

# DNA Swabs and Sample Handling

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**Isoheliix**<sup>TM</sup>  
DNA/RNA Sampling and Purification

*We Bring The World Of Biotechnology To You*  
**BOCA  
SCIENTIFIC**

# DNA Buccal Swabs DNA Stabilization and Isolation Kits

## Isohelix: An Integrated Nucleic Acid Strategy

Each Isohelix product has been specifically designed and developed to improve all the DNA/RNA sampling steps from sample collection and stabilisation using Isohelix buccal swabs, right through to processing and isolation.

We have taken an integrated approach by looking at each individual step to improve yields, reduce sample losses and at the same time improve the handling procedures, the result maximises yields and quality of DNA/RNA.

## Smarter Collection using Isohelix DNA/RNA Buccal Swabs

The Isohelix range of Buccal Swabs has been designed to give increased yields of high quality buccal cell and genomic DNA and RNA. Buccal cell sampling offers a viable alternative to blood collection and, together with the Isohelix range of DNA Isolation and Stabilization kits, enables high yields of pure, intact DNA to be collected easily and quickly.

Isohelix swabs are suitable for both human and veterinary use and offer significant advantages over other swab designs in terms of efficiency of cell collection by the unique swab matrix, which combined with a quick release surface, maximises yields of nucleic acids. Swab batches are ethylene oxide treated and routinely tested for human DNA contamination.

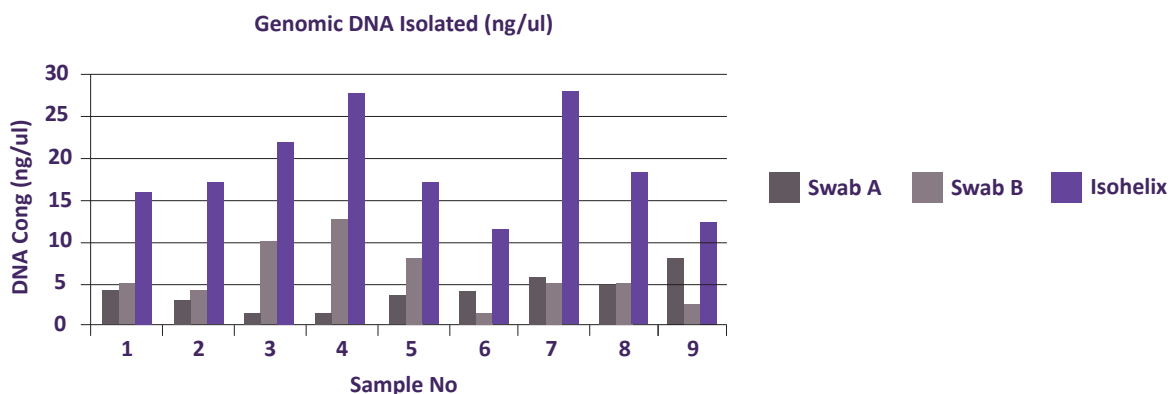
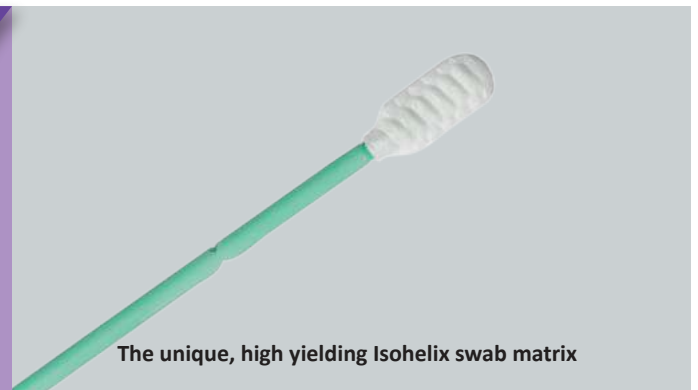
### Key benefits:

- ✓ High yielding buccal DNA/RNA collection
- ✓ Unique swab matrix greatly improves yields
- ✓ Simple, non-invasive alternative to blood
- ✓ Suitable for human and veterinary use
- ✓ Easy to handle and quick to use



### Isohelix swabs are used in:

- ✓ Research Genotyping Applications
- ✓ Veterinary Genotyping and Diagnostics
- ✓ Paternity and Heredity Services
- ✓ Forensics and DNA Population Studies



Comparison studies with other swab brands show greater average yields are achieved using Isohelix swabs

# DNA/RNA Buccal Swabs

## SK-1S Isohelix Swab Cat. No: SK-1S

The SK-1S swab uses Isohelix’s unique swab matrix design to efficiently collect buccal cell samples. Following sampling, simply snap the shaft just above the swab head and place into the tube provided, then seal for containment. Combine with Isohelix Dri-Capsules for an all-in-one collection and stabilisation solution.

