# Inactivir® Viral Inactivation Buffer Selection Guide

The Inactivir® range of Viral Inactivation Buffers have been developed to be used in sample tubes to inactivate viral pathogens that are present in patient or other potentially pathogenic samples.
The inactivation of viral pathogens on sample collection using Inactivir® will facilitate risk assessments that reduce the requirement for Category 2+/3 handling of potentially pathogenic samples, increasing both the safety of workers and the speed and ease of testing.

A range of Inactivir® buffers are available that have been optimised for specific use cases. This guide will help in the selection of the most appropriate buffer for your use case.

## Core Inactivation Buffers

**Inactivir® PLUS** is a guanidine-based buffer, augmented by REACH-compliant detergent. This is based on published work demonstrating complete viral inactivation of SARS nCoV-19, Ebola, Influenza A & B, RSV and a wide range of other viruses. The UK Government has approved the use of detergent-supplemented guanidine-based buffers for viral inactivation in monkeypox diagnostic testing
https://www.gov.uk/guidance/monkeypox-diagnostic-testing

This buffer is REACH compliant and features an improved buffer system for stabilisation of RNA in samples.

**Inactivir® SD LITE** is a non-guanidine buffer that is based on established inactivation principles used in production of human products for several decades with no evidence of viral transmission through those products in the entire timescale. Specific testing has shown inactivation of a wide range of viruses including SARS nCov-19. This buffer is designed for Point of Care (POC) or near-POC testing, with minimal additional components that could interfere with downstream testing. It does not stabilise RNA within samples and is suited for immediate testing use.

**Inactivir® SD COMPLETE** has the same non-guanidine inactivation system, but additionally contains buffer components that inactivate nucleotide degrading enzymes including RNAses. It therefore stabilizes samples to allow remote testing away from the site of sampling.

**Inactivir® SDI** includes an additional chaotrope along with the non-guanidine inactivation system. This provides excellent stability for samples and allows the sample to be used directly in silica-based purification systems.



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The following table summarises key properties of **Inactivir®** buffers.

| Buffer | Product Code | Guanidine-based | Suitable for 'direct-to-PCR' or 'direct-to-LAMP' assays | Compatible with 'direct to RNA purification' | Stabilize RNA |
|---|---|---|---|---|---|
| **Inactivir® PLUS** | **VIB-002** | **X** | | **X** | **+++** |
| **Inactivir® SD LITE** | **VIB-003** | | **X** | | **-** |
| **Inactivir® SD COMPLETE** | **VIB-004** | | **X** | | **++** |
| **Inactivir® SDI** | **VIB-005** | | | **X** | **+++** |

**Inactivir®** buffers containing chaotrope will denature nucleases and stabilise samples until extracted (+++ for stabilisation). **VIB-004 Inactivir® SD COMPLETE** contains a proprietary stabilisation buffer that provides protection against nuclease degradation but does not fully denature nucleases (++ for stabilisation).

**VIB-003 Inactivir® SD LITE** does not contain any stabilising agents (- for stabilisation).

All buffers are mucolytic and show rapid reduction in viscosity of saliva and sputum samples when mixed at up to a 1:3 ratio of sample to buffer.

**VIB-002 Inactivir® PLUS** and **VIB-005 Inactivir® SDI** allow samples to be added directly to silica-based nucleic-acid purifications. These have been validated with both column and magnetic-bead based methods. This means the amount of sample used in the purification can be doubled, as there is no need to add binding buffer in the first step of processing. This will increase sensitivity as twice the amount of sample is purified.

**VIB-003 Inactivir® SD LITE and VIB-004 Inactivir® SD COMPLETE** are capable of being used in some 'direct to PCR' assays. Testing has shown compatibility with standard RT-QPCR reactions for SARS nCoV-19 with addition of 2.5 ul per 20 ul reaction with some manufacturer mastermixes. They have both also been validated for direct-to-LAMP testing methods using published NEB primers and mastermix.

## Specialist Application Inactivation Buffers

**Inactivir®** buffers have been further optimised for specific applications in saliva and 'direct-to' LAMP testing. These mixes are based on the same viral inactivation system as the core buffers, but with changes in the buffers, additives, and concentrations to better suit specific applications.



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| Buffer | Product Code: | Stabilise RNA | Enhanced mucolytic buffer | Enhanced buffer for 'direct-to-LAMP' assays | Maximum sample to buffer ratio |
|---|---|---|---|---|---|
| Inactivir® SDT | VIB-007 | - | | X | 1:3 |
| Inactivir® SDT COMPLETE | VIB-008 | ++ | | X | 1:3 |
| Inactivir® SD Saliva | VIB-009 | ++ | X | | 1:3 |
| Inactivir® SD Saliva 2X | VIB-010 | ++ | X | | 1:1 |
| Inactivir® SD Saliva 3X | VIB-011 | ++ | X | | 2:1 |

**VIB-007 Inactivir® SDT** and **VIB-008 Inactivir® SDT COMPLETE** are equivalents of VIB-003 Inactivir® SD LITE and VIB-004 Inactivir® SD COMPLETE respectively, but with buffer systems that are optimised for colorimetric 'direct-to-LAMP' assay systems.

**VIB-009 Inactivir® SD Saliva,** along with **VIB-010 Inactivir® SD Saliva 2X** and **VIB-011 Inactivir® SD Saliva 3X** are inactivation buffers with an enhanced mucolytic system for saliva samples. To optimise the collection of samples the 3 buffers are designed to work at different buffer to sample ratios varying from a **3:1 buffer:sample ratio for VIB-009** Inactivir® SD Saliva, to a **1:1 ratio for VIB-010** Inactivir® SD Saliva 2X and a **1:2 ratio for VIB-011** Inactivir® SD Saliva 3X.

## Custom Inactivation Buffers

Life Science Group has an active product development team for Viral Inactivation Buffers, working in collaboration with the University of Bedfordshire. Please contact the company to discuss your inactivation buffer needs or to receive further information concerning any of the above listed products.

## Registration

All Inactivir® products are registered as a medical device with MHRA



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