EMERGENCY USE AUTHORIZATION (EUA) SUMMARY
OMNIGENE·ORAL OM-505 AND OME-505 SALIVA COLLECTION DEVICES

For In Vitro Diagnostic Use
Rx Only
For Use Under Emergency Use Authorization (EUA) Only

INTENDED USE

The OMNIgene·ORAL OM-505 and OME-505 (OMNIgene·ORAL) saliva collection devices are intended for use by individuals to collect, stabilize, and maintain during transport saliva specimens suspected of containing SARS-CoV-2 ribonucleic acid (RNA).[1]

The OMNIgene·ORAL OM-505 and OME-505 saliva collection devices are only for use under the Food and Drug Administration's Emergency Use Authorization.

DEVICE DESCRIPTION AND COLLECTION PRINCIPLE

Device Description
OMNIgene·ORAL consists of the OM-505 and OME-505 device models which are physically and chemically equivalent. The models differ in device model numbers and labeling.

The OMNIgene·ORAL enables the collection of a saliva specimen by an individual. The collected specimen is transported at ambient temperature in the collection tube provided with the collection device. OMNIgene·ORAL saliva collection devices are included as a component of a third party COVID-19 test manufacturer or home/self-collection kit. OMNIgene·ORAL saliva collection devices are not intended to be sold directly to patients.

The OMNIgene·ORAL collection devices consist of a long tube with an attached funnel. The funnel lid contains a small sealed reservoir containing a stabilizing liquid. The tube cap is a threaded cap and is used to close the tube after saliva has been collected. This cap replaces the funnel post saliva collection. Instructions for use are included within a clamshell primary package.

[1] While this EUA does not authorize your product as standalone self-collection devices, the OMNIgene·ORAL OM-505 and OME-505 may be included as a component of an authorized or cleared self-collection kit (e.g., as part of a kit that is authorized under its own EUA for use by an individual to collect saliva specimens at home).

Saliva Collection Procedure

The patient delivers saliva into the funnel until the amount of liquid saliva (not bubbles) reaches the fill line on the collection tube. The "fill-to" information is provided in the text and pictorials on the instructions for use inside the collection device that the patient/user is instructed to observe (See Figure 1). The patient closes the funnel lid by firmly pushing the lid down until a loud click is heard. This step allows the stabilizing liquid within the funnel lid to be released into the collection tube to mix with the patient's collected saliva. Holding the tube in an upright position, the patient unscrews the funnel from the tube and replaces it with the small cap provided with the collection device to close the tube tightly. After the tube is capped, the patient/HCP shakes the capped tube for approximately 5 seconds to mix the stabilizing liquid with the collected saliva sample. Upon contacting saliva cells, the stabilizing liquid lyses cellular and nuclear membranes to release and stabilize nucleic acids including viral RNA.

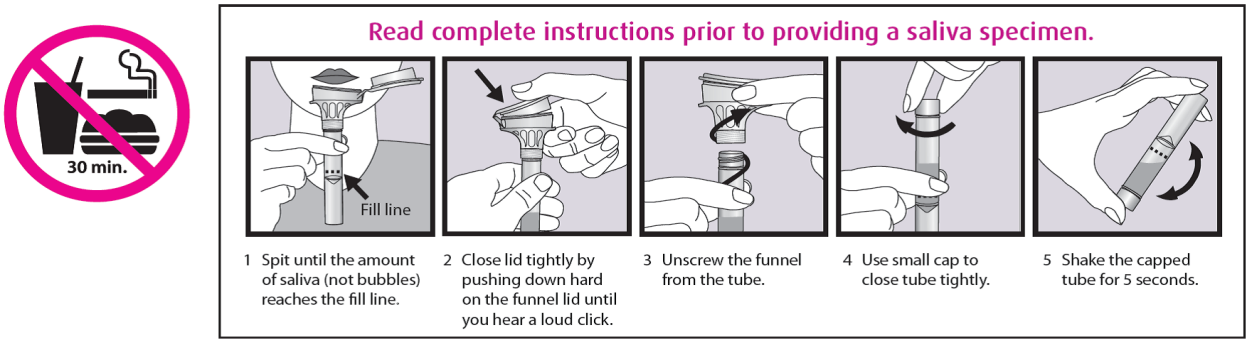

Figure 1. Collection Instructions for the OM-505 and OME-505

REAGENTS AND MATERIALS

The OMNIgene·ORAL saliva collection devices (OM-505 and OME-505) consist of the following components:

