancillary reagents and authorized materials required to use your product are not permitted.
- Authorized laboratories that receive your product will notify the relevant public health authorities of their intent to run your product prior to initiating testing.
- Authorized laboratories using your product will have a process in place for reporting test results to healthcare providers and relevant public health authorities, as appropriate.
- Authorized laboratories will collect information on the performance of your product and report to DMD/OHT7-OIR/OPEQ/CDRH (via email: 5.1.5 @fda.hhs.gov) and to BD by contacting BD Customer Support Services at 800.638.8663 (in the U.S.) any suspected occurrence of false positive or false negative results and significant deviations from the established performance characteristics of your product of which they become aware.
- All operators using your product must be appropriately trained in performing and interpreting the results of your product, use appropriate personal protective equipment when handling this kit, and use your product in accordance with the authorized labeling.
- Becton, Dickinson and Co., authorized distributors, and authorized laboratories and patient care settings using your product will ensure that any records associated with this EUA are maintained until otherwise notified by FDA. Such records will be made available to FDA for inspection upon request.

* The letter of authorization refers to, "Laboratories certified under the Clinical Laboratory Improvement Amendments of 1988 (CLIA), 42 U.S.C. §263a, that meet the requirements to perform high, moderate, or waived complexity tests. This test is authorized for use at the Point of Care (POC), i.e., in patient care settings operating under a CLIA Certificate of Waiver, Certificate of Compliance, or Certificate of Accreditation" as "authorized laboratories".

CLINICAL PERFORMANCE

The performance of the BD Veritor System for Rapid Detection of SARS-CoV-2 has been demonstrated in two studies.In both studies eligible subjects were 18 years and older and samples were collected by qualified personnel. Nasal swabs were collected following the dual nares method and handled as described in the collection device instructions for use. Specimens were collected and stored at -70 °C within 30 minutes of collection. All specimens within a pre-specified date range were selected and then sequentially tested in a blind fashion. As with all antigen tests, performance has been demonstrated to decrease as days since symptom onset increases.

Study 1:

In the initial study, performance was established with 226 direct nasal swabs prospectively collected and enrolled from individual symptomatic patients who were suspected of COVID-19 (within 5 days of onset of one or more self-reported symptoms).† Samples were obtained from 21 geographically diverse areas across the United States. The performance of the BD Veritor System Assay was compared to results of a nasopharyngeal or oropharyngeal swab stored in 3 mL viral transport media tested with an Emergency Use Authorized molecular (RT-PCR) test for detection of SARS-CoV-2.

† Symptoms included new loss of taste or smell, fever, shortness of breath or difficulty breathing, headache, cough, sore throat, muscle pain, chills and repeated shaking with chills.

Table 1: Summary of the Performance of the BD Veritor System for Rapid Detection of SARS-CoV-2 Compared to RT-PCR for Nasal Swabs

BD Veritor Results	Reference PCR Results		
	POS	NEG	Total
POS	26	0	26
NEG	5	195	200
Total	31	195	226

PPA: 84% (C.I. 67%–93%)
NPA: 100% (C.I. 98%–100%)
OPA: 98% (C.I. 95%–99%)

PPV: 100% (C.I. 89%, 100%)
NPV: 97.5% (C.I. 95%, 99%)

Table 2: Hypothetical Positive and Negative Predictive Values for the BD Veritor System for Rapid Detection of SARS-CoV-2 compared to PCR

			PPV		NPV	
Prevalence	Sensitivity	Specificity	Estimate	95% C.I.	Estimate	95% C.I.
1.0%	84.0% (26/31)	100.0% (195/195)	100.0%	(33.2%,100.0%)	99.8%	(99.7%, 99.9%)
2.0%			100.0%	(50.1%,100.0%)	99.7%	(99.3%, 99.9%)
5.0%			100.0%	(72.1%,100.0%)	99.2%	(98.3%, 99.7%)
10.0%			100.0%	(84.5%,100.0%)	98.2%	(96.4%, 99.4%)
13.7%			100.0%	(88.6%,100.0%)	97.5%	(94.9%, 99.1%)
15.0%			100.0%	(89.7%,100.0%)	97.2%	(94.4%, 99.0%)
20.0%			100.0%	(92.5%,100.0%)	96.1%	(92.2%, 98.7%)
25.0%			100.0%	(94.2%,100.0%)	94.9%	(89.9%, 98.2%)

Study 2:

In the second study, performance was established with 184 direct nasal swabs prospectively collected and enrolled from individual symptomatic patients (within 5 days of onset) with two or more self-reported symptoms‡ who were suspected of COVID-19. Samples were collected at 16 geographically diverse outpatient clinics only in the United States.
The BD Veritor SARS-CoV-2 results from the direct nasal swab were compared to results from the NP or OP swab in UVT tested with an Emergency Use Authorized molecular (RT-PCR) test for detection of SARS-CoV-2.

Table 3: Summary of the Performance of the BD Veritor System for Rapid Detection of SARS-CoV-2 compared to RT-PCR for Nasal Swabs

BD Veritor Results	Reference PCR Results		
	POS	NEG	Total
POS	29	1	30
NEG	2	152	154
Total	31	153	184

PPA: 93.5% (C.I. 79.3%–98.2%)
NPA: 99.3% (C.I. 96.4%–99.9%)
OPA: 98.4% (C.I. 95.3%–99.4%)

PPV: 96.7% (C.I. 84.7%, 99.9%)
NPV: 98.7% (C.I. 95.9%, 99.8%)

Table 4: Hypothetical Positive and Negative Predictive Values for the BD Veritor System for Rapid Detection of SARS-CoV-2 compared to PCR

			PPV		NPV	
Prevalence	Sensitivity	Specificity	Estimate	95% C.I.	Estimate	95% C.I.
1.0%	93.5% (29/31)	99.3% (152/153)	59.1%	(21.7%, 88.0%)	99.9%	(99.8%, 100.0%)
2.0%			74.5%	(35.8%, 99.0%)	99.9%	(99.6%, 100.0%)
5.0%			88.3%	(59.0%, 99.0%)	99.7%	(98.9%, 100.0%)
10.0%			94.1%	(75.2%, 99.8%)	99.3%	(97.7%, 99.9%)
15.0%			96.2%	(82.8%, 99.9%)	98.9%	(96.4%, 99.9%)
16.8%			96.7%	(84.7%, 99.9%)	98.7%	(95.9%, 99.8%)
20.0%			97.3%	(87.2%, 99.9%)	98.4%	(94.9%, 99.8%)
25.0%			97.9%	(90.1%, 99.9%)	97.9%	(93.3%, 99.7%)
30.0%			98.4%	(92.1%, 100.0%)	97.3%	(91.6%, 99.7%)
35.0%			98.7%	(93.6%, 100.0%)	96.6%	(89.7%, 99.6%)

EXPLANATION OF TERMS:
C.I.: Confidence Interval
PPA: Positive Percent Agreement = True Positives / True Positives + False Negatives
NPA: Negative Percent Agreement = True Negatives / True Negatives + False Positives.
OPA: Overall Percent Agreement = True Positives + True Negatives / Total Samples
PPV: Positive Predictive Value = True Positives / True Positive + False Positive
NPV: Negative Predictive Value = True Negatives / True Negative + False Negative

‡ Symptoms included new loss of taste or smell, fever, shortness of breath, diarrhea, GI upset, headache, extreme tiredness, fatigue, weakness, dry cough, sore throat, runny or stuffy nose, nasal congestion, muscle aches and body aches.

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ANALYTICAL PERFORMANCE

LIMIT OF DETECTION (ANALYTICAL SENSITIVITY)

The LOD for the BD Veritor System for Rapid Detection of SARS-CoV-2 was established using limiting dilutions of a viral sample inactivated by gamma irradiation. The material was supplied at a concentration of 2.8×10^5 $TCID_{50}$/mL. In this study, designed to estimate the LOD of the assay when using a direct nasal swab, the starting material was spiked into a volume of pooled human nasal matrix obtained from healthy donors and confirmed negative for SARS-CoV-2. An initial range finding study was performed testing devices in triplicate using a 10-fold dilution series. At each dilution, 50 µL samples were added to swabs and then tested in the BD Veritor assay using the procedure appropriate for patient nasal swab specimens. A concentration was chosen between the last dilution to give three positive results and the first to give three negative results. Using this concentration, the LOD was further refined with a 2-fold dilution series. The last dilution demonstrating 100% positivity was then tested in an additional 20 replicates tested in the same way.

Starting Material Concentration	Estimated LOD	No. Positive/Total	% Positive
2.8×10^5 $TCID_{50}$/mL	1.4×10^2 $TCID_{50}$/mL	19/20	95%

CROSS REACTIVITY (ANALYTICAL SPECIFICITY)

Cross-reactivity of the BD Veritor System for Rapid Detection of SARS-CoV-2 was evaluated by testing a panel of high prevalence respiratory pathogens that could potentially cross-react with the BD Veritor System for Rapid Detection of SARS-CoV-2. Each organism and virus was tested in triplicate. The final concentration of each organism is documented in the following table.