### Key benefits:

- ✓ Swab matrix significantly improves DNA yields
- ✓ Various formats available with/without tubes
- ✓ Available in single and twin sterile packs
- ✓ Safe alternative to blood collection









The SK-1S swab includes 5ml tube and cap

## SK-2S Isohelix Swab Cat. No: SK-2S





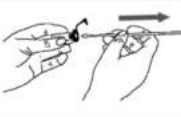

The SK-2S has the same features as the SK-1S, except that it includes a unique cap design which allows you to simply push the entire swab head from off the shaft into the collection tube after sampling. This format has the advantage of being easier to manipulate at the isolation stage, whether using manual or high-throughput extraction methods.



## Instructions for Isohelix SK-1S, SK-3S, SK-4S and SK-5S Buccal Swabs

<b>1</b>		Pull open the package from one end.
<b>2</b>		Remove the swab from the tube, taking care not to touch the white swab head with your fingers
<b>3</b>		Insert the swab into your mouth and rub firmly against the inside of your cheek or underneath lower and upper lip. For standard DNA collection rub for <b>1 minute</b> and in all cases rub for a minimum of 20 seconds. <b>Important – use reasonable, firm and solid pressure</b>
<b>4</b>		Place the swab back into the tube. Do not touch the swab head with your fingers
<b>5</b>		Place your thumbnail in the small groove set in the handle, then snap the handle in two by bending to one side. Let the swab head fall into the tube.
<b>6</b>		Seal the tube securely with the cap provided.

## Instructions for Isohelix SK-2S buccal Swabs

<b>1</b>		Pull open the package from one end.
<b>2</b>		Remove the swab from the tube, taking care not to touch the white swab head with your fingers
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<b>4</b>		Slide the plastic cap over the swab handle with the flat side of the cap facing upwards and the swab facing downwards.
<b>5</b>		Insert the swab into the clear plastic tube and push the cap into place. Next, hold the cap while pulling the swab handle outwards to release the swab material into the tube.
<b>6</b>		Close the cap by pushing the stopper fully into the cap ensuring the stopper is flush with the cap. The tube is now completely sealed.

## Other Isohelix Swab Formats

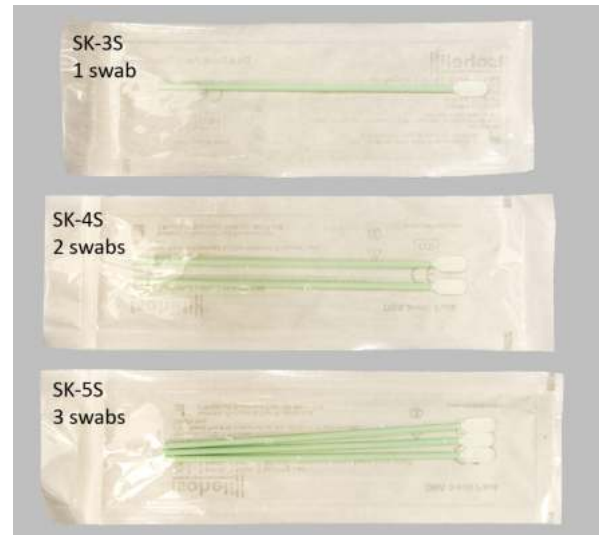
### SK3, SK4 and SK5 swab formats

<b>Cat. No: SK-3S</b>	<b>1 swab per wrapper</b>
<b>Cat. No: SK-4S</b>	<b>2 swabs per wrapper</b>
<b>Cat. No: SK-5S</b>	<b>3 swabs per wrapper</b>

The SK-3S, SK-4S and SK-5S formats all use the same swab design and materials used in the SK-1S and SK-2S formats, and have exactly the same advantages for efficiently collecting buccal cell samples.

Like the SK-1S you can quickly snap the shaft at the breakpoint if you wish to store the swab in a tube.