Component	Material
Clamshell primary packaging	Polyethyleneterephthalate
Instructions for Use (IFU)	Paper
Collection tube and funnel	Translucent Polypropylene Vial, 5 mL Tube Funnel is made of Polypropylene Random Copolymer
Membrane seal material on collection tube funnel	High barrier, high resistance clear film for moisture sensitive medical, electronic, and food packaging.
Stabilizing liquid	Proprietary formula
Stabilizing liquid component 2	Proprietary formula
Collection tube wrap around label	Polyolefin with a solvent acrylic adhesive. *The collection tube label has the "fill-to" line clearly indicating the requested 1 mL fill line for saliva, collect by date, lot information and barcode*
Collection tube cap (also referred to as small cap for the tube)	High Density Polyethylene (HDPE), screw cap, neutral

Collection tube cap insert	MXM Synthetic Paper. A clay (calcium carbonate) modified calendared polypropylene with the same feel and texture as white offset paper, but with the tear, water and chemical resistance of plastic. Purpose: to make user aware of the top of the screw cap (identified by the colored dot).*

*Product manufactured after March 20, 2020 no longer have a cap insert. Product made prior to March 20, 2020, and in distribution will have the insert.

PRODUCT MANUFACTURING

The OMNIgene·ORAL saliva collection devices (OM-505 and OME-505) have been validated using only the components referenced in the EUA.

1) **Overview of Manufacturing Capabilities:**

   OMNIgene·ORAL collection devices are manufactured by DNA Genotek Inc., a subsidiary of OraSure Technologies, Inc. under a Quality Management System based on 21 CFR 820 and ISO 13485:2016 [MDSAP 704862].

   - FDA Registration Number: 3003742580 [DNA Genotek Inc.]
   - Owner/Operator Number: 905496 [DNA Genotek Inc.]

2) **Ordering and Distribution:**

   OMNIgene·ORAL saliva collection devices are included as a component of third party COVID-19 test manufacturer or laboratory developed collection kits. OMNIgene·ORAL saliva collection devices themselves are not intended to be sold directly to patients.

   The ordering of the OMNIgene·ORAL saliva collection device will be completed via a typical ordering procedure following the DNA Genotek sales process. When order completion is finalized, DNA Genotek will ship devices in accordance with the signed sales agreement. OMNIgene·ORAL collection devices will be distributed for use in COVID-19 testing by the COVID-19 test kit manufacturers, collection kit manufacturers without a SARS-CoV-2 assay, or laboratories providing saliva collection kits.

COLLECTION DEVICE STABILITY

1) **Pre-Collection Shelf-Life Stability:**

   a. *Shelf-Life Stability – Unopened*

      Stability testing was completed in accordance with FDA recognized CLSI Standard EP25 – *Evaluation of stability of in vitro diagnostics, February 2013 edition.*

      Shelf-life stability of the OMNIgene·ORAL saliva collection devices (OM-505 and OME-505) was determined using data from the equivalent Oragene·Dx

collection device (i.e., OGD-500) which was cleared under K110701. OMNIgene·ORAL saliva collection devices contain the same physical components and have identical instructions for use as the Oragene·Dx family of devices. The composition of the stabilization buffer differs slightly between the OMNIgene·ORAL and the Oragene·Dx collection devices. Nonetheless, Oragene·Dx devices were used as a reference to evaluate the physical performance of unopened products containing either the OMNIgene·ORAL OM-505 or OME-505 collection device. Test devices were stored at 13°C and 32°C for >30 months (n=20) and demonstrated a volume loss of less than 0.2g in all devices tested which adhered to the acceptance criteria.