Potential Cross-Reactant	Concentration Tested	Cross-Reactivity (Yes/No)
Human coronavirus 229E (heat inactivated)	1.0×10^5 UI/mL	No
Human coronavirus OC43	1.0×10^5 $TCID_{50}$/mL	No
Human coronavirus NL63	1.0×10^5 $TCID_{50}$/mL	No
Adenovirus	1.0×10^5 $TCID_{50}$/mL	No
Human Metapneumovirus	1.0×10^5 $TCID_{50}$/mL	No
Parainfluenza virus 1	1.0×10^5 $TCID_{50}$/mL	No
Parainfluenza virus 2	1.0×10^5 $TCID_{50}$/mL	No
Parainfluenza virus 3	5.2×10^5 $TCID_{50}$/mL	No
Parainfluenza virus 4	1.6×10^4 $TCID_{50}$/mL	No
Influenza A	2.5×10^5 $TCID_{50}$/mL	No
Influenza B	2.9×10^5 $TCID_{50}$/mL	No
Enterovirus	4.0×10^5 $TCID_{50}$/mL	No
Respiratory syncytial virus	4.0×10^5 $TCID_{50}$/mL	No
Rhinovirus	1.1×10^5 PFU/mL	No
SARS-coronavirus	4.5×10^5 PFU/mL	No
MERS-coronavirus	1.5×10^5 $TCID_{50}$/mL	No
Haemophilus influenza	1.4×10^6 CFU/mL	No
Streptococcus pneumoniae	1.0×10^6 CFU/mL	No
Streptococcus pyogenes	1.6×10^6 CFU/mL	No
Candida albicans	1.8×10^6 CFU/mL	No
Pooled human nasal wash	100%	No
Bordetella pertussis	1.4×10^6 CFU/mL	No
Mycoplasma pneumoniae	1.0×10^6 CFU/mL	No
Chlamydia pneumoniae	1.0×10^6 IFU/mL	No
Legionella pneumophila	1.0×10^6 CFU/mL	No

To estimate the likelihood of cross-reactivity with SARS-CoV-2 of organisms that were not available for wet testing, *In silico* analysis using the Basic Local Alignment Search Tool (BLAST) managed by the National Center for Biotechnology Information (NCBI) was used to assess the degree of protein sequence homology.

- For *P. jirovecii* one area of sequence similarity shows 45.4% homology across 9% of the sequence, making cross-reactivity in the BD Veritor sandwich immunoassay highly unlikely.
- No protein sequence homology was found between SARS-CoV-2 and *M. tuberculosis*, and thus homology-based cross-reactivity can be ruled out.
- The comparison between SARS-CoV-2 nucleocapsid protein and human coronavirus HKU1 revealed that the only potential for homology is with the HKU1 nucleocapsid phosphoprotein. Homology is relatively low, at 36.7% across 82% of sequences, but cross-reactivity cannot be ruled out.

ENDOGENOUS INTERFERING SUBSTANCES

Various substances were evaluated with the BD Veritor System for Rapid Detection of SARS-CoV-2. The substances tested included whole blood 4%, mucin and various medications. No interference was noted with this assay for any of the substances tested.

Substance	Concentration Tested	Interference (Yes/No)
Afrin Nasal Spray (Oxymetazoline)	5% v/v	No
Flonase (Fluticasone)	5% v/v	No
Nasacort (Triamcinolone)	5% v/v	No
Neo-Synephrine (Phenylephrine hydrochloride)	5% v/v	No
Oseltamivir	2.2 µg/mL	No
Mucin protein	2.5 mg/mL	No
Rhinocort (Budesonide)	5% v/v	No
Saline nasal spray	15% v/v	No
Zanamivir	282 ng/mL	No
Zicam Cold Remedy (Galphimia glauca, Luffa operculata, Sabadilla)	5% v/v	No
Whole blood	4% v/v	No
Cepacol (Menthol/Benzocaine)	1.5 mg/mL	No
Ricola (menthol)	1.5 mg/mL	No
Tobramycin	4 µg/mL	No
Sucrets (Dyclonine/Menthol)	1.5 mg/mL	No
NeilMed Naso Gel	5% v/v	No
Zicam nasal spray (Oxymetazoline)	10% v/v	No
Alkalol nasal wash	10% v/v	No
Fisherman's Friend (menthol)	1.5 mg/mL	No
Chloraseptic (Phenol Spray)	15% v/v	No
Mupirocin	10 mg/mL	No

MICROBIAL INTERFERENCE

The BD Veritor System for Rapid Detection of SARS-CoV-2 assay was evaluated with various organisms at the concentrations indicated below. No interference was noted.

Potential Microbial Interferent	Concentration Tested	Interference (Yes/No)
Human coronavirus 229E	1.0×10^5 U/mL	No
Human coronavirus OC43	1.0×10^5 $TCID_{50}$/mL	No
Human coronavirus NL63	1.0×10^5 $TCID_{50}$/mL	No
Adenovirus	1.0×10^5 $TCID_{50}$/mL	No
Human Metapneumovirus	1.0×10^5 $TCID_{50}$/mL	No
Parainfluenza virus 1	1.0×10^5 $TCID_{50}$/mL	No

Potential Microbial Interferent	Concentration Tested	Interference (Yes/No)
Parainfluenza virus 2	1.0 x 10^5 $TCID_{50}$/mL	No
Parainfluenza virus 3	5.2 x 10^5 $TCID_{50}$/mL	No
Parainfluenza virus 4a	1.5 x 10^4 $TCID_{50}$/mL	No
Influenza A	2.5 x 10^5 $TCID_{50}$/mL	No
Influenza B	2.9 x 10^5 $TCID_{50}$/mL	No
Enterovirus D68	4.0 x 10^5 $TCID_{50}$/mL	No
Respiratory syncytial virus	4.0 x 10^5 $TCID_{50}$/mL	No
Rhinovirus 3	1.1 x 10^5 PFU/mL	No
SARS-coronavirus	4.5 x 10^5 PFU/mL	No
MERS-coronavirus	1.5 x 10^5 $TCID_{50}$/mL	No
Haemophilus influenza	1.4 x 10^6 CFU/mL	No
Streptococcus pneumoniae	1.0 x 10^6 CFU/mL	No
Streptococcus pyogenes	1.6 x 10^6 CFU/mL	No
Bordetella pertussis	1.4 x 10^6 CFU/mL	No
Mycoplasma pneumoniae	1.0 x 10^6 CFU/mL	No
Chlamydia pneumoniae	1.0 x 10^6 CFU/mL	No
Legionella pneumophila	1.0 x 10^6 CFU/mL	No
Pooled human nasal wash	N/A	No
Candida albicans	1.8 x 10^6 CFU/mL	No

REPRODUCIBILITY

Another study was designed to assess the capability of users to test seeded swab samples across the range of the assay with three (3) users, over three (3) days, with three (3) lots of devices. The following table shows the performance.

Sample	Operator #1		Operator #2		Operator #3		Total	
	% Positive	95 % CI	% Positive	95 % CI	% Positive	95 % CI	% Positive	95 % CI
Negative	0% (0/27)	(0.0%,12.5%)	0% (0/27)	(0.0%,12.5%)	0% (0/27)	(0.0%,12.5%)	0% (0/81)	(0.0%,4.5%)
Low Positive (3x LoD)	100% (27/27)	(87.5%,100.0%)	100% (27/27)	(87.5%,100.0%)	100% (27/27)	(87.5%,100.0%)	100% (81/81)	(95.5%, 100.0%)
Low Positive (5x LoD)	100% (27/27)	(87.5%,100.0%)	100% (27/27)	(87.5%,100.0%)	100% (27/27)	(87.5%,100.0%)	100% (81/81)	(95.5%, 100.0%)
Moderate Positive (10x LoD)	100% (27/27)	(87.5%,100.0%)	100% (27/27)	(87.5%,100.0%)	100% (27/27)	(87.5%,100.0%)	100% (81/81)	(95.5%, 100.0%)
High Positive (40x LoD)	100% (27/27)	(87.5%,100.0%)	100% (27/27)	(87.5%,100.0%)	100% (27/27)	(87.5%,100.0%)	100% (81/81)	(95.5%, 100.0%)

HIGH DOSE HOOK EFFECT

No high dose hook effect was observed up to 2.8 x 10^5 $TCID_{50}$/mL of gamma-inactivated SARS-CoV-2 with the BD Veritor System for Rapid Detection of SARS-CoV-2 test.

TECHNICAL SUPPORT

For questions, or to report a problem, please call Technical Support at 1.800.638.8663 or visit bd.com. Test system problems may also be reported to the FDA using the MedWatch reporting system: Phone: 1.800.FDA.1088; Fax: 1.800.FDA.1078 or visit http://www.fda.gov/medwatch.

Outside the United States, contact your local BD representative.