If this is your preferred method, Isohelix has available pre-capped tubes that can be ordered with these formats.



### MS Mini DNA Isohelix Swabs

**Cat. No: MS-01 / MS-02 / MS-03 / MS-04**

The MS-01, MS-02, MS-03, MS-04 Mini DNA Isohelix Swabs use exactly the same matrix material as the SK swabs so there is significant history of use, but have reduced dimensions and area. The width of the swab has been reduced from 8mm to 6mm and employs a slightly different shaft attachment enabling yields close to the SK swabs. The swabs are Ethylene Oxide treated and are available in different swabs numbers per wrapper, the break point has been reduced compared to the SK swab allowing it to be used in smaller tubes.

#### Applications

Small Mammals, other Animals and Invertebrates. Particularly of interest for Mice Genotyping. Automation friendly.

#### Key benefits:

- ✓ Smaller surface area size
- ✓ Very high pro rata DNA yields
- ✓ Fits smaller tubes so can be 96 racked
- ✓ Lower break point to fit shorter tubes
- ✓ Uses identical swab material to SK series



### Additional swab applications

Whilst the Isohelix DNA buccal swabs have been designed for buccal applications, they have also been used extensively in many other applications including:

- Skin
- Hard Surface Sampling
- Teeth and Gums
- Tongue
- Stool/Faecal

If you have queries on any other tissue or sampling area please refer to Isohelix for further information.



# Buccal Swab & Stabilization

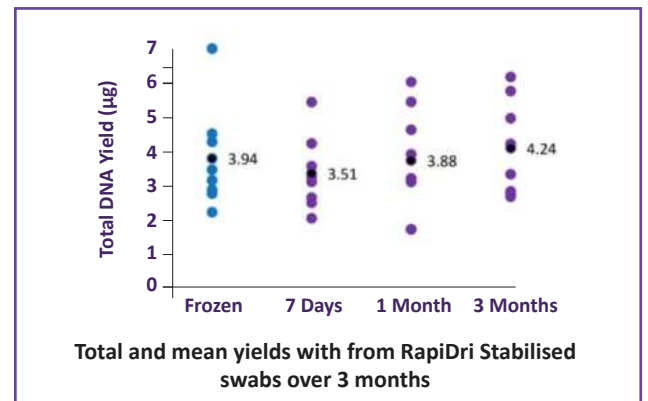
## RapiDri™ Swab Kits

**Cat. No: RD-01**

The new RapiDri™ Swab kit uses the widely published Isohelix DNA Buccal swab, which offers real benefits for high DNA yields, CE/IVD registration, ease of use and universal compatibility for DNA extraction, together with the latest microporous and moisture wicking properties of the RapiDri™ Pouch, and a barcoded sealing label for sample tracing.

Once placed into the RapiDri™ pouch, the microporous membrane quickly and actively dries the swab. This in turn fully stabilizes the DNA on the swab matrix, thereby protecting the DNA, maximising its yield and integrity. In our laboratories the stability and DNA preservation has been tested to be at least 3 months at ambient and in many cases considerably longer.

The RapiDri™ pouch also protects the DNA from cross contamination both by acting as a physical transport pack to protect the DNA sample. The pouch actively repels any accidental wetting from the outside due to its hydrophobic structure, which resists any possible backward cross flow contamination.



## Automation – Friendly Swab

**New design swab cap suitable for automated decapping and liquid handling systems**

The New automation swab and tube kit is designed for automated sample processing, including automated decappers. The unique cap grips the swab handle when the tube is sealed, removing the swab from the tube when the sample is de-capped.



**New design swab cap suitable for automated decapping and liquid handling systems**

## Isohelix Dri-Capsules with SK-1S Swab pack

**Cat. No: SGC-50**

Designed for use with Isohelix SK-1S swabs, these silica gel capsules offer an easy to use alternative to chemical stabilization for long term stability of the buccal DNA on the swab head prior to isolation.

### Key benefits:

- ✓ 3+ years stability at room temperature
- ✓ Liquid free alternative to BuccalFix
- ✓ Easy to handle by patients and professionals



**Isohelix Dri-Capsules with SK-1S Swab pack**

# Buccal Swab Stabilization

## BuccalFix Stabilization and Lysis Buffers

### Cat. No: BFX

The Isohelix BuccalFix range of stabilizing buffers are designed to completely stabilize the DNA in samples from DNA buccal swabs by inhibiting all enzymatic and microbial activity that occurs following any buccal sampling.

