

## INCREASE YOUR LAB EFFICIENCY

CoolSafe  
Freeze Dryers  
4-15 Litres

Scandinavian by Design



LABOGENE

## The Freeze Drying & Vacuum Concentration Process

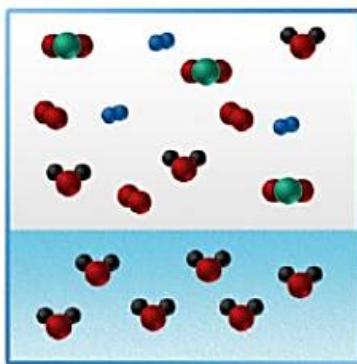
Freeze Drying is basically a 3 stage process. In the first stage, the sample is frozen so that the "free" water present is converted to ice, thereby the phase change from liquid to solid is achieved. This stage is known as the **PRE-FREEZING** step. In the second stage of the freeze drying process, the ice formed in the pre-freezing step is removed from the sample by the direct conversation of the ice (solid phase) to a vapour (vapour phase), without passing through a liquid phase, by a process called **sublimation**. This stage is known as the **PRIMARY DRYING** step.

Typically most aqueous samples/solutions show an increase in concentration as the product temperature is reduced and the water is converted to ice, during the Pre Freeze step.

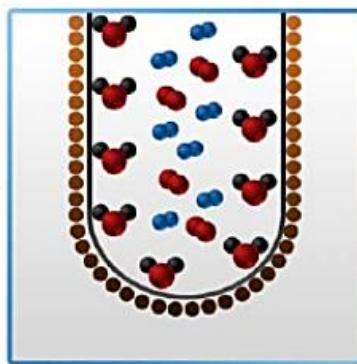
These are known as **EUTECTIC FORMING** solutions.

Some solutions however do not exhibit this quick transformation from a liquid phase to a solid phase, when the temperature is reduced, they just become more viscous. These are known as **GLASS FORMING** solutions. Most sugars solutions or samples containing sugars exhibit this phenomena.

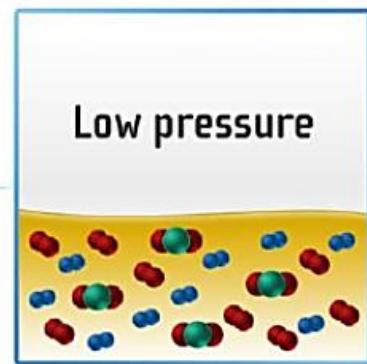
## Evacuation sequence



## Chamber

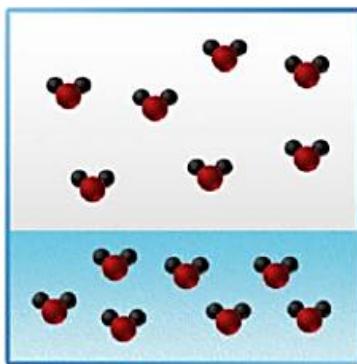


## Condenser

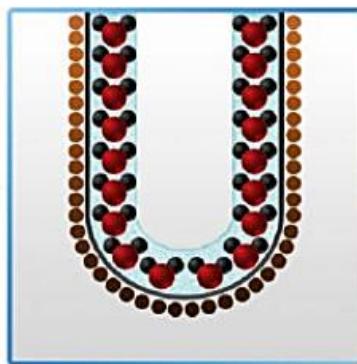


### Vacuum pump

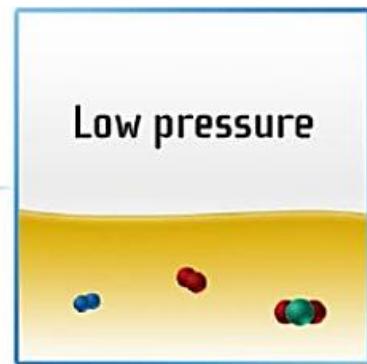
## Freeze drying process



## Chamber



### Condenser

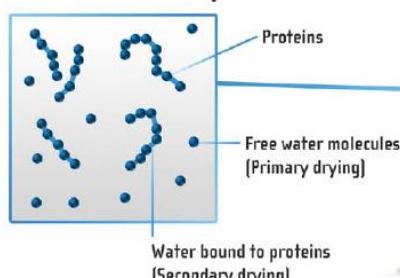


### Vacuum pump



Finally in the third stage, any water that is "molecular bound" to the solids of the sample, is converted to vapour and removed from the sample. This stage is known as **SECONDARY DRYING** and usually involves increasing the temperature and pressure environment i.e. the shelf temperature / vacuum inside the chamber, to provide the energy to "break the molecular bonding". This process is called **desorption**.