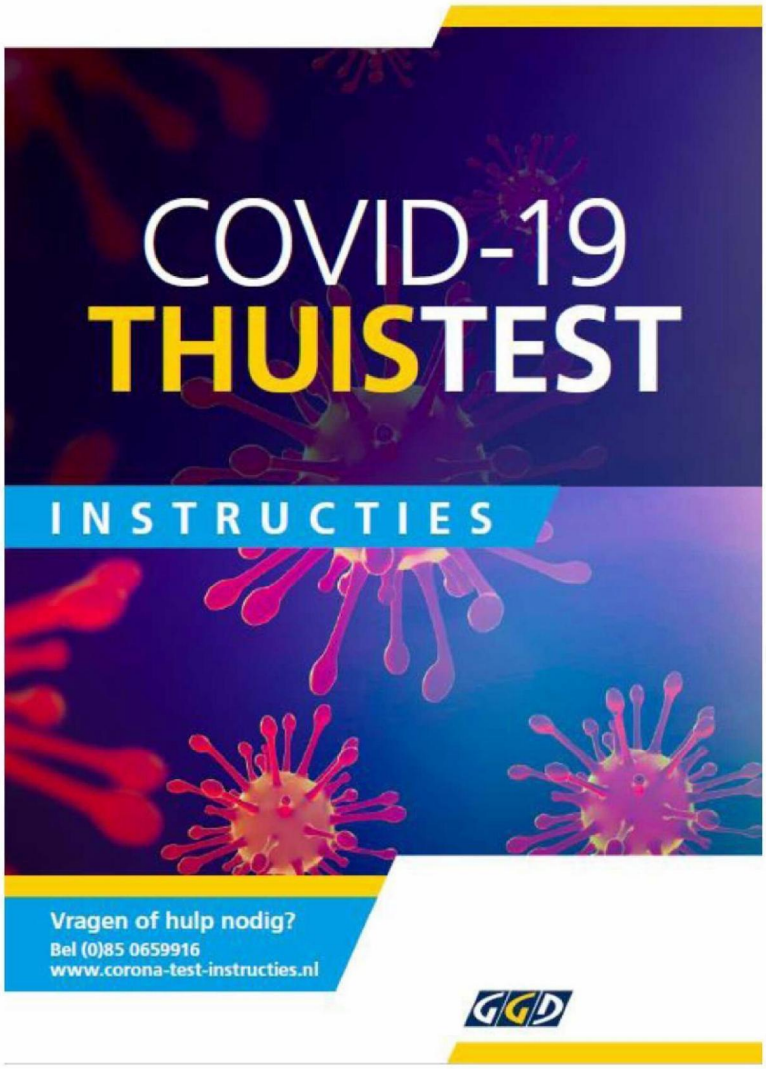
REFERENCES

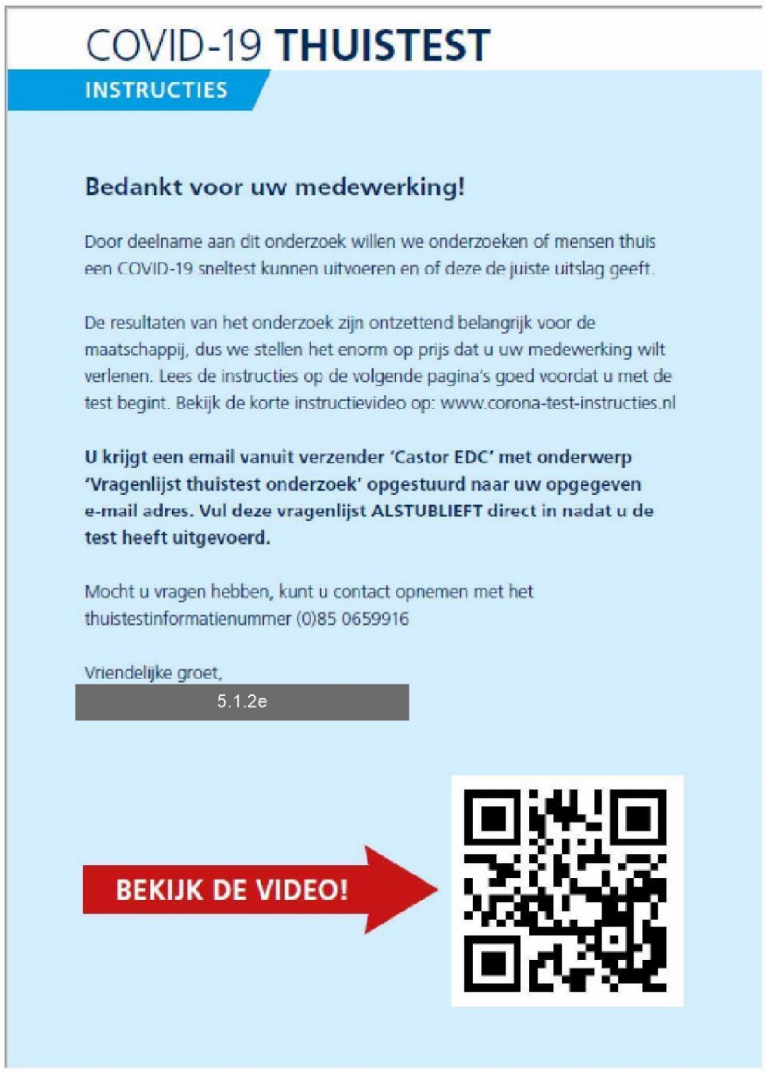
1. Centers for Disease Control and Prevention. https://www.cdc.gov/coronavirus/2019-ncov/index.html. Accessed March 30, 2020.
2. https://www.cdc.gov/flu/symptoms/flu-vs-covid19.htm.

Change History

Revision	Date	Change Summary
01	2020-09	CE Mark Initial Release.
02	2020-10	Modified Sodium Azide warning language and description of intended user. Added endogenous and microbial interference data tables and reproducibility testing results. Addition of new clinical study. Added French, Italian, German, Spanish and Swedish translations.
03	2020-11	Minor typographical corrections.

Attachment 4: Instructions for the use of the BD Veritor™ System for Rapid Detection of SARS-CoV-2 with BD catalog number 256089 as self-test





COVID-19 **THUISTEST**

INSTRUCTIES

Bedankt voor uw medewerking!

Door deelname aan dit onderzoek willen we onderzoeken of mensen thuis een COVID-19 sneltest kunnen uitvoeren en of deze de juiste uitslag geeft.

De resultaten van het onderzoek zijn ontzettend belangrijk voor de maatschappij, dus we stellen het enorm op prijs dat u uw medewerking wilt verlenen. Lees de instructies op de volgende pagina's goed voordat u met de test begint. Bekijk de korte instructievideo op: www.corona-test-instructies.nl

U krijgt een email vanuit verzender 'Castor EDC' met onderwerp 'Vragenlijst thuistest onderzoek' opgestuurd naar uw opgegeven e-mail adres. Vul deze vragenlijst ALSTUBLIEFT direct in nadat u de test heeft uitgevoerd.

Mocht u vragen hebben, kunt u contact opnemen met het thuistestinformatienummer (0)85 0659916

Vriendelijke groet,

5.1.2e

BEKIJK DE VIDEO!

Uw testkit bevat de volgende onderdelen:

