



Telstar Igloo

*Ultra low temperature freezers
-45°C & -86°C
Upright & Chest
370 to 830 liter*

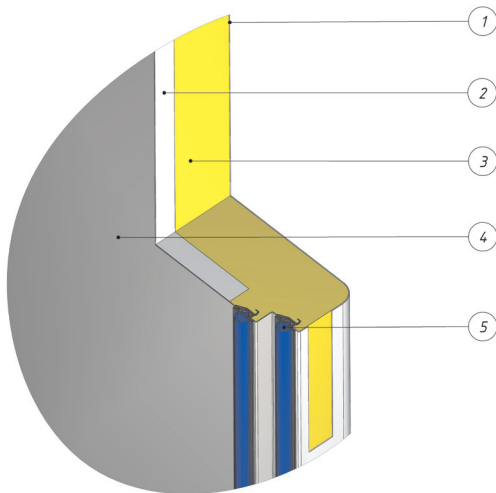




More samples, less footprint

Laboratory space is valuable. In comparison with the traditional freezers, Telstar uses ultra thin vacuum insulation panels. With only 80 mm of insulation, it creates a much better insulation value than 125 mm of regular PU foam.

A temperature of -86°C is guaranteed for an ambient up to $+35^{\circ}\text{C}$. Additionally the thin insulation increases the storage capacity up to 30%.



VIP insulation of Igloo:

1. Polyester coated
2. vacuum insulation
3. PU foam
4. stainless steel interior
5. double door seal (heated)



The slim VIP insulated Igloo easily fits through every standard lab door

Taking real care for the environment

Safety for your samples is most important, but why also not save the environment? That's why Telstar standard uses ecological refrigerants in its freezers. Unlike the traditional used mixed synthetic potent greenhouse gases, Telstar is a pioneer in using 100% pure natural refrigerants. CFC, HCFC and HFC free. Of course the hydrocarbon systems used are safety compliant according EN60335-2-24.

Like an Igloo: low sound level and low power consumption

The Igloo green line only uses high quality and energy efficient compressors. Combined with the use of natural refrigerants it achieves a mix of smoothly running compressors with the lowest power consumption and noise levels around 50 dB(A). This fact is registered according NEN-EN-ISO 11202.

Features and Benefits



Storage capacity & flexibility:

- Largest sample storage capacity per footprint
- Reinforced stainless steel shelves
- Reversible door hinges system
- Easy fit, 2, 3, 5, 6 inner doors

All options are standard:

- Pressure equalization valve
- 2 (+ 2) sample throughputs
- Stainless steel interior
- RS485, remote alarm