The DNA is fully stabilized and importantly, the structure and integrity of the DNA is fully maintained for further downstream processing applications. Once stabilized the DNA can be stored in the BuccalFix at Room Temperature for periods in excess of 2 years, and then easily be processed for DNA isolation by the addition of Proteinase K and subsequent isolation steps. The BuccalFix buffers are offered in bulk, as well as pre-filled into various tube formats to suit both manual and more automated applications where 1D and 2D bar coding, and auto de-cap options are valuable. Additionally the new MS mini swabs will fit into the smaller tubes where 96 tube racking is crucial.

### Key benefits:

- ✓ Stabilizes your DNA long term
- ✓ Maintains DNA structural integrity
- ✓ Improves DNA yields and purity
- ✓ Room temperature storage
- ✓ Choice of collection tubes – anal/HT
- ✓ Accommodates various swabs designs
- ✓ Compatible with most DNA Isolation Kits



BuccalFix Pre-Filled Stabilization tubes and SK-3S swabs

## StoolFix Gut Microbiome Stabilization Kit

### Cat. No: STF

The new StoolFix™ Gut Microbiome Collection and Stabilization prefilled tubes use the latest Isohelix DNA Stabilization chemis-try, fully optimized for fecal microbiome DNA.

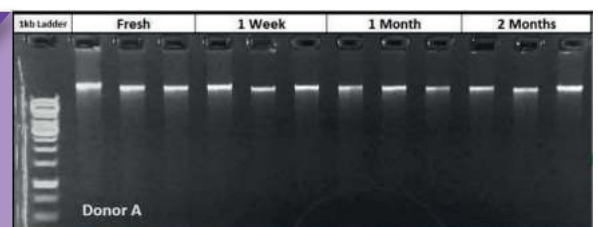
To minimize sample handling, the Isohelix DNA swabs are used to collect and transfer the sample into prefilled tubes containing the StoolFix™ buffer. Once sealed, the buffer protects the integrity of DNA and maximizes yield at room temperature. The robust tube is well suited to shipping and combined with a suitable shipping pouch meets international sample shipping guidelines.

### DNA Isolation

The StoolFix buffer is widely compatible with DNA Isolation kits, and works particularly well in conjunction with the Isohelix BuccalFix Plus kit **BFP-50**.

### Features

- ✓ Ambient Stability
- ✓ Isohelix Swab matrix maximizes yield
- ✓ Minimized handling
- ✓ Rapid stabilization
- ✓ Easy to use
- ✓ Transport tested
- ✓ Automation Friendly



1.0% Agarose gel of 1ng/μl DNA purified from fecal samples stored in StoolFix solution at time points from 0 days to 2 months

# Buccal RNA Stabilization

## BuccalFiX RNA Stabilization & Lysis Kits

Cat. No: RFX

The new BuccalFiX RNA Stabilization and lysis kits use all the Isohelix expertise and innovation to apply the same benefits of the DNA stabilization kits to RNA samples.

Simply collect the sample using the supplied flock swabs and snap the swab head into the tube. The non-toxic buffer stabilizes RNA and DNA for 2 weeks at room temperature.

### Features

- ✓ Stabilizes all RNA species
- ✓ 2 Weeks room temperature stability
- ✓ Suitable for field, home use or clinic sampling
- ✓ Instant stabilization
- ✓ Easy to use
- ✓ Transport tested to 95kPa
- ✓ Compatible with all isolation kits (proteinase k supplied)



## Isohelix BEK Single Step/Single Tube DNA Release Kit

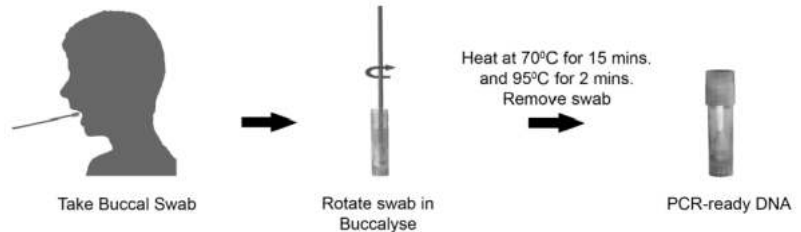
Cat. No: BEK-50

The Isohelix Buccalyse DNA Release Kits produce high DNA yields from buccal swabs (2 to 4µg average total yield from an adult) offering significant advantages of ease of handling, speed and simplified sample preparation with rapid extraction of PCR-ready DNA using a single tube method not requiring centrifugation.

