

Cryostorage

4titude has been offering sealing solutions suitable for cryostorage for many years and is now expanding this range to include dedicated cryotubes, cryoracks and a specialised stem cells freezing system.

Our cryotube range is focused on customers with a need for reliable and detailed sample tracking. Both the cryotubes and the cryoracks are double barcoded with linear barcode (code 128), 2D barcodes and human readable information to avoid sample errors.

Our 2D barcode scanner (see page 55) allow the tracking and export of sample data in different formats for integration in sample management systems.

Our PolarCell vitrification offers a unique way of freezing and thawing stem cells by using specially adapted cryoracks with memory foam inserts to enable ultra-rapid cooling of the cells. This leads to a reduction of stress for the cells and an increased survival rate.



Cryotubes and Cryoracks



External screw cap, internal screw cap

For our cryogenic range we are offering 2ml and 5ml, self standing cry otubes with a 2D barcode on the bottom. The datamatrix code on the bottom is also written as linear Barcode 128 and as human readable code on the side of the tube.

The tubes are available with either an external or an internal cap, both of which are designed for allow use with automatic decappers.

The tubes can be placed in cryogenic storage boxes that also have both 2D barcodes at the bottom and linear Barcode 128 on the sides.

A plate scanner to scan, track and maintain the sample information completes the workflow. For details see page 55.

Features

- Suitable for low temperature storage of biological specimen
- Full sample traceability
- Double decoding with 2D and linear barcode
- External or internal cap available
- One-piece cap design to eliminate leaking and contamination
- DNase, RNase and human genomic DNA free
- Pyrogen free

Code	Description	Quantity
4ti-4010	2ml Cryotube, external cap, double barcoded	500
4ti-4011	5ml Cryotube, external cap, double barcoded	500
4ti-4020	2ml Cryotube, internal cap, double barcoded	500
4ti-4021	5ml Cryotube, internal cap, double barcoded	500
4ti-4030/B	Cryorack for 2ml tubes, double barcoded, blue	5
4ti-4030/Y	Cryorack for 2ml tubes, double barcoded, yellow	5
4ti-4030/R	Cryorack for 2ml tubes, double barcoded, red	5
4ti-4030/G	Cryorack for 2ml tubes, double barcoded, green	5
4ti-4031/B	Cryorack for 5ml tubes, double barcoded, blue	5
4ti-4031/Y	Cryorack for 5ml tubes, double barcoded, yellow	5
4ti-4031/R	Cryorack for 5ml tubes, double barcoded, red	5
4ti-4031/G	Cryorack for 5ml tubes, double barcoded, green	5



Barcoding on well bottoms and on the rack

PolarCell

PolarCell is a platform for ultra-rapid, controlled cryopreservation and revival of stem cells

4titude®s PolarCell is an insulation box for charging and transporting adapted cryoracks. The cryoracks are charged with liquid nitrogen which is absorbed into a specialised foam insert. Tubes can then be placed into the rack, ensuring a close contact between tube and liquid nitrogen for extremely fast cooling (~25,000°C/min.). Once charged, by saturation with liquid nitrogen, the racks can be safely handled and will remain at liquid nitrogen temperature for approximately 30 minutes without the lid, and 45 minutes with the lid.

Cells are mixed with cryoprotectant and transferred to the Cryorack for rapid freezing. PolarCell can be used with ease in a class 2 flow hood to maintain full sterility of cells during cryopreservation.

Once all the samples have been dispensed into the cryovials, the lid can be placed on the PolarCell for transportation to long-term cryo-storage.



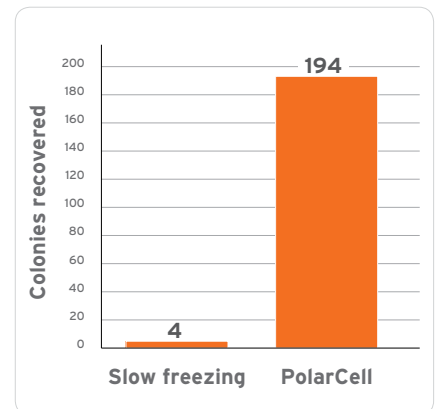


Survival rates are typically less than 5 % for pluripotent stem cells with standard slow freezing methods (Reubinoff et al 2001). Other stem cells are also fragile. With the PolarCell more than 80% cell survival allows for higher throughput and avoids stresses that can lead to differentiation or tumorigenesis of pluripotent cells.

Ultra-rapid freezing of stem cells is based on two approaches:

- Rapid addition and dilution of a cryodiluent before and after cryopreservation to avoid toxic effects of the chemicals on the cells.
- Ultra-rapid freezing and thawing to minimise the generation of intracellular ice crystals and membrane changes that cause cell death.

Code	Description	Qty
4ti-0400	PolarCell start-up kit: PolarCell Box 1 x Cryorack with charging material 100 x 1.5ml Screw cap tubes with lids 1 x 10ml of Cryoprotectant	1 kit
4ti-0410	Cryoboxes with charging foam material	5 boxes
4ti-0415	Screw cap tubes with lids	500 tubes and lids
4ti-0420	Cryoprotectant 10ml	1 x 10ml bottle



1ml cell suspension of human embryonic stem cells was frozen and thawed