Table 1 summarizes ongoing real-time shelf-life stability testing on the OMNIgene·ORAL collection devices:

Table 1. Protocol for Real-time Stability Testing of the OMNIgene·ORAL Collection Devices

Design Requirement	Validation Means	Acceptance Criteria	Status
The product shall have a shelf-life of at least 24 months at the labeled storage temperature (15-30°C), based on real- time evaporation testing.	Hold 30 OM-505 devices at 13°C and 32°C for duration of shelf life. Determine volume change over time.	Proprietary information	Ongoing
Device chemistry must withstand a shelf life of at least 24 months at the labeled storage temperature (15-30°C).	Hold OM-505 devices at 13°C and 32°C. Test chemistry pH and conductivity.	At each time-point: ensure chemistry remains within manufacturing parameters	Ongoing

The shelf-life testing data to date supports a pre-collection storage temperature of 15°C – 30°C for the OMNIgene·ORAL devices.

2) **Sample Volume Tolerance Testing:**

To evaluate potential volume fluctuations of a collected saliva specimen, the operational limits of the Oragene Dx OGD-500 was previously evaluated as part of K110701. This study tested the effect of over or under filling the OGD-500 collection device. The Oragene Dx OGD-500 is equivalent to the OMNIgene ORAL in terms of the volume of saliva that is required to be obtained for testing; however, the stabilizing liquids are different amongst the collection devices. Both Oragene·Dx OGD-500 and OMNIgene·ORAL devices are intended for the collection of 2 mL of saliva. Sample volume tolerance study data show that OMNIgene·ORAL devices can accept a wide range of saliva input volumes and still perform as intended.

According to K110701, 60 donors collected saliva using 4 devices with differing fill-to lines for a total of 240 samples

- Fill-to lines were set at 1, 1.5, 2, and 3 mL volumes with a constant 2 mL volume of stabilizing solution
- All acceptance criteria, pre-defined in the study protocol, were met successfully

PERFORMANCE EVALUATION

The following supportive performance data were provided by P23 Labs and Clinical Reference Laboratory Inc. for DNA Genotek's EUA submission. A right of reference from both laboratories was provided to DNA Genotek to leverage the sample stability and clinical study data that evaluated the OM-505 collection device. Please refer to the EUA summaries for the P23 Labs TaqPath SARS-CoV-2 Assay and the CRL Rapid Response test, respectively for detailed information on assay validation using saliva collected in the OM-505 device.

1) **Specimen Stability Studies Using the OM-505 Saliva Collection Device Post-Saliva Collection:**

Simulated Shipping Study with the OMNIgene·ORAL OM-505 Saliva Collection Device

To further evaluate sample stability following the addition of the OM-505 stabilizing reagent to a collected saliva sample in the OM-505, a simulated shipping study was performed as part of the authorization for the P23 At-Home COVID-19 Test Collection Kit. The sample stability study was designed to evaluate the effect of temperature variation on the stability of SARS-CoV-2 RNA during transport of saliva specimens in the OM-505. The shipping study simulated shipping at room temperature as well as the extreme temperature conditions that could be experienced during the summer and winter months. See Tables 2 and 3 for summer and winter thermal profiles evaluated in this study. Room temperature stability was evaluated by physically shipping samples via UPS from Little Rock, AR to Memphis, TN over 3 days (72 hours) and 5 days (120 hours) at ambient conditions.

Simulated sample stability and shipping studies were performed using contrived positive saliva specimens collected in the OM-505 at 2X and 5X LoD concentrations, as established in EUA200403, as well as previously tested clinical positive and negative saliva patient specimens. After the samples underwent the thermal excursions, they were equilibrated to room temperature, extracted using the ThermoFisher MagMAX Viral/Pathogen Nucleic Acid Isolation Kit, and tested with the P23 Labs TaqPath SARS-CoV-2 Assay.

Table 2. Summer Temperature Excursion

Temperature	Cycle Period	Cycle Period Hours	Total Time Hours[1]
40°C	1	8	8
22°C	2	4	12
40°C	3	2	14
30°C	4	36	50
40°C	5	6	56

[1] Sum of cycle periods

Table 3. Winter Temperature Excursion

Temperature	Cycle Period	Cycle Period Hours	Total Time Hours[1]
-10°C	1	8	8

18°C	2	4	12
-10°C	3	2	14
10°C	4	36	50
-10°C	5	6	56

[1] Sum of cycle periods

a. *Shipping Study Using Contrived Saliva Samples*

Contrived samples were prepared using pooled known negative patient sample matrix that were spiked with quantified SeraCare material to establish low positives of 2X LoD (LoD previously established as 10 copies/µL) and high positive saliva samples at 5X LoD. For the spiked saliva, donated pathogen free saliva was pooled. Saliva was shown to be negative as each donor was asymptomatic and a prior NP swab was tested and shown to be negative. The donor saliva was screened by an outside laboratory using an unmodified ThermoFisher TaqPath SARS-CoV-2 Assay 48 hours before use in the contrived study.

