VIA Freeze™ liquid nitrogen-free controlled-rate freezers

CELL THERAPY SYSTEMS

VIA Freeze™ controlled-rate freezers provide a scalable and flexible solution to your cryopreservation needs. Available in a range of capacities, they combine customizable cooling profiles, electronic control systems, and a conduction cooling method to optimize cGMP-compliant cryopreservation without the need for liquid nitrogen. All VIA Freeze™ models integrate with Chronicle™ automation software* enabling cooling profiles to be developed and shared across networked units.

Controlled cooling

- Maintain optimal cell function and viability with therapy-specific cooling profiles and precise temperature control
- Develop, store, and share profiles using the VIA Freeze™ user interface or within Chronicle™ automation software

Consistent quality

- Remove heat evenly from all samples with liquid nitrogen-free conduction cooling
- Standardize cryopreservation by delivering stored profiles between networked units

Cleanroom compatible

- Fill and freeze containers in the same location to streamline manufacturing processes
- Eliminate risks and infrastructure costs associated with liquid nitrogen

cGMP-compliant cryopreservation

- Ready to integrate with cGMP process validation procedures
- Controls designed to support 21 CFR Part 11 compliance

Versatile

- Increase productivity without changing processes between VIA Freeze™ models
- Options from 24 to 384 cryogenic vials, cryobags filled up to 275 mL, straws, and multiwell plates. Customized plates also available.

Fig 1. VIA Freeze™ Duo liquid nitrogen-free controlled rate freezer, part of a range to suit all processing requirements.

VIA Freeze™ are intended for controlled-rate cooling of biological material for subsequent cryopreservation. VIA Freeze™ instruments are intended for research or manufacturing use only; they are not intended for clinical procedures or for diagnostic purposes.

* Can be purchased separately

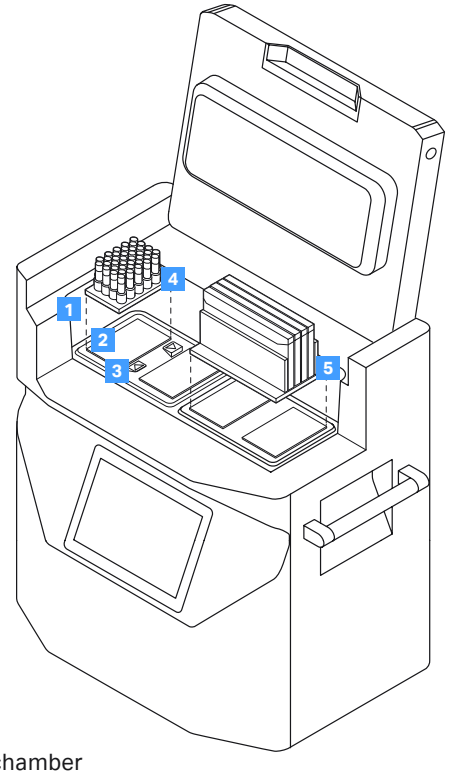
Configuration

Performance and structural aspects of VIA Freeze™ controlled-rate freezers are identical (see Table 2). It is only the capacity of the different models that varies. Simply match your production volume with the capacity of the VIA Freeze™ model to ensure consistent sample quality and biological outcomes.

Fig 2. Capacity varies but controlled cooling performance remains consistent across the range: VIA Freeze™ Uno, VIA Freeze™ Duo, VIA Freeze™ Quad (left to right).

cGMP support

Each unit includes a calibration certificate. All models support web-based process monitoring. IQOQ documentation is available for each model.