COVID-19 **THUISTEST**

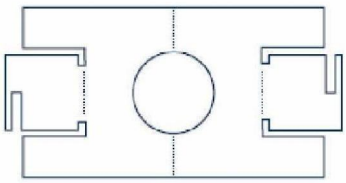
VOORBEREIDING

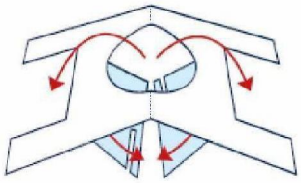
1. HYGIËNE

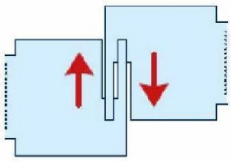
- Snuit uw neus
- Was uw handen

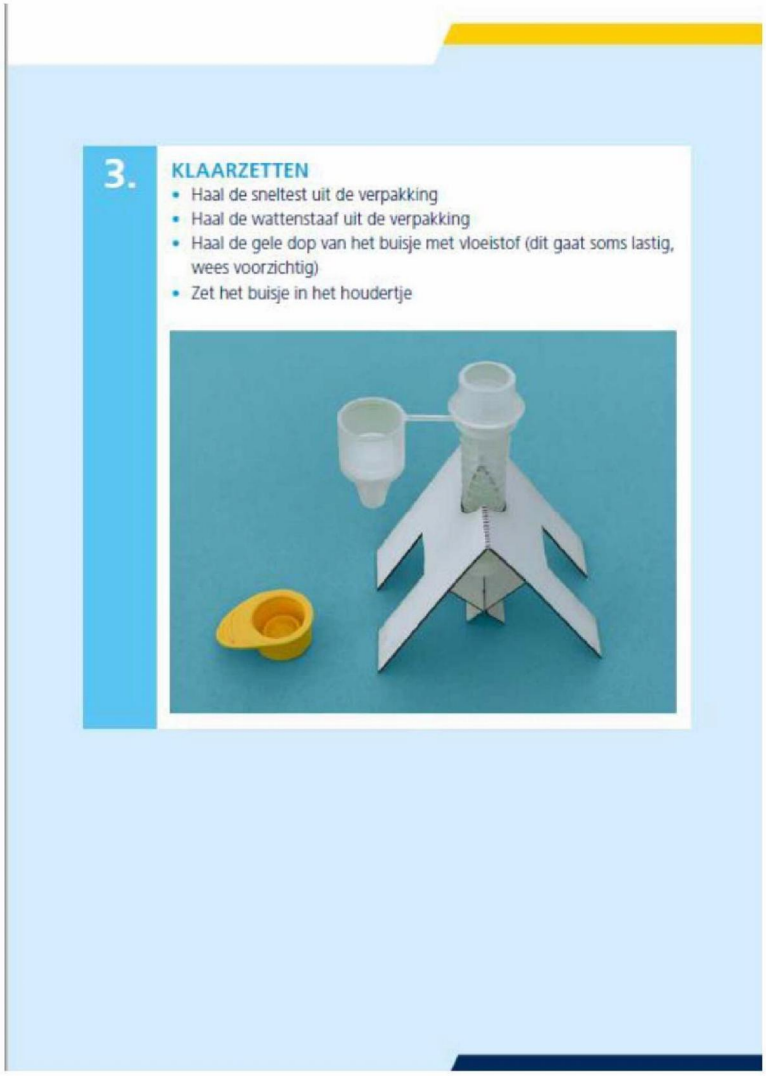
2. HOUDERTJE

- Vouw het kartonnen houdertje in elkaar, zoals hieronder afgebeeld









COVID-19 **THUISTEST**

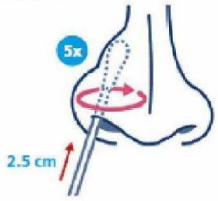
AFNAME

4. AFMETEN

- Zorg dat de wattenstok niks raakt
- Bekijk hieronder hoe ver 2.5 cm ongeveer is

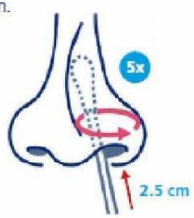
5. NEUS AFNAME

- Breng de wattenstaaf **2.5 cm** in de neus
- Schraap 5 rondjes langs de binnenkant van de neus.
  Dit kan tranen in de ogen veroorzaken.
  Dat is heel normaal.



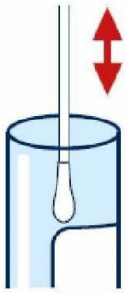
6. ANDERE NEUSGAT

- Breng dezelfde wattenstaaf **2.5 cm** in het andere neusgat
- Schraap 5 rondjes langs de binnenkant van de neus.
  Dit kan tranen in de ogen veroorzaken.
  Dat is heel normaal.



7. MENGEN

- Doop de wattenstaaf voorzichtig in de vloeistof
- Beweeg de wattenstaaf rustig op en neer voor ongeveer 15 seconden
- Knijp in de buitenkant van het buisje de vloeistof uit de wattenstaaf zodat alles in het buisje achterblijft

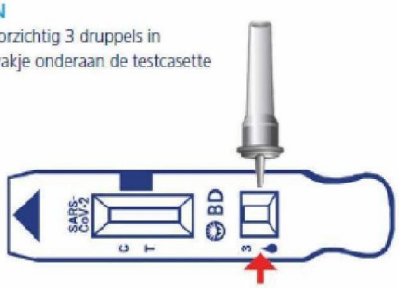


8. AFSLUITEN

- Sluit het buisje af tot je een **KLIK** hoort

9. DRUPPELEN

- Druppel voorzichtig 3 druppels in het kleine vakje onderaan de testcasette



10. WACHT 15 MINUTEN

- Zet een wekker op 15 minuten

COVID-19 **THUISTEST**

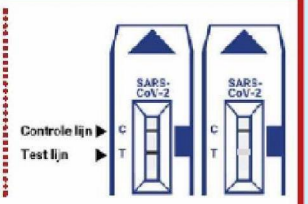
AFLEZEN EN AFRONDING

11. **UITSLAG**
- Wacht 15 minuten en lees de test af

15 minuten

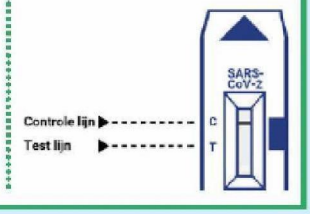
UITSLAG: POSITIEF

- Bij 2 streepjes is de uitslag **POSITIEF**
- U bent **waarschijnlijk** besmet met het Covid-19 virus
- Blijf binnen en wacht de uitslag van de teststraat test af om zeker te zijn dat u ziek en/of besmettelijk bent



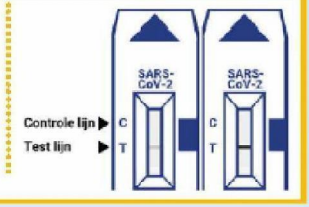
UITSLAG: NEGATIEF

- Bij 1 streepje bovenin is de uitslag **NEGATIEF**
- U bent **waarschijnlijk** niet besmet met het Covid-19 virus
- Blijf binnen en wacht de uitslag van de teststraat test af om zeker te zijn dat u niet ziek en/of besmettelijk bent



UITSLAG: ONGELDIG

- Bij 1 streepje onderin is de test **ONGELDIG**
- Blijf binnen tot de uitslag van de teststraat bekend is



12. VUL HET ONLINE FORMULIER IN

- U krijgt een email vanuit verzender 'Castor EDC' met onderwerp 'Vragenlijst thuistest onderzoek' opgestuurd naar uw opgegeven e-mail adres
- Dit is een link naar het online vragenformulier
- Vul het vragenformulier uit deze link direct in nadat u de test heeft uitgevoerd

13. VRAGEN?

- Heeft u vragen? Bel het thuistestinformatienummer: (0)85 0659916

14. AFVAL

- U kunt alle materialen weggooien in uw eigen afvalbak
- Bewaar het zakje met uw persoonlijk nummer tot u de gehele vragenlijst hebt doorlopen en verzonden

COVID-19 **THUISTEST**

ALGEMENE INFORMATIE

1. Algemene informatie

Deze studie is een samenwerking tussen de deelnemende ziekenhuizen Breda (Amphia ziekenhuis) / Nijmegen (Radboud UMC) / Rotterdam (Erasmus MC) / Tilburg (Elisabeth-TweeSteden ziekenhuis), het ministerie van VWS, en de GGD

2. Doel van het onderzoek

Nagaan hoe toepasbaar een COVID-19 antigeen sneltest is en hoe deze zelf door iemand zonder medische achtergrond zelf ingezet en afgelezen kan worden.

3. Achtergrond van het onderzoek

Momenteel wordt bij mensen met ziekteklachten passend bij COVID-19 een zogenaamde PCR test afgenomen in een teststraat. Dit is een erg gevoelige en precieze test, maar hij duurt lang en kan enkel verwerkt worden in gespecialiseerde laboratoria. Dit zorgt ervoor dat mensen vaak relatief lang moeten wachten op de uitslag van hun test en dat de laboratoria en erg onder druk staan.

In oktober is in de zogenaamde COVID-19 antigeen sneltest gevalideerd in de teststraten van de GGD Breda in samenwerking met het Amphia ziekenhuis en ministerie van Volksgezondheid, Welzijn en Sport. Deze test heeft ook een goede gevoeligheid en geeft een resultaat in 15 minuten. Sindsdien bestaat er veel vraag naar de antigeen sneltest.

In dit onderzoek willen we bekijken of een COVID-19 sneltest zelfstandig ingezet en afgelezen kan worden door mensen met klachten passend bij COVID-19. Hiermee zou veel tijdswinst geboekt kunnen worden. Daarnaast kunnen we bekijken of de testresultaten overeenkomen met de resultaten van de eerder uitgevoerde sneltest studie en met de resultaten van de PCR test.

4. Wat meedoen inhoudt

Als u klachten hebt die kunnen passen bij COVID-19, maakt volgens de richtlijn van de overheid een afspraak om een PCR test te krijgen. Als u op de afspraak verschijnt kan u gevraagd worden of u mee wilt doen aan deze studie. Als u besluit mee te doen aan deze studie zal u geheel volgens huidige richtlijnen een PCR test afname (verder te noemen: "teststraat test") krijgen door een opgeleide studiemedewerker. Daarnaast krijgt u een pakketje overhandigd met daarin de sneltest en instructies hoe de sneltest bij uzelf af te nemen, de test te verwerken en vervolgens af te lezen.

Het is dan de bedoeling dat u dezelfde dag thuis de sneltest bij uzelf afneemt. Vervolgens leest u na 15 minuten zelf de test af. U vult op een online formulier enkele vragen in en ook de uitslag die u zelf heeft afgelezen.

Heeft u een POSITIEVE sneltest uitslag, dan heeft u waarschijnlijk COVID-19 en blijft u in thuisquarantaine totdat de uitslag van de teststraat bekend is.

Heeft u een NEGATIEVE uitslag in de sneltest, dan heeft u waarschijnlijk geen COVID-19 maar blijft u in thuisquarantaine totdat de uitslag van de teststraat bekend is. De uitslag van de teststraat is namelijk leidend.

De testuitslag van de teststraat test volgt later, binnen 48 uur. Deze kan in enkele gevallen verschillen van de uitslag van de antigeen sneltest.