Testing included 25 contrived spiked saliva samples; 20 low positive and 5 high positive saliva samples collected in the OM-505 collection device. The contrived positive and negative saliva samples were either physically shipped at ambient conditions or stored for the duration of each simulated shipping study as shown in Table 2 and 3. At the conclusion of each thermal profile, the samples were equilibrated to room temperature, extracted using the ThermoFisher MagMAX Viral/Pathogen Nucleic Acid Isolation Kit, and retested with the P23 Labs TaqPath SARS-CoV-2 Assay. Results were compared to those reported upon initial testing when specimens were received at time 0 (day 0, room temperature).

Twenty out of 20 low positive samples (100%) and 5/5 high positive contrived samples (100%) were reported as positive after exposure to room temperature as well as the summer and winter temperature cycles. The mean and standard deviation of the Ct values for each gene target were similar before and after each simulated shipping scenario (within ~3 Cts), with no evidence of significant degradation of the SARS-CoV-2 RNA. All SARS-CoV-2 negative specimens were reported as negative after enduring ambient temperature and extreme temperature conditions (no amplification of N, ORF1ab, or S genes).

A summary of the mean Ct values observed for each SARS-CoV-2 specific target gene is provided in Table 4.

Table 4. Summary of Results from the Simulated Shipping Study Using Contrived Saliva Samples

Sample Group	Test Point	N	Mean Ct (Standard Deviation)			Positive (%)
			N Gene	ORF1ab	S Gene	
Negative	Day 0 (RT)[1]	20	Und[6]	Und[6]	Und[6]	0 (0)
	Day 3 (RT)[2]	20	Und[6]	Und[6]	Und[6]	0 (0)
	Day 5 (RT)[3]	20	Und[6]	Und[6]	Und[6]	0 (0)

	Summer[4]	20	N/A	N/A	N/A	0 (0)
	Winter[5]	20	N/A	N/A	N/A	0 (0)
Low Positive 2X LoD 20 copies/µL	Day 0 (RT)	20	22.9 (1.9)	24.3 (2.8)	26.1 (1.6)	20/20 (100)
	Day 3 (RT)	20	23.3 (1.6)	25.5 (1.0)	26.9 (2.1)	20/20 (100)
	Day 5 (RT)	20	26.9 (0.9)	27.4 (1.8)	28.1 (1.3)	20/20 (100)
	Summer	20	26.8 (1.8)	27.8 (1.3)	27.1 (1.9)	20/20 (100)
	Winter	20	26.3 (2.1)	26.9 (0.6)	26.9 (1.7)	20/20 (100)
High Positive 5X LoD 50 copies/µL	Day 0 (RT)	5	22.3 (1.1)	23.9 (1.6)	24.7 (2.0)	5/5 (100)
	Day 3 (RT)	5	24.1 (1.6)	24.8 (1.2)	25.3 (1.9)	5/5 (100)
	Day 5 (RT)	5	25.1 (0.9)	25.9 (13)	27.3 (1.3)	5/5 (100)
	Summer	5	25.9 (1.1)	25.5 (1.8)	24.3 (2.3)	5/5 (100)
	Winter	5	25.9 (1.8)	25.4 (1.1)	24.8 (1.4)	5/5 (100)

[1] Day 0 (RT) = within 2 hours of collection at room temperature shipping conditions
[2] Day 3 (RT) = 72 hours at room temperature shipping conditions
[3] Day 5 (RT) = 120 hours at room temperature shipping conditions
[4] Testing performed at the conclusion of the thermal excursions described in Table 2
[5] Testing performed at the conclusion of the thermal excursions described in Table 3
[6] Und = Undetermined value (no detectable Ct value)

b. *Shipping Study Using Confirmed Positive Clinical Saliva Samples*
A total of 31 previously confirmed clinical SARS-CoV-2 positive saliva specimens were evaluated in the simulated shipping study. The clinical samples were either physically shipped at ambient temperature conditions or stored for the duration of each simulated temperature excursion, followed by equilibration to room temperature, extracted using the MagMAX kit, and tested with the P23 Labs TaqPath SARS-CoV-2 Assay.

