11 Cryotechnics

Cryotechnics

For freezing samples, Greiner Bio-One offers a user-friendly system that includes a variety of different CE-marked Cryo.s™ with an appropriate support rack.

Cryo.s™ are suitable for storage of cell cultures, tissue samples, microbiological samples (e.g. viruses, bacteria, yeast and other fungi, spores), material of human or animal origin, such as blood, serum and sperm as well as antibodies, RNA, DNA and protein samples. (Cryo.s™ are not intended for sample storage within reproductive medicine.)

Our wide selection of Cryo.s™ products includes freezing tubes with different volumes, different base forms, as well as several cap colours. Identification and labelling of the samples is achieved by a choice of coloured screw caps and a white, scratch-resistant writing area. Additional white cap inserts are enclosed in each sales pack for labelling on the cap.

In addition, Cryo.s™ with Datamatrix (→ p. 11 I 7) and the Datamatrix Cryo Rack (→ p. 11 I 8) following the ANSI plate standard are optimum solutions for semi-automated and automated processes in sample management and biobanking.

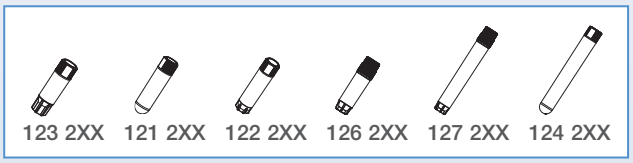
Finally, Greiner Bio-One offers a range of accessory equipment for work with Cryo.s™ and for their storage, such as a support rack (→ p. 11 I 5) and a Cryo Storage Box (→ p. 11 I 6) providing space for 81 Cryo.s™.

Cryo.s™ are made of polypropylene which is characterised by high thermal resistance in a temperature range from -196 °C to +121 °C.

The direct storage of tubes in liquid nitrogen is in general a safety hazard. As a safety precaution, Cryo.s™ must be stored in a freezer or exclusively in the gas phase over the liquid nitrogen.

Cryo.s™ from Greiner Bio-One are

- Sterile
- Free of detectable endotoxins
- Non-cytotoxic
- Free of detectable DNase, RNase, human DNA
- Available in different sizes
- Supplied with an internal thread for 1 ml, 2 ml and 5 ml or with an external thread for 2 ml and 4 ml
- Also available without a starfoot base
- Available with white, scratch-resistant writing area
- Available with coloured screw caps for easier identification of samples



!

Cryo.s™ must be evenly exposed to freezing temperatures.
→ Detailed freezing protocol in the Technical Appendix.
Please also follow the warning note / documentation provided within each box.

Cryo.s™

Cryo.s™ 1 ml and 2 ml

Cryo.s™
1 ml and 2 ml

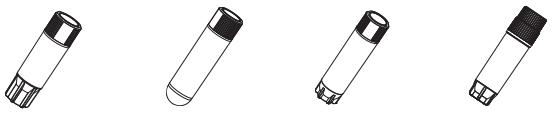
- Datamatrix Codes on Cryo.s™ p. 11 I 7
- Linear Barcodes on Cryo.s™ p. 14 I 4
- Freezing Protocol, Technical Appendix

- CE-marked
- High thermal resistance
- Cap inserts
  Cat.-No. 304 171
  (50 pieces per bag)
- Cryo.s™ with internal thread have a silicone gasket

CE | IVD | Free of detectable DNase, RNase, human DNA | non-pyrogenic | non-cytotoxic

	Description	Cryo.s™ 1 ml	Cryo.s™ 2 ml	Cryo.s™ 2 ml	Cryo.s™ 2 ml
	Working volume [ml]	1 – 1.2	1.8 – 2.0	1.8 – 2.0	up to 2.2
	ø [mm] x height*) [mm]	12.5 x 42	12.5 x 48	12.5 x 48	12.4 x 47
	Starfoot	+	-	+	+
	Bottom	conical	round	round	round
	Thread	internal	internal	internal	external
	Sterile	+	+	+	+