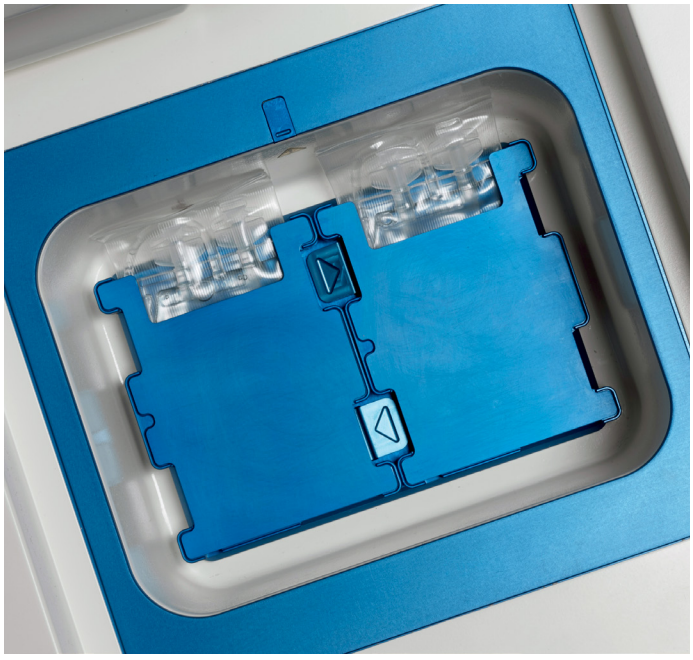
1. Cryochamber
2. Heat transfer pad
3. Sample plate release clips (removed when fitting large plates)
4. Standard sample plate fits to one heat transfer pad (example shows 48 × 2 mL cryovial plate)
5. Double width sample plate spans two heat transfer pads (example shows adjustable rack plate for Duo or Quad with 4 x 250 mL-type cryobags in metal cassettes)

Fig 3. The Stirling cryocooler engine powered VIA Freeze™ controlled-rate freezers give you complete control over freezing samples in a range of container types (cut-away image of VIA Freeze™ Quad unit shown).

Suitable for vials, bags, straws, and multiwell plates

Our sample plates and adapters provide the flexibility and scalability your cryopreservation process needs. Available in different formats to suit your preferred container type, each plate has a different container capacity and can be fitted on one or across multiple heat transfer pads (see Table 1 for a selection of available plates). To load samples, simply select the adapter for your specific container type and place it in your VIA Freeze™ cryochamber. It is also possible to quickly change to a different plate if you need to freeze samples in other containers.

(A)



(B)

Fig 4. VIA Freeze™ Duo cryochamber loaded with two sample plates fitted on separate heat transfer pads with (A) two single 50 mL horizontal cryobag plates and (B) two single 48 × 2 mL cryovial plates.

Table 1. Capacities of commonly used sample plates compatible with VIA Freeze™ units. More options are available; full information on the range of sample plates is available on the Cytiva website.

				VIA Freeze™ Uno	VIA Freeze™ Duo	VIA Freeze™ Quad
Cryovial type and capacity by VIA Freeze™ unit**						
Cryovial manufacturer	**Type**		**Cryovials per plate**	**Total cryovials per unit**		
Corning™, Nalgene™, Nunc™, FluidX, Greiner™, CellSeal™/Cook Regentec	2 mL		48	48	96	192
West Pharma	2 mL		35	35	70	140
West Pharma	5 mL		20	20	40	80
Aseptic Technologies	50 mL		6	6	12	24
Aseptic Technologies	6, 10 mL		12	12	24	48
Aseptic Technologies	2 mL		15	15	30	60
CellSeal/Cook Regentec	5 mL		10	10	20	40
Cryobag type and capacity by VIA Freeze™ unit**						
Cryobag manufacturer	**Type**	**Max. fill volume**	**Orientation**	**Cryobags per sample plate**	**Total cryobags per unit**	
Cord blood cryobags	25 mL	25 mL	Horizontal	1	1	2	4
Cord blood cryobags	25 mL	25 mL	Vertical	4	4	8	16
Origen, CryoMACS™	50 mL	30 mL	Horizontal	1	1	2	4
Origen, CryoMACS	50 mL	30 mL‡	Vertical	8†	NA	8	16
Origen, CryoMACS	250 mL	70 mL‡	Horizontal	1†	NA	1	2
Origen, CryoMACS	250 mL	70 mL‡	Vertical	4†	NA	4	8
Origen, CryoMACS	500 - 1000 mL	100 - 275 mL‡	Horizontal	1††	NA	NA	1
Origen, CryoMACS	500 - 1000 mL	100 - 275 mL‡	Vertical	2†§	NA	NA	4