Results of the simulated shipping studies when using previously confirmed clinical positive and negative saliva specimens showed that 31/31 positive samples were positive by the P23 Labs TaqPath SARS-CoV-2 Assay. The mean and standard deviation of the Ct values for each gene target were similar before and after simulated shipping scenario (within ~3 Cts), with no evidence of significant degradation of the SARS-CoV-2 RNA. Eleven out of 11 negative clinical saliva specimens were negative by the P23 Labs TaqPath SARS-CoV-2 Assay (no amplification of N, ORF1ab, or S genes) (See Table 5).

Table 5. Summary of Results from the Simulated Shipping Study Using Clinical Saliva Samples

Saliva Sample Group	Test Point	N	Mean Ct (Standard Deviation)			Positive (%)
			N Gene	ORF1ab	S Gene	
Negative	Day 0 (RT)[1]	11	Und[6]	Und[6]	Und[6]	0 (0)
	Day 3 (RT)[2]	11	Und[6]	Und[6]	Und[6]	0 (0)
	Day 5 (RT)[3]	11	Und[6]	Und[6]	Und[6]	0 (0)
	Summer[4]	11	N/A	N/A	N/A	0 (0)
	Winter[5]	11	N/A	N/A	N/A	0 (0)
Positive	Day 0 (RT)[1]	31	25.3 (0.8)	23.6 (1.5)	26.1 (1.2)	31/31 (100)
	Day 3 (RT)[2]	31	26.9 (1.1)	24.4 (0.9)	28.1 (1.3)	31/31 (100)
	Day 5 (RT)[3]	31	27.3 (1.9)	24.9 (1.8)	27.7 (1.6)	31/31 (100)
	Summer[4]	31	28.9 (1.8)	25.9 (1.1)	27.1 (2.3)	31/31 (100)

	Winter[5]	31	25.9 (1.3)	27.3 (1.5)	27.1 (0.9)	31/31 (100)

[1] Day 0 (RT) = within 2 hours of collection at room temperature shipping conditions
[2] Day 3 (RT) = 72 hours at room temperature shipping conditions
[3] Day 5 (RT) = 120 hours at room temperature shipping conditions
[4] Testing performed at the conclusion of the thermal excursions described in Table 2
[5] Testing performed at the conclusion of the thermal excursions described in Table 3
[6] Und = Undetermined value (no detectable Ct value)

These results demonstrate that SARS-CoV-2 RNA positive saliva specimens are stable in the OMNIgene·ORAL OM-505 collection device when exposed to a broad range of temperature conditions. P23 Labs TaqPath SARS-CoV-2 Assay performance was equivalent when using saliva collected in OM-505 and spiked with SARS-CoV-2 RNA versus patient self-collected saliva in the OM-505 while under HCP supervision. These data support the use of the OMNIgene·ORAL saliva collection devices (both OM-505 and OME-505) for transport and storage of saliva specimens at room temperature for 72 hours.

2) <u>Self-Collection Validation/Usability Study</u>:

A usability study was previously conducted to assess user comprehension of the Oragene Dx OGD-500 collection instructions. The OMNIgene•ORAL OM-505 device contains the same physical components and collection procedure as the Oragene·Dx family of devices; therefore, testing of Oragene·Dx is referenced to fulfill usability performance requirements. Please see K141410 and K192920 for usability and human factors evaluation that can be applied to the OMNIgene·ORAL saliva collection devices.