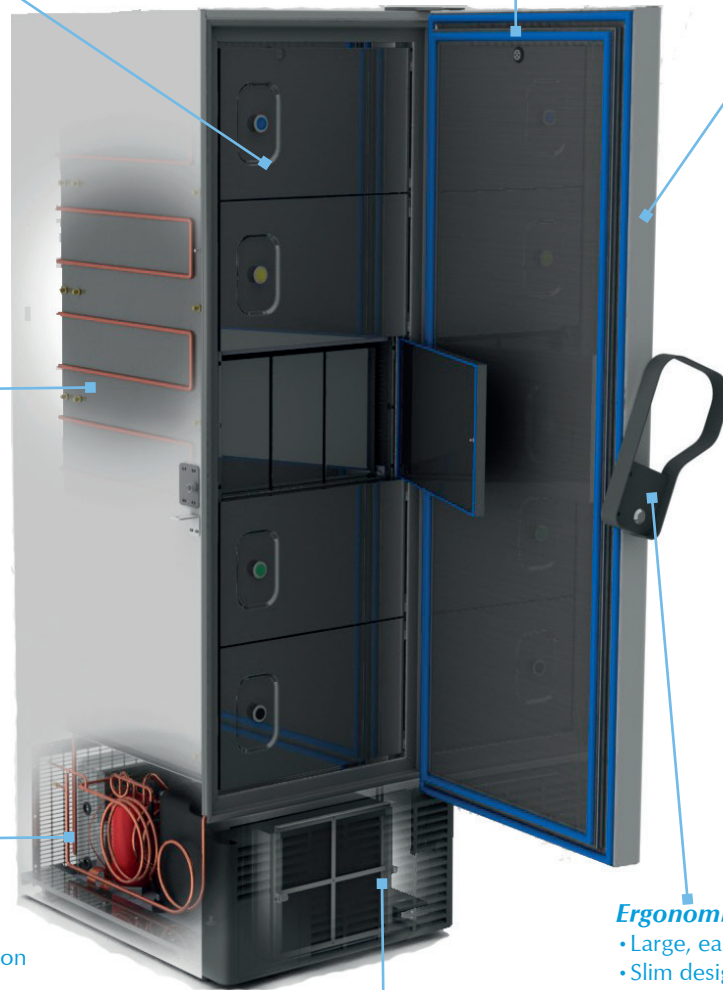


Highest reliability:

- Using the most reliable components available in the world
- Self diagnostic and multiple alarm system on eye level
- Perfect Fit door sealing system with heated seal to prevent ice forming

Top class Cooling Performances:

- Fastest cool down and recovery time
- Superior insulation by vacuum insulation panels



Environmental friendly:

- Natural ecological, green refrigerants
- Lowest power consumption
- Lowest noise level

Ergonomic Design:

- Large, easy grip, single hand opening
- Slim design fits easy through a door



Service friendly:

- Easy filter cleaning
- Accessibility for electronics



Standard eye-level control

A reliable and self diagnostic monitoring and alarm system is positioned on eye level, far from dust and moisture. The bright led lighted digital display is visible from big distances. Performances can be checked in a blink of an eye!



Monitoring & Alarm Specs

- LCD Screen
 - Sample temperature
 - Ambient temperature
 - Voltage
- Adjustable high alarm
- Adjustable low alarm
- Ambient alarm
- Power failure alarm
 - Battery backup
- Event log file
 - Door alarm
 - Power alarm
 - Filter alarm
 - Temperature alarm
 - Ambient alert
- Display graphs
 - Day
 - Month
 - Year
- On-board data history
 - Day
 - Month
 - Year
- Password protection
 - On / Off
 - Temperature settings
 - Tech parameters
 - Engineering menu
- Communication / Outputs
 - RS485
 - Dry contacts (no/nc/com)
- Test / self diagnostic system
- Run time
 - Filter cleaning
 - Compressor time
 - System time

Features of monitoring & alarm system

- Bright, easy to read, digital display
- Readout option in 1 and 0,1°C increments(accuracy)
- Password protected menu's
- Different levels of authorization, user, parameters and engineering menu
- Adjustable temperature set points;
- Audible and visual high/low temperature alarm
- Power outage alarm with battery back up
- Voltage indication and stabilization
- Ambient temperature indication and alarm
- Clean condenser filter alarm;
- Door alarm (also for CO2 or LN2 backup System)
- Remote alarm (NO/NC/COM)
- RS485 port for optional data transfer to computer
- Service friendly plug & play detachable cable housing
- Selection for running optimum mode or economy mode

User friendly access to your samples

In practice a freezer is never opened with empty hands. As a result Telstar developed a single hand opening door handle. This large and easy-grip handle helps to lever the door and firmly press the door without effort.