5. Mogelijke ongemakken, voor- en nadelen
Een uitstrijkje genomen uit neus kan onaangenaam aanvoelen en kortdurend tranende ogen veroorzaken. Deelname aan het onderzoek levert, anders dan een tijdsinvestering van maximaal 20 minuten geen directe nadelen op voor de deelnemer.

Er zijn geen directe persoonlijke voordelen verbonden aan deelname aan het onderzoek. U krijgt wel sneller een uitslag als u besmet bent met het COVID-19 virus. U levert een bijdrage aan het verbeteren van het testen van COVID-19. Voor het meedoen aan dit onderzoek ontvangt u geen vergoeding.

6. Als u niet mee wilt doen of wilt stoppen met het onderzoek
U beslist zelf of u meedoet aan het onderzoek. Deelname is vrijwillig. Als u meedoet, kunt u zich altijd bedenken en toch stoppen, ook tijdens het onderzoek. U hoeft niet te zeggen waarom u stopt. Wel vragen we u dit aan de onderzoeker te melden. De gegevens die tot dat moment zijn verzameld, worden gebruikt voor het onderzoek.

7. Gebruik en bewaren van uw gegevens en lichaamsmateriaal
Voor dit onderzoek worden uw persoonsgegevens en lichaamsmateriaal (het materiaal van de afname in de teststraat) verzameld, gebruikt en bewaard. Het gaat om gegevens zoals uw naam, leeftijd en de informatie vermeld onder punt 4. Het verzamelen, gebruiken en bewaren van uw gegevens en uw lichaamsmateriaal is nodig om de vragen die in dit onderzoek worden gesteld te kunnen beantwoorden en de resultaten (niet herleidbaar) te kunnen publiceren. Deze gegevens zullen alleen gebruikt worden voor dit doeleinde en niet gedeeld worden. Wij vragen voor het gebruik van uw gegevens en lichaamsmateriaal uw toestemming.

Uw gegevens worden 15 jaar bewaard in het Amphia ziekenhuis in Breda. Uw lichaamsmateriaal wordt niet onmiddellijk na gebruik vernietigd. Het wordt voor onbepaalde tijd bewaard in het laboratorium Microvida om daarop nog nieuwe bepalingen te kunnen doen die te maken hebben met dit onderzoek.

U kunt uw toestemming voor gebruik van uw persoonsgegevens altijd weer intrekken. Dit geldt voor dit onderzoek en ook voor het bewaren en het gebruik voor toekomstig onderzoek. De onderzoeksgegevens die zijn verzameld tot het moment dat u uw toestemming intrekt, worden nog wel gebruikt in het onderzoek. Uw lichaamsmateriaal wordt na intrekking van uw toestemming vernietigd. Als er al metingen met dat lichaamsmateriaal zijn gedaan, dan worden die gegevens nog wel gebruikt.

8. Verzekering voor proefpersonen
Als u deelneemt aan het onderzoek, loopt u geen extra risico's.

9. Heeft u vragen?
Bij vragen kunt u contact opnemen met het thuistestinformatienummer: (0)85 0659916
Voor onafhankelijk advies over meedoen aan dit onderzoek kunt u terecht bij 5.1.2e 5.1.2e op het nummer 076 - 5954192.

Attachment 5: Instructions for Use of the BD Kit for Rapid Detection of SARS-CoV-2

BD Kit For Rapid Detection of SARS-CoV-2

CE IVD bd.com/e-labeling 2 °C 30 °C

500053270(02)
2021-03
English

REF 256091

INTENDED USE

The BD Kit for Rapid Detection of SARS-CoV-2 is a chromatographic immunoassay intended for the direct and qualitative detection of SARS-CoV-2 nucleocapsid antigens in nasal swabs from individuals who are without symptoms, or with symptoms, who are suspected of SARS-CoV-2 infection by their healthcare provider.

Visually read results are for the identification of SARS-CoV-2 nucleocapsid antigen. This antigen is generally detectable in upper respiratory samples during the acute phase of infection. Positive results indicate the presence of viral antigens, but clinical correlation with patient history and other diagnostic information is necessary to determine infection status.

The BD Kit for Rapid Detection of SARS-CoV-2 is intended for use in point of care settings by healthcare professionals or trained users specifically instructed in the use of the BD Kit for Rapid Detection of SARS-CoV-2 and proper infection control procedures.

SUMMARY AND EXPLANATION OF THE TEST

A novel coronavirus (2019-nCoV) was identified in December 2019[1], which has resulted in hundreds of millions of confirmed human infections worldwide. Cases of severe illness and deaths have been reported. On February 11, 2020 the International Committee for Taxonomy of Viruses (ICTV) renamed the virus SARS-CoV-2.

The median incubation time is estimated to be approximately 5 days[2] with symptoms estimated to be present within 12 days of infection. The symptoms of COVID-19 are similar to other viral respiratory diseases and include fever, cough, and shortness of breath.

PRINCIPLES OF THE PROCEDURE

When specimens are processed and added to the test device, SARS-CoV-2 antigens present in the specimen bind to antibodies conjugated to detector particles in the test strip. The antigen-conjugate complexes migrate across the test strip to the reaction area and are captured by lines of antibodies bound on the membrane.

REAGENTS

The following components are included in the BD Kit for Rapid Detection of SARS-CoV-2.

Materials Provided:

KIT COMPONENT	QUANTITY	DESCRIPTION
Test Devices	30 single use test devices	Foil pouched test device containing one reactive strip. Each strip has one line of murine anti-SARS coronavirus monoclonal antibody on the test line, and one of biotin coupled to bovine protein on the positive control line. Murine and Leporine anti-SARS coronavirus and anti-biotin monoclonal antibodies conjugated to detector reagents are bound in the sample delivery area.
Extraction Reagent	30 single use reaction tubes, each with 325 µL extraction reagent and having an integral dispensing tip	Detergent solution with less than 0.1% sodium azide (preservative).
Specimen sampling swabs	30 sterile, single use specimen sampling swabs	For sample collection and transfer.
SARS-CoV-2 (+) Control Swab	1 each – individually wrapped for single use	Non-infectious, recombinant viral protein antigen with less than 0.1% sodium azide.
SARS-CoV-2 (–) Control Swab	1 each – individually wrapped for single use	Buffer with less than 0.1% sodium azide.
Assay documentation	1 each - Instructions for use 1 each - Quick reference instruction card 1 each - Nasal sampling instructions	

Materials Required But Not Provided:

- Timer
- Tube rack for specimens
- Any necessary personal protective equipment

WARNINGS AND PRECAUTIONS

1. For *in vitro* diagnostic use. Do not reuse the test device or kit components.
2. This test has been authorized only for the detection of proteins from SARS-CoV-2, not for any other viruses or pathogens.
3. Do not use this kit beyond the expiration date printed on the outside carton.
4. Do not use the kit to evaluate patient specimens if either the positive control swab or negative control swab fail to give expected results.
5. Do not mix components from different kits or from other BD diagnostic assays, even if they look similar.
6. Kit components, other than the swabs used for specimen collection, should not make contact with the patient.
7. Proper specimen collection, handling, and processing are critical to the performance of this test.
8. Specific training or guidance is recommended if operators are not experienced with specimen collection and handling procedures. Wear protective clothing such as laboratory coats, disposable gloves, and eye protection when specimens are collected and evaluated.
9. Pathogenic microorganisms, including hepatitis viruses and Human Immunodeficiency Virus, may be present in clinical specimens. Standard precautions and institutional guidelines should always be followed in handling, storing, and disposing of all specimens and all items contaminated with blood or other body fluids.
10. The SARS-CoV-2 positive control swabs have been prepared from recombinant viral proteins and do not contain infectious material.
11. Dispose of used BD Kit for Rapid Detection of SARS-CoV-2 test devices and reagents as biohazardous waste in accordance with federal, state, and local requirements.
12. Reagents contain sodium azide, which is harmful if inhaled, swallowed or exposed to skin. If there is contact with skin, wash immediately with plenty of water. Contact with acids produces very toxic gas.
13. BD Kit for Rapid Detection of SARS-CoV-2 test devices used in a laminar flow hood or in areas with high air flow should be covered during test development to ensure proper sample flow.
14. For additional information on hazard symbols, safety, handling and disposal of the components within this kit, please refer to the Safety Data Sheet (SDS) located at bd.com.

STORAGE

Kits must be stored at 2–30 °C.

SPECIMEN COLLECTION AND HANDLING

Specimen Collection and Preparation

Acceptable specimens for testing with this kit include nasal swab specimens obtained by the dual nares collection method. It is essential that correct specimen collection and preparation methods be followed. Specimens obtained early during symptom onset will contain the highest viral titers; specimens obtained after 5 days of symptoms are more likely to produce negative results when compared to an RT-PCR assay. Inadequate specimen collection, improper specimen handling and/or transport may yield a falsely negative result; therefore, training in specimen collection is highly recommended due to the importance of specimen quality for generating accurate test results.

Nasal Swab Specimen Collection

NOTE: The BD Kit for Rapid Detection of SARS-CoV-2 includes swabs for nasal specimen collection. When collecting a nasal swab sample, use the nasal swab supplied in the kit.