NA Not compatible with this VIA Freeze™ model

‡ Small vial holder(s) can be added/included, each fitting up to 4 × 2mL-type vials

† Sample plate spans two sample plate loading trays

§ Cassettes span across two adjustable racks with an average of two cassettes per rack

†† Sample plate spans four sample plate loading trays

** Maximum fill volume may not be feasible or may require reduced cooling rates

Note: Bespoke sample plates can be made for container types to order. Some sample plates require additional accessories such as lid spacers or foam inserts. Information on adapter plates for multiwell, plates, and straws is available on request. Cleanroom compatibility of your freezer's configuration must be verified by the user.

Fig 5. Chronicle™ automation software connects Cytiva cell therapy instruments and third-party instruments and supports process development through commercial GMP manufacturing.

Optimize and monitor cryogenic steps with Chronicle™ automation software*

Once you have developed your cooling profiles, standardize and integrate your processes with a digital solution designed to optimize complex cell therapy process development and manufacturing.

Chronicle™ automation software can monitor all facility manufacturing operations and supply chain logistics with real-time data acquisition and notifications. By integrating your VIA Freeze™ units, you will be able to define optimized, therapy-specific controlled cooling profiles and deliver them to all networked units. You will also be able to constantly monitor linked instruments, create and annotate electronic batch records of your run data, plus access records and instrument alerts from the VIA Freeze™ touchscreen or any web browser.

Chronicle™ automation software:

- Unites cooling run data with complete cell processing electronic batch records
- Provides rapid adoption of cryopreservation processes during scale up
- Offers remote monitoring of processes and equipment

* Can be purchased separately

Link and remotely operate multiple units

Increase batch size by linking VIA Freeze™ units to perform the same freezing protocol on multiple instruments at the same time. Using link mode in Chronicle™ automation software, you can start the cooling protocol of VIA Freeze™ systems remotely. This will increase your workflow efficiency, free up staff in any laboratory setting, and remove the requirement to re-enter a cleanroom to activate this cryopreservation step.

Via the batch freezing electronic standard operating procedure (eSOP) on Chronicle™ software:

- Identify each freezer used by scanning asset labels
- Ensure each freezer receives an identical set of parameters to control the cooling run by downloading them from Chronicle™ software and selecting them automatically in the eSOP
- Ensure each freezer starts at the exact same time with a one-button start from the eSOP. This includes continue instructions after any hold step, removing the need to do this manually
- Run data from all units is automatically uploaded and digitally recorded as part of the electronic batch record as separate reports. But they are all linked to the one eSOP

Table 2. VIA Freeze™ specifications.

	VIA Freeze™ Uno***	VIA Freeze™ Duo***	VIA Freeze™ Quad***
Liquid nitrogen-free	Yes	Yes	Yes
Cleanroom optimized	Yes	Yes	Yes
Minimum temperature	-100°C	-100°C	-100°C
Maximum number of standard sample plates	1	2	4
User Access Control	Included	Included	Included
PDF batch report	Yes	Yes	Yes
User-programmable cooling protocols	30	30	30
Pre-programmed cooling protocols	Yes	Yes	Yes
Dimensions (W×D×H)	29.3×35.9×44.9 cm	44.6×38.3×61 cm	63.8×38.3×61 cm
Weight	14 kg (31 lb)	40 kg (88 lb)	64 kg (141 lb)
Power	120–240 VAC 200 W (max)	120–240 VAC 350 W (max)	120–240 VAC 650 W (max)

*** Compliant with CE, UKCA, cTUVus, FCC, ICES, EAC, RCM, KC.

Ordering information

Product	Product code
VIA Freeze™ Uno controlled-rate freezer	VF_30001
VIA Freeze™ Duo controlled-rate freezer	VFD_30006
VIA Freeze™ Quad controlled-rate freezer	VFQ_30010

cytiva.com/cryo

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