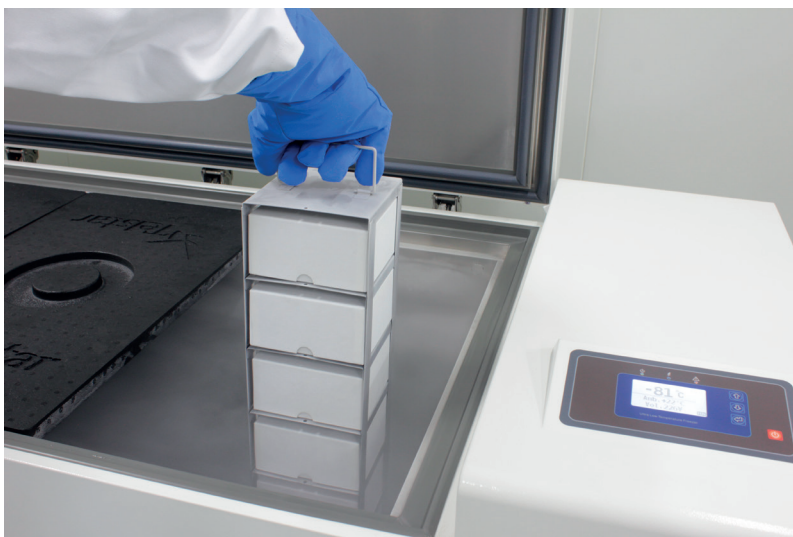
The robust metal system is designed and tested to resist thousands of handlings. Security is safeguarded by a cylinder lock and it allows an additional padlock to be attached when more security is needed.

A heated vacuum equalisation port allows smooth door openings even when the door is opened multiple times.



Flexible sample storage

As a standard the Igloo series are equipped with a 5 compartment configuration to efficiently store the standard racking systems. However, different inner door configurations are available to always have an answer on existing storage systems! The inner doors are well insulated with 20 mm PU foam and are colour coded. To ensure the highest quality standards, the inner chamber is made of stainless steel. Telstar is the only one offering a true stainless steel interior in the market. This means not only stainless steel inside walls, but also stainless steel shelves, inside of the main door and even the inner doors.



Top class temperature performances

Telstar developed a freezer with the lowest power consumption available, without making any compromises in cooling performance. The combination of ultimate temperature recovery times with very stable and uniform temperatures all through the cabinet ensures the top class performances. The package is completed with the VIP insulation giving the best safety in case of power failure.

Unique! Customized door hinge

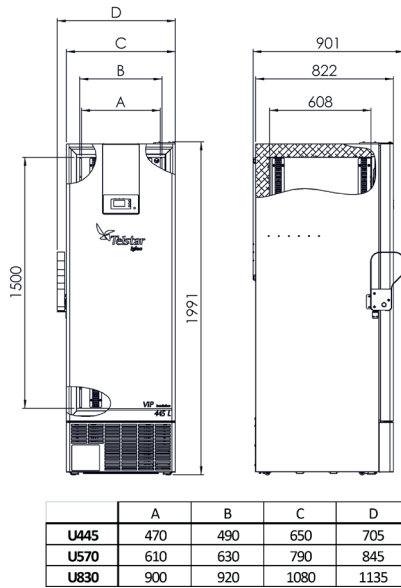
Telstar freezers are ready to easily change the position of the hinge and door handle mechanism. This makes it possible to choose if the door could be opened from the left or right side depending on the installation on the final location into the laboratory.



Technical Specifications Igloo -86°C Upright

| STORAGE SPECS | UNIT | -86 Igloo U445 | -86 Igloo U570 | -86 Igloo U830 |
|-------------------|----------------------|----------------|----------------|----------------|
| Capacity | L | 445 | 570 | 830 |
| Storage capacity | storage racks | 15 | 20 | 30 |
| | 2" cryo boxes | 300 | 400 | 600 |
| | 2ml vials | 30.000 | 40.000 | 60.000 |
| Footprint | m ² | 0.56 | 0.68 | 0.93 |
| Vial to footprint | vials/m ² | 53.517 | 58.823 | 64.516 |