### Key benefits:

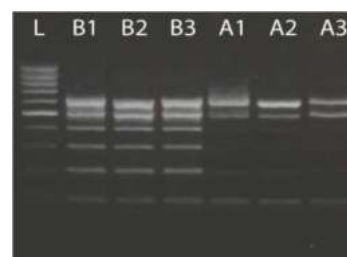
- ✓ Quick and easy, single tube/single step kit
- ✓ PCR-ready DNA in under 20 minutes
- ✓ DNA suitable for simple and multiplex PCR
- ✓ Ideal for qPCR DNA samples
- ✓ Outperforms alternative single tube kits
- ✓ Suitable for high throughput and robotics
- ✓ Developed for DNA buccal swabs

### Buccalyse kit instructions



## Comparison of Buccalyse to an alternative single tube kit

The gel shows good quality, intact DNA released from 3 Buccalyse samples, and its superior performance against alternative single tube kits, in terms of quality and quantity of the DNA as demonstrated using a PCR quality check kit.



L = 100bp Ladder  
B1 = Buccalyse sample 1  
B2 = Buccalyse sample 2  
B3 = Buccalyse sample 3  
A1 = Alternative sample 1  
A2 = Alternative sample 2  
A3 = Alternative sample 3

## Buccal DNA Isolation Kits

### BuccalFix Plus DNA Isolation Kit

Cat. No: BFP-50

The BuccalFix Plus DNA Isolation Kits are designed to easily and quickly purify DNA already stored in BuccalFix Stabilization buffers. The kit comes with all the reagents required to perform the necessary isolation steps, including Proteinase K, to produce DNA with high yields and purity for all downstream processing applications. The protocol is extremely flexible and easily adjusted, especially if there are varying volumes to be purified. The average processing time for 0.5ml is well under 1 hour, and no solvents, alcohol or other buffers are required.

Swab	A260/280	A260/230	DNA yield $\mu\text{g}$
1	1.81	1.96	2.94
2	1.76	1.64	4.95
3	1.85	1.59	2.52
4	1.75	1.68	5.28
5	1.86	2.14	3.12
6	1.79	1.52	1.99
7	1.86	1.41	2.63
8	1.84	1.53	8.22
9	1.79	2.03	3.11

Table shows Purity Ratios from 9 single adult swabs stabilized in BuccalFix and isolated through the BuccalFix DNA Isolation Kit. DNA yields measured by Qubit dsDNA BR assay.

#### Key benefits:

- ✓ Specifically Designed for DNA Buccal Swabs.
- ✓ Can be scaled up or down for varying volumes.
- ✓ Gives extremely high yields and purity ratios
- ✓ Rapid and Easy to Use working protocols
- ✓ Can be used for manual or automated formats
- ✓ No Solvents or Ethanol

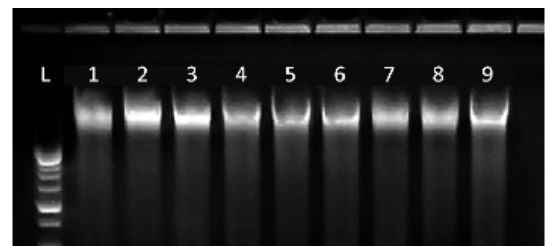


BuccalFix Plus includes all required reagents to isolate high quality DNA from BuccalFix stabilized swabs

### Buccal-Prep Plus DNA Isolation Kit

Cat. No: BPP-50

The Buccal-Prep Plus DNA Isolation Kit is our very latest precipitation based chemistry combining all the optimized buffers to fully lyse and simply purify DNA from Buccal swabs. The kit provides a fast protocol to produce high yields and purity for all downstream processing applications. No solvents, alcohol, or other external buffers are required yet there are few processing steps thus creating a fast and easy cycle process time.