1. Insert swab into one nostril of the patient. The swab tip should be inserted up to 2.5 cm (1 inch) from the edge of the nostril. Roll the swab 5 times along the mucosa inside the nostril to ensure that both mucus and cells are collected.
2. Using the same swab, repeat this process for the other nostril to ensure that an adequate sample is collected from both nasal cavities.
3. Withdraw the swab from the nasal cavity. The sample is now ready for processing using the BD Kit for Rapid Detection of SARS-CoV-2.

DO'S AND DON'TS OF SPECIMEN COLLECTION

- Use only swabs provided with the kit.
- Do test sample immediately and always within 1 hour of collection.

For laboratory support for COVID-19 in the EU/EEA, visit https://www.ecdc.europa.eu/en/novel-coronavirus/laboratory-support.

Outside the United States, refer to applicable guidelines from other national or local authorities.

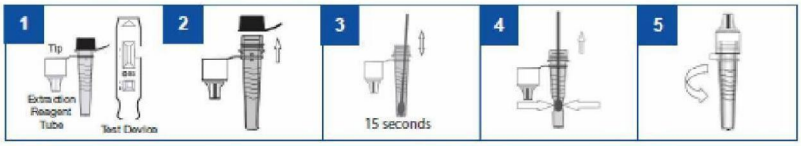
TEST PROCEDURE

Reagents, specimens and devices must be at room temperature (15–30 °C) for testing.

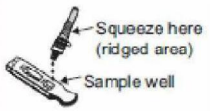
Getting ready to test

Once the nasal swab has been collected from the nostrils, the swab must be processed within 1 hour.

Procedural steps for Nasal Swabs or control swabs:



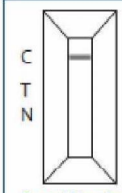
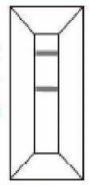
1	• Remove one extraction reagent tube/tip and one BD Kit for Rapid Detection of SARS-CoV-2 test device from its foil pouch immediately before testing. • Label one test device and one extraction reagent tube for each specimen or control to be tested. • Place the labeled extraction reagent tube(s) in a rack in the designated area of the workspace.
2	Remove and discard the cap from the extraction reagent tube.
3	Insert the swab into the tube and plunge the swab up and down in the fluid for a minimum of 15 seconds, taking care not to splash contents out of the tube.
4	Remove the swab while squeezing the sides of the tube to extract the liquid from the swab.
5	Press the attached tip firmly onto the extraction reagent tube containing the processed sample (threading or twisting is not required). Mix thoroughly by swirling or flicking the bottom of the tube.
	Once the swab has been processed in the extraction reagent and the tube has been capped, the sample must be added to the test device within 30 minutes.

TEST EXECUTION		
6	**Adding the specimen to the test device** • Invert the extraction reagent tube and hold it vertically (approximately 1 inch above the sample well). • Gently squeeze the ridged body of the tube, dispensing three (3) drops of the processed specimen into the sample well. **NOTE: Squeezing the tube too close to the tip may cause leakage.**	
7	**Timing development** • Allow the test to develop for **15 minutes.** **Caution: incorrect results may occur if development time is less than 15 minutes.** Some lines may appear on the device sooner. - If running test under laminar flow hood, cover test device to avoid inconsistent flow.	

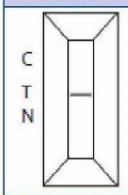
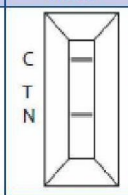
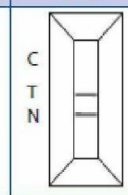
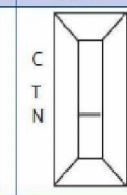
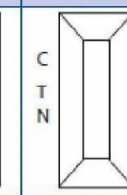
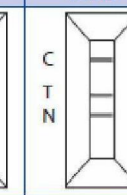
INTERPRETATION OF RESULTS

When the test is ready, elevate the device, if necessary, to a position where the device reading window is optimally positioned for user visualization. Slowly tilt the device back and forth to remove unnecessary glare.

Examine the device reading window for the visual presence of lines in the Control (C), Test (T) and Non-specific (N) regions.

Examples of Valid Test Results are listed below:			
Negative		**Positive**	
 Control Line Only	Negative results are presumptive. Negative test results do not preclude infection and should not be used as the sole basis for treatment or other patient management decisions, including infection control decisions, particularly in the presence of clinical signs and symptoms consistent with COVID-19, or in those who have been in contact with the virus. It is recommended that these results be confirmed by a molecular testing method, if necessary, for patient management.	 Control Line and Test Line	Positive for the detection of SARS-CoV-2 antigen. Positive results indicate the presence of viral antigens, but clinical correlation with patient history and other diagnostic information is necessary to determine infection status. Positive results do not rule out bacterial infection or co-infection with other viruses. The agent detected may not be the definite cause of disease.

Record result. Properly dispose of test device. Do not re-read test devices.

Invalid test results. Invalid tests should be repeated					
There are six possible invalid test results					
The test is invalid due to the presence of a Non-specific line or absence of a Control line. The test must be repeated. If the result is still invalid, the specimen cannot be interpreted.					
Invalid	**Invalid**	**Invalid**	**Invalid**	**Invalid**	**Invalid**
					
Test line only	Control line and Non-specific line	Test line and Non-specific line	Non-specific line only	No lines	All 3 lines

QUALITY CONTROL

Each BD Kit for Rapid Detection of SARS-CoV-2 test device contains both positive and negative internal/procedural controls:

- The internal positive Control line (C) validates the immunological integrity of the device, proper reagent function, and assures correct test procedure.
- The N line (Non-specific line) functions as a background line looking for possible assay interferants. If visible, the result is invalid.

EXTERNAL POSITIVE AND NEGATIVE CONTROLS

Positive and Negative control swabs are supplied with each kit. These controls provide additional quality control material to assess that the test reagents perform as expected. Prepare kit control swabs and test using the same procedure as used for patient specimens.

BD recommends controls be run once for:

- each new kit lot,
- each new operator,
- as required by internal quality control procedures and in accordance with local and national regulations or accreditation requirements.

If the kit controls do not perform as expected, do not report patient results. Contact your local BD representative.

LIMITATIONS OF THE PROCEDURE

- Users should test specimens as quickly as possible after specimen collection, within 1 hour after specimen collection and within 30 minutes of placing the swab into the extraction reagent.
- Clinical performance was evaluated with frozen samples, and test performance may be different with fresh samples.
- This BD Kit for Rapid Detection of SARS-CoV-2 is only intended for nasal swab specimens that are collected and tested directly (i.e., swabs that have NOT been placed in transport media). The kit includes a pre-diluted processing reagent in a ready to use "unitized" tube. This kit IS NOT INTENDED for testing liquid samples such as wash or aspirate samples or swabs in transport media as results can be compromised by over dilution.
- Results from the BD Kit for Rapid Detection of SARS-CoV-2 test should be correlated with the clinical history, epidemiological data, and other data available to the clinician evaluating the patient.
- A false-negative test result may occur if the level of viral antigen in a sample is below the detection limit of the test or if the sample was collected or transported improperly; therefore, a negative test result does not eliminate the possibility of SARS-CoV-2 infection.
- The amount of antigen in a sample may decrease as the duration of illness increases. Specimens collected after day 5 of illness are more likely to be negative compared to a RT-PCR assay.
- Failure to follow the test procedure may adversely affect test performance and/or invalidate the test result.
- The contents of this kit are to be used for the qualitative detection of SARS-CoV-2 antigens from nasal swab specimens only and are only intended to be used with the other contents of this kit. The BD Kit for Rapid Detection of SARS-CoV-2 can detect both viable and non-viable SARS-CoV-2 material.
- The BD Kit for Rapid Detection of SARS-CoV-2 performance depends on antigen load and may not correlate with other diagnostic methods performed on the same specimen.
- Positive and negative predictive values are highly dependent on prevalence rates. Positive test results are more likely to represent false positive results during periods of little/no SARS-CoV-2 activity when disease prevalence is low. False negative test results are more likely when prevalence of disease caused by SARS-CoV-2 is high.
- This device has been evaluated for use with human specimen material only.
- The performance of the device has not been assessed on specimens from individuals who have been infected with emerging variants of SARS-CoV-2 of public health concern.
- The validity of the BD Kit for Rapid Detection of SARS-CoV-2 test has not been proven for identification/ confirmation of tissue culture isolates and should not be used in this capacity.

CLINICAL PERFORMANCE

The performance of the BD Kit for Rapid Detection of SARS-CoV-2 has been demonstrated in two studies. The first study is evaluated performance in symptomatic individuals and the second study assessed performance in asymptomatic individuals.