*model number clarification: Uxxx: U= Upright Type, xxx=liter capacity

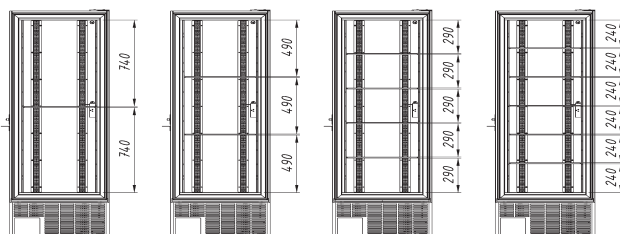


| TECHNICAL SPECS | UNIT | -86 Igloo U445 | -86 Igloo U570 | -86 Igloo U830 |
|--------------------------|----------|--|----------------|----------------|
| Cabinet material | internal | full 304 stainless steel interior | | |
| | external | polyester coated exterior | | |
| Sample throughputs | | 2 standard ports (+ 2 pre-cut) | | |
| Shelves, inner doors | | standard 5 inner doors, 4 shelves | | |
| Weight (uncrated/crated) | Kg | 270/302 | 293/328 | 352/392 |
| Electricity | V / Hz | 220-240 V, 50 Hz (110V /60Hz optional) | | |
| TEMPERATURE SPECS | UNIT | -86 Igloo U445 | -86 Igloo U570 | -86 Igloo U830 |
| Temperature range | °C | -50 up to -86 (factory set point in -80) | | |

*model number clarification: Uxxx: U= Upright Type, xxx=liter capacity

Inner door configuration for Uprights

Standard we supply 5 inner doors, 4 shelves (create 5 compartments)



Inner door configurations

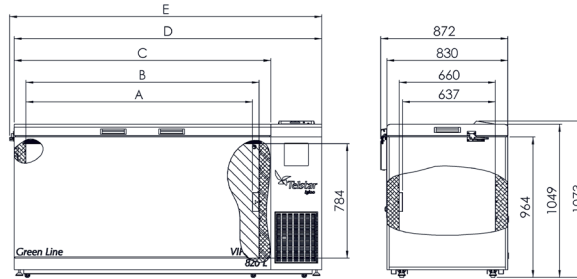
| Inner Doors | Shelves | Compartments |
|-------------|---------|--------------|
| 2 | 1 | 2 |
| 3 | 2 | 3 |
| 6 | 5 | 6 |
| 5 | 4 | 5 |

Extra shelf including clips

Technical Specifications Igloo -86°C Chest

| STORAGE SPECS | UNIT | -86 Igloo C370 | -86 Igloo C620 | -86 Igloo C820 |
|-------------------|----------------------|----------------|----------------|----------------|
| Capacity | L | 370 | 620 | 820 |
| | storage racks | 20 | 32 | 44 |
| Storage capacity | 2" cryo boxes | 280 | 448 | 616 |
| | 2ml vials | 28.000 | 44.800 | 61.600 |
| Footprint | m ² | 1.05 | 1.50 | 1.84 |
| Vial to footprint | vials/m ² | 26.666 | 29.866 | 33.478 |

*model number clarification: Cxxx: C= Chest Type, xxx=liter capacity



| | A | B | C | D | E |
|-------------|------|------|------|------|------|
| C370 | 683 | 725 | 885 | 1235 | 1267 |
| C620 | 1158 | 1200 | 1360 | 1710 | 1742 |
| C820 | 1558 | 1600 | 1760 | 2110 | 2142 |

| TECHNICAL SPECS | UNIT | -86 Igloo C370 | -86 Igloo C620 | -86 Igloo C820 |
|--------------------------|----------|--|----------------|----------------|
| Cabinet material | internal | full 304 stainless steel interior | | |
| | external | polyester coated exterior | | |
| Sample throughputs | | 2 standard ports (+ 1 pre-cut) | | |
| Weight (uncrated/crated) | Kg | 180/200 | 220/250 | 285/325 |
| Electricity | V / Hz | 220-240 V, 50 Hz (110V /60Hz optional) | | |
| TEMPERATURE SPECS | UNIT | -86 Igloo C370 | -86 Igloo C620 | -86 Igloo C820 |
| Temperature range | °C | -50 up to -86 (factory set point in -80) | | |