*) total height incl. lid



COLOUR	Natural,	without writing area	Cat.-No.	123 261	121 261	122 261	126 261
	Natural,	with writing area	Cat.-No.	123 263	121 263	122 263	126 263
	Green,	with writing area	Cat.-No.	123 277	121 277	122 277	126 277
	Yellow,	with writing area	Cat.-No.	123 278	121 278	122 278	126 278
	Blue,	with writing area	Cat.-No.	123 279	121 279	122 279	126 279
	Red,	with writing area	Cat.-No.	123 280	121 280	122 280	126 280

with 150 inserts per case

Quantity per bag/case per Cat.-No.: 100/500

Cryo.s™ 4 ml and 5 ml

Cryo.s™
4 ml and 5 ml

Datamatrix Codes on Cryo.s™ p. 11 I 7
Linear Barcodes on Cryo.s™ p. 14 I 4
Freezing Protocol, Technical Appendix

- CE-marked
- High thermal resistance
- Cap inserts
  Cat.-No. 304 171
  (50 pieces per bag)
- Cryo.s™ with internal thread have a silicone gasket

CE | IVD | Free of detectable DNase, RNase, human DNA non-pyrogenic | non-cytotoxic

Description	Cryo.s™ 4 ml	Cryo.s™ 5 ml
Working volume [ml]	up to 4.0	4.5 – 5.0 **)
ø [mm] x height *) [mm]	12.4 x 83	12.5 x 86
Starfoot	+	-
Bottom	round	round
Thread	external	internal
Sterile	+	+

*) total height incl. lid

**) Maximum working volume for freezing of aqueous solutions: 4.5 ml


COLOUR					
	Natural,	without writing area	Cat.-No.	127 261	124 261
	Natural,	with writing area	Cat.-No.	127 263	124 263
	Green,	with writing area	Cat.-No.	127 277	124 275
	Yellow,	with writing area	Cat.-No.	127 278	124 276
	Blue,	with writing area	Cat.-No.	127 279	124 274
	Red,	with writing area	Cat.-No.	127 280	124 273

with 100 inserts per case

Quantity per bag/case per Cat.-No.: 50/300

Support Rack

Support Rack

- Suitable for Cryo.s™ with starfoot base (Cat.-No. 122 XXX, 123 XXX, 126 XXX, 127 XXX)
- Improved handling since the tubes can be opened with one hand
- Rubber base to prevent slipping
- Offers space for up to 40 Cryo.s™

Cat.-No.	802 501
Description	support rack f. one-hand operation
Width [mm] x length [mm] x height [mm]	100 x 200 x 22
Material	polycarbonate
Colour	blue
Quantity per bag/case	1

Cryo Storage Box

The Cryo Storage Box is a helpful accessory for storing Cryo.s™ sample tubes at low and ultra-low temperatures. The box material polypropylene is very temperature and shock-resistant, thus allowing storage temperatures as low as -196 °C.

New

Cryo Storage Box

Cryo.s™ p. 11 I 3

- Holds 81 Cryo.s™ sample tubes
- Transparent lid for optimum visibility of box content
- Venting holes for facilitated air exchange between interior and exterior
- Easy lid removal
- Available in different colours
- Temperature-resistant polypropylene (-196 °C ~ +121 °C)

The Cryo Storage Box fits all 1 and 2 ml Cryo.s™ with internal and external threat (Cat.-No. 121 2XX, 122 2XX, 123 2XX and 126 2XX). It is compatible with standard LN2 containers and metal racks.

Cat.-No.	802 202	802 203	802 204	802 206	802 225
Description	Cryo Storage Box	Cryo Storage Box	Cryo Storage Box	Cryo Storage Box	Cryo Storage Box
Width x length x height*) [mm]	126.5 x 126.5 x 51	126.5 x 126.5 x 51	126.5 x 126.5 x 51	126.5 x 126.5 x 51	126.5 x 126.5 x 51
Material	polypropylene	polypropylene	polypropylene	polypropylene	polypropylene
Rack colour	natural	red	blue	yellow	green
Lid colour	natural	natural	natural	natural	natural
Quantity per bag/case	5/20	5/20	5/20	5/20	5/20

*) The indicated height refers to the Cryo Storage Box filled with 2 ml Cryo.s™ and covered with a lid.

Datamatrix Codes on Cryo.s™

Cryo.s™ with Datamatrix

Recently, the Datamatrix code has been gaining in popularity for use in tracking biological and medical reagents and samples. Among the advantages of Datamatrix codes is the nearly infinite scalability of the symbol, thus providing large data capacity within a small footprint. Datamatrix codes can be scanned and decoded independent of their orientation. Moreover, they offer the Reed-Solomon method of error correction which renders high resistance to inaccuracies caused by symbol damage.
Greiner Bio-One now offers a wide range of Cryo.s™ equipped with a Datamatrix tag on the tube bottom. The applied ECC200 code is the newest version of Datamatrix that supports advanced error correction algorithms with capability to decipher partially damaged codes. Datamatrix codes are laser-written, thus providing high resistance to mechanical strain and chemicals.