Study 1

In the symptomatic study, clinical performance of a visually-read assay was established with 319 direct nasal swabs prospectively collected and enrolled from individual symptomatic patients who were suspected of COVID-19 (within 5 days of onset of two or more self-reported symptoms). [a] Eligible subjects were 18 years or older and samples were collected by qualified personnel from 21 geographically diverse areas across the United States. Nasal swabs were collected following the dual nares method and handled as described in the collection device instructions for use. Specimens were frozen within 30 minutes of collection. All specimens within a pre-specified date range were selected and sequentially tested in a blind fashion. The BD Kit for Rapid Detection of SARS-CoV-2 was analyzed by visually reading the test device. The participants were blinded to the comparator result and recorded their observations manually. After every 50 specimens, a different participant performed the visual interpretation. Overall, there were seven different participants reading the devices. The performance of the BD Kit for Rapid Detection of SARS-CoV-2 was compared to results of a nasopharyngeal swab stored in 3 mL viral transport media tested with an Emergency Use Authorized molecular (RT-PCR) test for detection of SARS-CoV-2.

[a] Symptoms included: new loss of taste or smell, fever, shortness of breath or difficulty breathing, diarrhea, GI upset, headache, extreme tiredness, fatigue, weakness, dry cough, sore throat, runny or stuffy nose, nasal congestion, muscle aches, body aches, chills, repeated shaking with chills.

Table 1: Summary of the Performance of the BD Kit System for Rapid Detection of SARS-CoV-2 Compared to RT-PCR for Nasal Swabs in Symptomatic Individuals.

	Reference PCR Results		
BD Visual Results	POS	NEG	Total
POS	51	1	52
NEG	5	262	267
Total	56	263	319

PPA: 91.1% (C.I. 80.7%–96.1%)
NPA: 99.6% (C.I. 97.9%–99.9%)
OPA: 98.1% (C.I. 96.0%–99.1%)

PPV: 98.1% (C.I. 90.7%–99.9%)
NPV: 98.1% (C.I. 96.0%–99.4%)

Study 2
In the asymptomatic study, performance was established with 370 direct nasal swabs prospectively collected and enrolled from individual asymptomatic patients who were receiving testing for COVID-19. Eligible subjects were all ages and samples were collected by qualified personnel from 3 geographically diverse outpatient clinics in the United States. Nasal swabs were collected following the dual nares method and handled as described in the collection device instructions for use. Specimens were stored frozen within 30 minutes of collection and stored until tested. All specimens within a pre-specified date range were selected and then sequentially tested in a blinded fashion. The BD Kit for Rapid Detection of SARS-CoV-2 was analyzed by visually reading the test device. Each device was read visually by a participant. The participant was blind to the comparator results. Overall, there were five different participants reading the devices. The performance of the BD Kit for Rapid Detection of SARS-CoV-2 was compared to results of a nasal swab stored in 3 mL viral transport media tested with an Emergency Use Authorized molecular (RT-PCR) test for detection of SARS-CoV-2. Using the cycle threshold (Ct) from the comparator assay, performance is presented overall and by Cts33 to demonstrate that positive agreement of the assay is higher with samples below this threshold. A lower Ct value corresponds to higher virus concentrations, therefore Ct value can be a surrogate for the amount of virus present in the sample. A Ct threshold of Cts33 was chosen due to evidence suggesting that patients with Ct value >30 are no longer contagious.[3,4,5]

Table 2: Summary of the Performance of the BD Kit for Rapid Detection of SARS-CoV-2 Compared to RT-PCR for Nasal Swabs in Asymptomatic Individuals.

	Reference PCR Results		
BD Visual Results	POS	NEG	Total
POS	13	2	15
NEG	7	348	355
Total	20	350	370

OPA: 97.6% (C.I. 95.4%–98.7%)
PPV: 86.7% (C.I. 64.8%–98.5%)
NPV: 98.0% (C.I. 96.7%–99.1%)

Table 3: Summary of the Performance of the BD Kit for Rapid Detection of SARS-CoV-2 Compared to RT-PCR for Nasal Swabs in Asymptomatic Individuals Categorized by Ct cutoffs.

Overall PPA	Cts33 PPA	Overall NPA
65.0% (C.I. 43.3%–81.9%)	72.2% (C.I. 49.1%–87.5%)	99.4% (C.I. 97.9%–99.8%)

EXPLANATION OF TERMS:
C.I.: Confidence Interval
PPA: Positive Percent Agreement = True Positives / (True Positives + False Negatives)
NPA: Negative Percent Agreement = True Negatives / (True Negatives + False Positives)
OPA: Overall Percent Agreement = (True Positives + True Negatives) / Total Samples
PPV: Positive Predictive Value = True Positives / (True Positives + False Positives)
NPV: Negative Predictive Value = True Negatives / (True Negatives + False Negatives)

ANALYTICAL PERFORMANCE
The BD Kit for Rapid Detection of SARS-CoV-2 test device is produced by an identical process as the BD Veritor™ System for Rapid Detection of SARS-CoV-2, however the devices are interpreted differently. The BD Kit for Rapid Detection of SARS-CoV-2 is interpreted visually whereas the BD Veritor™ System for Rapid Detection of SARS-CoV-2 is interpreted by the BD Veritor™ Plus Analyzer system. Because the devices are functionally the same, the analytical validation data generated for the validation of BD Veritor™ System for Rapid Detection of SARS-CoV-2 also applies to the BD Kit for Rapid Detection of SARS-CoV-2 visual read assay.

LIMIT OF DETECTION (ANALYTICAL SENSITIVITY)

The LOD for the BD Veritor™ System for Rapid Detection of SARS-CoV-2 was established using limiting dilutions of a viral sample inactivated by gamma irradiation. The material was supplied at a concentration of 2.8×10^5 $TCID_{50}$/mL. In this study, designed to estimate the LOD of the assay when using a direct nasal swab, the starting material was spiked into a volume of pooled human nasal matrix obtained from healthy donors and confirmed negative for SARS-CoV-2. An initial range finding study was performed testing devices in triplicate using a 10-fold dilution series. At each dilution, 50 µL samples were added to swabs and then tested in the BD Veritor™ assay using the procedure appropriate for patient nasal swab specimens. A concentration was chosen between the last dilution to give three positive results and the first to give three negative results. Using this concentration, the LOD was further refined with a 2-fold dilution series. The last dilution demonstrating 100% positivity was then tested in an additional 20 replicates tested in the same way.

Starting Material Concentration	Estimated LOD	No. Positive/Total	% Positive
2.8×10^5 $TCID_{50}$/mL	1.4×10^2 $TCID_{50}$/mL	19/20	95%

Limit of detection of the visual read was established in two studies. One with two experienced operators and one with eleven inexperienced operators. The inexperienced users had varying education, age, gender and healthcare backgrounds, however, none had experience with the BD Veritor™ System or any BD lateral flow assay. Serial dilutions of gamma irradiated virus were prepared in nasal fluid. The samples were randomized and read by the BD Veritor™ Plus Analyzer at 15 minutes and then read visually by different operators using blinded samples. In both analytical studies, the limit of detection of the visual read was determined to be one 2-fold dilution higher than the BD Veritor™ Plus Analyzer with an acceptance criteria of ≥95% detection. These studies showed that the instruments can consistently detect slightly fainter lines than a human.

CROSS-REACTIVITY (ANALYTICAL SPECIFICITY)

Cross-reactivity of the BD Veritor™ System for Rapid Detection of SARS-CoV-2 was evaluated by testing a panel of high prevalence respiratory pathogens that could potentially cross-react with the BD Veritor™ System for Rapid Detection of SARS-CoV-2. Each organism and virus was tested in triplicate. The final concentration of each organism is documented in the following table. This data was determined using the instrumented BD Veritor™ System for Rapid Detection of SARS-CoV-2 assay.

Potential Cross-Reactant	Concentration Tested	Cross-Reactivity (Yes/No)
Human coronavirus 229E (heat inactivated)	1.0×10^5 U/mL	No
Human coronavirus OC43	1.0×10^5 $TCID_{50}$/mL	No
Human coronavirus NL63	1.0×10^5 $TCID_{50}$/mL	No
Adenovirus	1.0×10^5 $TCID_{50}$/mL	No
Human Metapneumovirus	1.0×10^5 $TCID_{50}$/mL	No
Parainfluenza virus 1	1.0×10^5 $TCID_{50}$/mL	No
Parainfluenza virus 2	1.0×10^5 $TCID_{50}$/mL	No
Parainfluenza virus 3	5.2×10^5 $TCID_{50}$/mL	No
Parainfluenza virus 4	1.6×10^4 $TCID_{50}$/mL	No
Influenza A	2.5×10^5 $TCID_{50}$/mL	No
Influenza B	2.9×10^5 $TCID_{50}$/mL	No
Enterovirus	4.0×10^5 $TCID_{50}$/mL	No
Respiratory syncytial virus	4.0×10^5 $TCID_{50}$/mL	No
Rhinovirus	1.1×10^5 PFU/mL	No
SARS-coronavirus	4.5×10^5 PFU/mL	No
MERS-coronavirus	1.5×10^5 $TCID_{50}$/mL	No
Haemophilus influenzae	1.4×10^6 CFU/mL	No
Streptococcus pneumoniae	1.0×10^6 CFU/mL	No
Streptococcus pyogenes	1.6×10^6 CFU/mL	No
Candida albicans	1.8×10^6 CFU/mL	No
Pooled human nasal wash	100%	No
Bordetella pertussis	1.4×10^6 CFU/mL	No
Mycoplasma pneumoniae	1.0×10^6 CFU/mL	No
Chlamydia pneumoniae	1.0×10^6 IFU/mL	No
Legionella pneumophila	1.0×10^6 CFU/mL	No

This data was determined using the instrumented BD Veritor™ System for Rapid Detection of SARS-CoV-2 assay.