3) <u>Clinical Evaluation; Paired NP Swab and Saliva Clinical Study</u>

a. *Please see EUA summary for the P23 At-Home COVID-19 Test Collection Kit for use with the P23 Labs TaqPath SARS-CoV-2 Assay.*

A study was performed to evaluate the use of saliva as a specimen type for detection of SARS-CoV-2 in patients who were suspected of COVID-19 by their healthcare provider. The study was conducted with symptomatic patients from one ambulatory care center who were each provided with instructions for self-collection of saliva using the OMNIgene·ORAL OM-505 collection device (included in the P23 At-Home COVID-19 Test Collection Kit). Self-collection of saliva samples was performed under the observation of a healthcare provider, without intervention, who subsequently (within 10 minutes) also collected a nasopharyngeal swab (NP) from each patient for parallel testing for SARS-CoV-2. Patients were given the option to ask the HCP for assistance or to complete the collection, if they had remaining questions not covered by the instructions. For this study, patients with previously detected SARS-CoV-2 positive results were re-tested between 7-21 days of an initial positive test using paired samples collected in the clinic as previously described within 10 minutes of each other. Both the saliva and swabs were transported at ambient temperature and tested using the P23 Labs TaqPath SARS-CoV-2 Assay within 48 hours of collection. There was 100% positive and negative percent agreement between the results

obtained from testing of saliva and those obtained from nasopharyngeal swabs (See Table 6 below).

Table 6. Summary of Qualitative Results Obtained from Parallel Testing of Nasopharyngeal Swab Samples and Saliva Collected in the OM-505 with the P23 Labs TaqPath SARS-CoV-2 Assay

		Nasopharyngeal Swab		
		Positive	**Negative**	**Total**
Saliva Collected in the OM-505	**Positive**	31	0	31
	Negative	0	11	11
	Total	31	11	42
Positive Percent Agreement		100% (31/31); 88.98-100.00%[1]		
Negative Percent Agreement		100% (11/11); 74.12-100.00%[1]		

[1]Two-sided 95% score confidence intervals

b. *Please see EUA summary for the CRL COVID-19 Self Collection Testing Kit for use with the CRL Rapid Response test by the Clinical Reference Laboratory, Inc.*

A study was performed to evaluate the use of saliva as a specimen type for detection of SARS-CoV-2 in patients who were suspected of COVID-19 by their healthcare provider. Thirty-two COVID-19 positive individuals were enrolled in the study. Positivity for SARS-CoV-2 was established by nasopharyngeal (NP) swab tested with an FDA EUA authorized molecular diagnostic assay. Saliva was collected from enrolled patients 1-3 days after the NP swab was collected. Participants self-collected the saliva sample using the OMNIgene·ORAL OM-505 device with no guidance, while under observation by the healthcare professional. Saliva was tested using the CRL Rapid Response test at Clinical Reference Laboratory, Inc. Saliva was transported at ambient temperature and tested within 48 hours of collection.

In addition to the positive samples, 27 negative saliva samples were collected with 100% negative percent agreement between the comparator EUA-RT-PCR assay(s) used to test the NP swabs and the saliva samples tested with the CRL Rapid Response.

Table 7. Summary of Qualitative Results Comparing Saliva Tested with the CRL Rapid Response Test and the NP Swab Tested with an FDA EUA Authorized RT-PCR Assay

		FDA EUA Authorized Comparator (Nasopharyngeal Swab)		
		Positive	**Negative**	**Total**
CRL Rapid Response Test (Saliva Collected in the OM-505)	**Positive**	32	0	32
	Negative	0	27	27
	Total	32	27	59
Positive Percent Agreement		100% (32/32); 89.11-100.00%[1]		

Negative Percent Agreement	100% (27/27); 87.23-100.00%[1]

[1]Two-sided 95% score confidence intervals

WARNINGS:

- This sample collection device has not been FDA cleared or approved.
- This sample collection device has been authorized by FDA under an EUA.
- This sample collection device has been authorized only to collect, stabilize, and maintain during transport, saliva specimens suspected of containing SARS-CoV-2 ribonucleic acid (RNA), not for any other viruses or pathogens.
- This sample collection device is only authorized for the duration of the declaration that circumstances exist justifying the authorization of emergency use of medical devices for detection and/or diagnosis of COVID-19 under Section 564(b)(1) of the Federal Food, Drug and Cosmetic Act, 21 U.S.C. § 360bbb3(b)(1), unless the authorization is terminated or revoked sooner.