High molecular weight genomic DNA isolated from buccal swabs using the Buccal-Prep Plus DNA kit

#### Features

- ✓ Latest optimized chemistry for highest purities
- ✓ Includes the Lysis and Stabilization buffers
- ✓ High purity values as measured by A260/280
- ✓ High yields of intact DNA with negligible RNA
- ✓ All the same advantages as BuccalFix Plus kits



BuccalPrep Plus includes all reagents required to lyse and fully purify buccal DNA



## Other Buccal DNA Kits

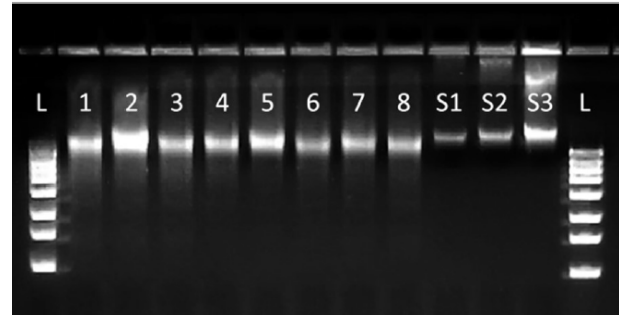
### Isohelix Xtreme DNA Kit

**Cat. No: XME-5/50**

The Isohelix Xtreme DNA kit is a silica membrane based spin column DNA purification kit designed to isolate highly purified, high molecular weight genomic DNA from buccal swabs, with minimal losses. The DNA is suitable for use in even the most demanding downstream applications.

Swab	Yield in ug (by Qubit dsDNA BR assay)	A260/280	A260/230
1	2.44	1.83	2.65
2	2.6	1.86	2.91
3	1.84	1.82	3.42
4	2.34	1.86	3.32
5	2.38	1.94	3.56
6	1.85	1.78	1.90
7	2.26	1.94	3.51
8	1.86	1.85	1.92

Table shows Samples 1 – 8: Xtreme isolated Isohelix buccal swabs



High molecular weight, intact DNA from Xtreme DNA Kit. S1, S2 & S3: Commercial Human Genomic DNA @ 7.5, 15 & 30ng/μl

#### Features

- ✓ Very high purity DNA
- ✓ DNA free from trace PCR inhibitors
- ✓ Optimized for buccal DNA
- ✓ Manual or high throughput formats
- ✓ No solvent based chemicals
- ✓ Maintains integrity of the genomic DNA
- ✓ Improved success in the more demanding downstream applications



Xtreme DNA Isolation kit includes high performance cartridges

### Isohelix BuccalMag Kit

**Cat. No: BMG-50**

The Isohelix BuccalMag kit for buccal swabs DNA Isolation offers a fast and reliable methods especially useful for medium to high throughput applications.

The kits contain high binding capacity magnetic beads with a large surface area for fast attachment that enables rapid isolation of intact genomic DNA from DNA Buccal Swab.

As with all Isohelix DNA kits, no harmful or toxic buffers are used, to allow safe, straightforward and variable sample processing volumes.

#### Key benefits:

- ✓ Fast, Reliable Purification
- ✓ Medium – High Throughput
- ✓ High Binding capacity beads
- ✓ Variable Sample Volumes
- ✓ Non-Toxic buffers



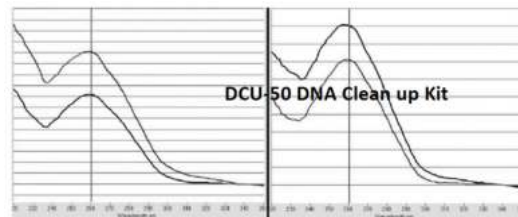
Isohelix Magnetic Rack

# DNA Accessories

## DNA Clean Up Kit

The DNA CleanUp kit is designed as a valuable secondary isolation step, to specifically improve the purification profile of DNA from saliva and buccal samples that might have been contaminated due to poor sampling techniques or non-optimized DNA Isolation kits.

Right: Nanodrop scan before and after DCU Clean-up, showing improved sample purity



### Key benefits:

- ✓ Rescues poor samples
- ✓ Preserves yields
- ✓ DNA from any source



DCU-50 DNA Clean up Kit

## Buccal Swab Accessories

**Spin + Collect Sample Recovery** a novel sample recovery device to increase sample yields from swabs and other materials.

Simple to operate, the Spin+Collect firmly grips the swab or other material whilst exposing maximal surface area for the first step of elution or lysis of the sample. A 1.5ml microfuge tube is then fitted as a cap and inverted for centrifugation and final release of any sample trapped in the matrix.