To estimate the likelihood of cross-reactivity with SARS-CoV-2 of organisms that were not available for wet testing, *In silico* analysis using the Basic Local Alignment Search Tool (BLAST) managed by the National Center for Biotechnology Information (NCBI) was used to assess the degree of protein sequence homology.

- For *P. jirovecii* one area of sequence similarity shows 45.4% homology across 9% of the sequence, making cross-reactivity in the BD Veritor™ sandwich immunoassay highly unlikely.
- No protein sequence homology was found between SARS-CoV-2 and *M. tuberculosis*, and thus homology-based cross-reactivity can be ruled out.
- The comparison between SARS-CoV-2 nucleocapsid protein and human coronavirus HKU1 revealed that the only potential for homology is with the HKU1 nucleocapsid phosphoprotein. Homology is relatively low, at 38.7% across 82% of sequences, but cross-reactivity cannot be ruled out.

ENDOGENOUS INTERFERING SUBSTANCES

Various substances were evaluated with the BD Veritor™ System for Rapid Detection of SARS-CoV-2. The substances tested included whole blood 4%, mucin and various medications. No interference was noted with the BD Veritor™ System for Rapid Detection of SARS-CoV-2 assay for any of the substances tested.

Substance	Concentration Tested	Interference (Yes/No)
Afrin Nasal Spray (Oxymetazoline)	5% v/v	No
Flonase (Fluticasone)	5% v/v	No
Nasacort (Triamcinolone)	5% v/v	No
Neo-Synephrine (Phenylephrine hydrochloride)	5% v/v	No
Oseltamivir	2.2 µg/mL	No
Mucin protein	2.5 mg/mL	No
Rhinocort (Budesonide)	5% v/v	No
Saline nasal spray	15% v/v	No
Zanamivir	282 ng/mL	No
Zicam Cold Remedy (Galphimia glauca, Luffa operculata, Sabadilla)	5% v/v	No
Whole blood	4% v/v	No
Cepacol (Menthol/Benzocaine)	1.5 mg/mL	No
Riocla (menthol)	1.5 mg/mL	No
Tobramycin	4 µg/mL	No
Sucrets (Dyclonine/Menthol)	1.5 mg/mL	No
NeilMed Naso Gel	5% v/v	No
Zicam nasal spray (Oxymetazoline)	10% v/v	No
Alkalol nasal wash	10% v/v	No
Fisherman's Friend (menthol)	1.5 mg/mL	No
Chloraseptic (Phenol Spray)	15% v/v	No
Mupirocin	10 mg/mL	No

Additionally, the following were tested for interference in a negative and a 3x LOD sample. No interference was noted at the levels tested.

Substance	Concentration Tested	Interference (Yes/No)
Afrin Nasal Spray (Oxymetazoline)	15% v/v	No
Neo-Synephrine (Phenylephrine hydrochloride)	15% v/v	No
Oseltamivir	2.2 µg/mL	No
Mucin protein	5 mg/mL	No
Mupirocin	10 mg/mL	No
Rheumatoid Factor	12.5 IU/mL	No

Note: Based on *in vitro* testing, false positive results cannot be ruled out in patients with rheumatoid factor higher than 12.5 IU/mL in nasal fluid, although it is unclear if such concentrations are clinically relevant.

This data was determined using the instrumented BD Veritor™ System for Rapid Detection of SARS-CoV-2 assay.

Additionally, the following substances were tested and the results interpreted visually. No interference was noted.

Substance	Concentration Tested	Interference (Yes/No)
Whole blood	4% v/v	No
Mucin protein	2.5 mg/mL	No

MICROBIAL INTERFERENCE

The BD Veritor™ System for Rapid Detection of SARS-CoV-2 assay was evaluated with various organisms at the concentrations indicated below. No interference was noted.

Potential Microbial Interferent	Concentration Tested	Interference (Yes/No)
Human coronavirus 229E	1.0 x 10^5 U/mL	No
Human coronavirus OC43	1.0 x 10^5 $TCID_{50}$/mL	No
Human coronavirus NL63	1.0 x 10^5 $TCID_{50}$/mL	No
Adenovirus	1.0 x 10^5 $TCID_{50}$/mL	No
Human Metapneumovirus	1.0 x 10^5 $TCID_{50}$/mL	No
Parainfluenza virus 1	1.0 x 10^5 $TCID_{50}$/mL	No
Parainfluenza virus 2	1.0 x 10^5 $TCID_{50}$/mL	No
Parainfluenza virus 3	5.2 x 10^5 $TCID_{50}$/mL	No
Parainfluenza virus 4a	1.5 x 10^4 $TCID_{50}$/mL	No
Influenza A	2.5 x 10^5 $TCID_{50}$/mL	No
Influenza B	2.9 x 10^5 $TCID_{50}$/mL	No
Enterovirus D68	4.0 x 10^5 $TCID_{50}$/mL	No
Respiratory syncytial virus	4.0 x 10^5 $TCID_{50}$/mL	No
Rhinovirus 3	1.1 x 10^5 PFU/mL	No
SARS-coronavirus	4.5 x 10^5 PFU/mL	No
MERS-coronavirus	1.5 x 10^5 $TCID_{50}$/mL	No
Haemophilus influenzae	1.4 x 10^6 CFU/mL	No
Streptococcus pneumoniae	1.0 x 10^6 CFU/mL	No
Streptococcus pyogenes	1.6 x 10^6 CFU/mL	No
Bordetella pertussis	1.4 x 10^6 CFU/mL	No
Mycoplasma pneumoniae	1.0 x 10^6 CFU/mL	No
Chlamydia pneumoniae	1.0 x 10^6 IFU/mL	No
Legionella pneumophila	1.0 x 10^6 CFU/mL	No
Pooled human nasal wash	N/A	No
Candida albicans	1.8 x 10^6 CFU/mL	No

This data was determined using the instrumented BD Veritor™ System for Rapid Detection of SARS-CoV-2 assay.

REPRODUCIBILITY

Another study was designed to assess the capability of users to test seeded swab samples across the dynamic range of the assay with eleven (11) users, over two (2) days, using dilution preparations in four (4) separate sessions with a single lot of devices. The following table shows the performance.

Sample	Session No. 1		Session No. 2		Session No. 3		Session No. 4		Total	
	% Positive	95% C.I.	% Positive	95% C.I.	% Positive	95% C.I.	% Positive	95% C.I.	% Positive	95% C.I.
2x LOD	100% (15/15)	(79.6%, 100%)	100% (10/10)	(72.3%, 100%)	100% (15/15)	(79.6%, 100%)	100% (15/15)	(79.6%, 100%)	100% (55/55)	(93.5%, 100%)
1x LOD	100% (15/15)	(79.6%, 100%)	100% (10/10)	(72.3%, 100%)	100% (15/15)	(79.6%, 100%)	100% (15/15)	(79.6%, 100%)	100% (55/55)	(93.5%, 100%)
0.5x LOD	100% (15/15)	(79.6%, 100%)	70% (7/10)	(39.7%, 89.2%)	93.3% (14/15)	(70.2%, 98.8%)	86.7% (13/15)	(62.1%, 96.3%)	89.1% (49/55)	(78.2%, 94.9%)
0.25x LOD	33.3% (5/15)	(15.2%, 58.3%)	20% (2/10)	(5.7%, 51.0%)	33.3% (5/15)	(15.2%, 58.3%)	20% (3/15)	(7.1%, 45.2%)	27.3% (15/55)	(17.3%, 40.2%)
0.125x LOD	0% (0/15)	(0%, 20.4%)	0% (0/10)	(0%, 27.8%)	6.7% (1/15)	(1.2%, 29.8%)	0% (0/15)	(0%, 20.4%)	1.8% (1/55)	(0.3%, 9.6%)
Negative Nasal Fluid	0% (0/15)	(0%, 20.4%)	0% (0/10)	(0%, 27.8%)	0% (0/15)	(0%, 20.4%)	0% (0/15)	(0%, 20.4%)	0% (0/55)	(0%, 6.5%)

HIGH DOSE HOOK EFFECT

No high dose hook effect was observed up to 2.8×10^5 $TCID_{50}$/mL of gamma-inactivated SARS-CoV-2 with the BD Veritor™ System for Rapid Detection of SARS-CoV-2 test.

TECHNICAL SUPPORT

Outside the United States, contact your local BD representative.

REFERENCES

1. Centers for Disease Control and Prevention. https://www.cdc.gov/coronavirus/2019-ncov/index.html. Accessed March 30, 2020.
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4. CDC. Duration of Isolation and Precautions for Adults with COVID-19. (2020).
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CHANGE HISTORY

Revision	Date	Change Summary
01	2021-02	Initial Release.
02	2021-03	Deleted duplicate content. Added asymptomatic population to Intended Use section. Updated enrollment criteria for clinical performance and relevant performance characteristics. Added asymptomatic performance data.

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