!

Further information on Datamatrix coding

→ **Forum No. 10: Datamatrix coding for sample identification with Cryo.s™ sample storage tubes** (F071 008)

Cryo.s™ with Datamatrix are compatible with numerous automated liquid handling and de-/re-capping systems. For further information on suppliers of compatible accessory equipment please refer to

→ **Forum No. 14: Cryo.s™ with Datamatrix and the novel Datamatrix Cryo Rack – automation and biobanking** (F073 116)

Cryo.s™ with Datamatrix Barcode Service

Cryo.s™ p. 11 I 2 ff.

Linear Barcodes on Cryo.s™ p. 14 I 4

Cryo.s™ with Datamatrix
- ECC200 Datamatrix code with Reed-Solomon algorithm for error correction
- Readability of partially damaged Datamatrices
- Laser-written for improved durability and resistance to mechanical strain and chemicals
- White Datamatrix on black background increases contrast and readability
- Assembly of Datamatrix on tube bottom for accelerated reading
- Verification of readability during production process; thus excluding incorrect, missing and duplicated codes within an ordered range of numbers

Cryo.s™ with Datamatrix may be ordered either **off the shelf** with unique predefined number sequences or on demand with **customised** Datamatrix codes. All customised orders are processed via an order form which can be requested by telephone (+49) 7022-948-0 or downloaded directly from our website www.gbo.com/bioscience/cryos.

Predefined Datamatrix Codes off the Shelf

Cat.-No.	123 263-2DG	122 263-2DG	126 263-2DG	127 263-2DG
Description Cryo.s™	1 ml, internal thread, writing area, natural screw cap	2 ml, internal thread, writing area, natural screw cap	2 ml, external thread, writing area, natural screw cap	4 ml, external thread, writing area, natural screw cap
Description Datamatrix code	14 x 14, sequence: G300000001, G300000002	14 x 14, sequence: G200000001, G200000002	14 x 14, sequence: G600000001, G600000002	14 x 14, sequence: G700000001, G700000002
Quantity per bag/case	100/500	100/500	100/500	50/300
	New	New	New	New

Customised Datamatrix Codes

Cat.-No.	F071 005
Description	order form Cryo.s™ with Datamatrix

Datamatrix Cryo Rack

With the novel Datamatrix Cryo Rack, Greiner Bio-One completes its product line for cryogenic sample storage in research, medicine and diagnostics. The rack can hold 48 Cryo.s™ on a footprint area of a regular microplate complying with the plate standard defined by the American National Standards Institute (ANSI). The Datamatrix Cryo Rack and the contained samples may thus be processed in automated handling systems employing the ANSI standard. Besides the option of automation, the novel rack offers helpful features for efficient and secure processing of sample information. Through-holes in the rack bottom allow visibility and scanning of the Datamatrices of the contained Cryo.s™ without the necessity of tube removal.

New

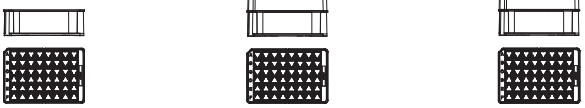
Datamatrix Cryo Rack

Cryo.s™ p. 11 I 3 f.

- Footprint following ANSI standard
- Capacity for 48 Cryo.s™
- Scanning windows in rack bottom
- Stackable
- Temperature-resistant polypropylene (-196 °C ~ +30 °C)

!

The option of coding the Datamatrix Cryo Rack with a laser-written linear barcode on its side and/ or a Datamatrix code on the bottom is available. For this option, please refer to **order form no. F010 898.**



	803 277	803 202	803 270
Cat.-No.	**803 277**	**803 202**	**803 270**
Description	Datamatrix Cryo Rack	Datamatrix Cryo Rack	Datamatrix Cryo Rack
Compatible for Cryo.s™	1 / 2 / 4 / 5 ml	1 / 2 ml	4 / 5 ml
Width x length x height [mm]	127.8 x 85.5 x 30.0	127.8 x 85.5 x 52.5	127.8 x 85.5 x 88.5
Material	polypropylene	polypropylene	polypropylene
Rack colour	black	black	black
Lid profile	-	low (natural)	high (natural)
Quantity per bag/case	5/20	20	15