### Key benefits:

- ✓ 25% yield increase
- ✓ Recovers sample deeply embedded in the matrix
- ✓ Single centrifuge step
- ✓ Disposable and packaged aseptically
- ✓ Tested for hDNA contamination



Spin + Collect Sample Recovery Device



Spin + Collect Sample Recovery Device requires a single centrifugation step



Triplicate barcodes and Transport Pack

**Transport packs** (Cat. No: TP-50) including outer printed bag with absorbent pads for shipping buccal swabs. UN3733 compliant.

**Bar-Coded Labels** (Cat. No: BC/3A/50) pre-printed in triplicate, 25 x 10mm on cryogenic labels, easily attached to tubes and paperwork for identification.

**Proteinase K** (Cat. No: PK/22, PK/11) lyophilized in 22mg and 11mg vial sizes.

# Isohelix Catalogue

Cat No	Description
<b>Isohelix Swab and DNA Sample Handling Products Catalogue</b>	
SK-1S	100 x 1 swab with 5ml tube and cap, individually wrapped and ethylene oxide treated.
SK-2S	100 x 1 swab with 2ml tube and special release cap, individually wrapped and ethylene oxide treated.
SK-3S	250 x 1 swab individually wrapped and ethylene oxide treated.
SK-4S	500 swabs, 250 x 2 swabs per wrapper, ethylene oxide treated and packed 250 units to a box.
SK-5S	600 swabs, 200 x 3 swabs per wrapper, ethylene oxide treated and packed 200 units to a box.
MS-01	Mini Swabs - 100 x 1 swab with 5ml tube, individually wrapped and ethylene oxide treated.
MS-02	Mini Swabs - 250 x 1 swab individually wrapped and ethylene oxide treated.
MS-03	Mini Swabs - 250 x 2 swabs per wrapper, ethylene oxide treated.
MS-04	Mini Swabs - 200 x 3 swabs per wrapper, ethylene oxide treated.
RD-01	200 x Isohelix Swab with RapiDri Pouch and Barcode, Individually wrapped and Ethylene Oxide treated
<b>Buccal Swab Stabilization</b>	
SGC-50	50 x Isohelix Dri-Capsules for long term DNA stability on SK1 swabs. Individually foil wrapped.
BFX/S1/05/50	50 x BuccalFix tubes using Sarstedt 2ml screw cap tubes pre-filled with 0.5ml BuccalFix DNA stabilization buffer
BFX/F3/05/50	50 x BuccalFix tubes using FluidX 2ml bulk packed bar-coded tubes, pre-filled with 0.5ml BuccalFix DNA stabilization buffer
STF/S1/05/50	50 x StoolFix tubes using Sarstedt 2ml screw cap tubes pre-filled with 1ml StoolFix stabilization buffer
RFS/S1/05/50	50 x BuccalFix tubes using Sarstedt 2ml screw cap tubes pre-filled with 0.5ml BuccalFix RNA stabilization buffer
<b>DNA Isolation and Handling Kits</b>	
XME-50	Xtreme DNA Kit for isolating purified DNA from buccal swabs using spin column technology. For 50 reactions.
BFP-50	BuccalFix Plus DNA Isolation kit for isolating purified DNA from buccal swabs stabilised in BuccalFix tubes. 50 reactions.
BPP-50	Buccal-Prep Plus DNA Isolation Kit – full precipitation based kit for isolating purified DNA from buccal swabs. 50 reactions.
BEK-50	Buccalyse DNA Release Kit – a quick and simple one tube method for releasing DNA from buccal swabs for 50 reactions.
BFX-25	BuccalFix stabilization buffer bulk pack. 25ml, sufficient for stabilising 50 buccal swabs.
BMG-50	BuccalMag DNA Isolation kit – magnetic bead separation for 50 samples
<b>Sample size kits Available</b>	
<b>Accessories</b>	
TP-50	50 Transport Packs with absorbent pads for shipping buccal swab samples
BC/3A/50	50 x 3 triplicate Pre-Printed barcodes 25mm x 10mm printed on cryogenic labels
SC/ST-100	100 x Spin+Collect devices, 5 per bag with 100 x 1.5ml matched tubes
PK/22	22mg Lyophilised Proteinase K – fully tested with instructions
PK/11	11mg Lyophilised Proteinase K – fully tested with instructions



View all Isohelix products at [www.bocascientific.com](http://www.bocascientific.com)

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