*model number clarification: Cxxx: C= Chest Type, xxx=liter capacity

Technical Specifications Igloo -45°C Upright & Chest

Basically the specifications of Igloo -45°C Upright & Chest models are equal to the specifications of the Igloo -86°C Upright & Chest models. Below a table with basic differences.

| TECHNICAL SPECS | UNIT | -45 Igloo U445 | -45 Igloo U570 | -45 Igloo U830 |
|--------------------------|------|--|----------------|----------------|
| Weight (uncrated/crated) | Kg | 248/280 | 271/306 | 330/370 |
| Temperature range | °C | -20 up to -45 (factory set point in -40) | | |
| | UNIT | -45 Igloo C370 | -45 Igloo C620 | -45 Igloo C820 |
| Weight (uncrated/crated) | Kg | 158/178 | 198/228 | 263/303 |
| Temperature range | °C | -20 up to -45 (factory set point in -40) | | |

*model number clarification: Cxxx: C= Chest Type, xxx=liter capacity

*model number clarification: Uxxx: U= Upright Type, xxx=liter capacity



Why Igloo simply is the right answer to cold storage:

- VIP insulation creates most vials per m2.
- Lowest power consumption.
- Ecological, green refrigerants.
- Superior temperature performance and uniformity.
- Eye level control and alarm system with graphs and event-log.
- Low Noise level.
- Fast door opening due to pressure equalisation port.
- Large, easy-grip door handle.
- Reversible door hinge system.
- Standard stainless steel interior.
- Insulated inner doors, flexible to choose 2, 3, 5 or 6 inner doors

Options and Accessories

Storage racks

| RACK TYPE | Box size | Boxes / Rack | Fit in freezer model (total) |
|-----------------|-----------|--------------|---|
| Side opening | 2" / 50mm | 20 | U445 (15 racks)/ U570 (20 racks) / U830 (30 racks) |
| | 3" / 75mm | 12 | U445 (15 racks)/ U570 (20 racks) / U830 (30 racks) |
| | 2" / 50mm | 14 | C370 (20 racks) / C620 (32 racks) / C820 (44 racks) |
| | 3" / 75mm | 9 | C370 (20 racks) / C620 (32 racks) / C820 (44 racks) |
| Sliding shelves | 2" / 50mm | 20 | U445 (15 racks)/ U570 (20 racks) / U830 (30 racks) |
| | 3" / 75mm | 12 | U445 (15 racks)/ U570 (20 racks) / U830 (30 racks) |

* all other racks are available on request (micro plate racks, etc)

| CRYO BOXES | |
|------------|--|
| | Polypropylene 2" box with 9 x 9 grid divider |
| | Polypropylene 3" box with 9 x 9 grid divider |
| | Cardboard storage 2" box (excl. dividers) |
| | Cardboard storage 3" box (excl. dividers) |



| DIVIDERS TO FIT IN CARDBOARD BOXES | |
|------------------------------------|--|
| | Storage box divider 7 x 7, 16 mm, 49 cell |
| | Storage box divider 8 x 8, 14 mm, 64 cell |
| | Storage box divider 9 x 9, 13 mm, 81 cell |
| | Storage box divider 10 x 10, 12 mm, 100 cell |



| OTHER ACCESSORIES | |
|-------------------|--|
| | Chart recorder, circular, 7 day |
| | Recorder paper (package with 52 pieces) |
| | Ink pens for recorder (package with 6 pieces) |
| | CO2 backup system Uprights (maintains temperature down to -67°C) |
| | CO2 backup system Chests (maintains temperature down to -67°C) |
| | LN2 backup system Uprights (maintains temperature down to -80°C) |
| | LN2 backup system Chests (maintains temperature down to -80°C) |
| | Water cooled condenser |
| | Factory filled in IQ/OQ protocol package |
| | Cryo gloves medium |
| | Cryo gloves Large |
| | Alarm battery kit for 72 hours |
| | Software to connect to PC with RS485 |
| | Wireless Lab Plug In option |
| | Independent temperature data logging and alarm with data readout by USB port |



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