Both in Freeze Drying & Vacuum Concentration, a low pressure environment is required to allow these processes to take place, therefore a high quality vacuum pump is necessary. In Freeze Drying, in order to start the removal of the water, the pressure inside the sample chamber has to be below the "triple point" value, whilst maintaining the temperature of the sample below its freezing point.



Whilst in Vacuum Concentration, where we want to keep the sample in a "liquid phase" during the process, vacuum is required to reduce its "boiling point" to a level whereby the liquid sample can be evaporated at low temperatures without denaturing the sample. The centrifugal force exerted on the sample inhibits any bubbling/boiling action whilst concentrating any solutes at the bottom of the tube.

## Primary Drying

During the primary drying stage, the ice in the sample is converted directly to a vapour, at low temperature and pressure, by the process of sublimation and is converted back to ice in the condenser, which is at a lower temperature and pressure than that of the sample chamber.

The "energy" required for this process to occur is provided by a gentle increase in sample temperature (heat). In vacuum concentration the sample is not normally in a frozen state, therefore this stage of the cycle is evaporation rather than sublimation.

The amount of "energy" required to initiate this step in the freeze drying / vacuum concentration cycle, is equivalent to that needed to melt the ice and/or evaporate the liquid. The resulting vapour is collected by the condenser/cold trap, which has a lower temperature and pressure than the product and hence is converted back to ice on the condenser surfaces.

If too much energy (heat) is applied to the sample during this Primary Drying step, such that sublimation takes place too rapidly, the condenser may not be able to convert the vapours to ice fast enough, the temperature inside the condenser will increase along with its vapour pressure and this results in the sample melting.

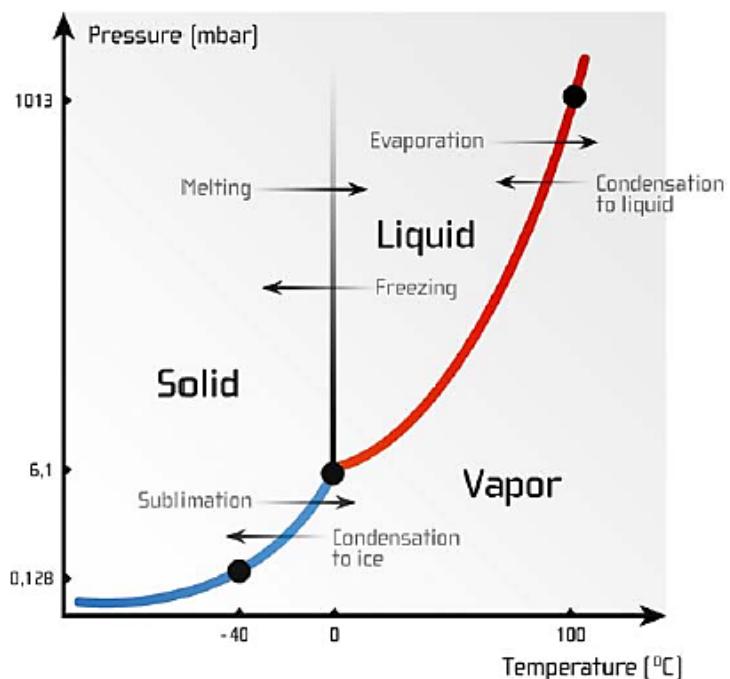
Optimising the heat applied to the sample in the Primary Drying step can only be achieved by experimentation and is essential so that the capacity of the condenser is not exceeded or overloaded, and that the product temperature does not rise above its "melting" point thereby destroying it.

## WHAT SIZE OF CONDENSER IS REQUIRED?

The size of a freeze dryer is rated in size by the capacity of the condenser to hold ice that is produced in a 24 hour drying cycle (i.e. water from the sample)

As a minimum, the condenser capacity must be adequate to handle the total amount of vapor from the sample volumes in a single batch before de-icing is required.

The larger the condenser's surface area, the more efficiently vapor is condensed to ice and, consequently, the thinner the ice-layer formed.



## Secondary Drying

After the removal of the "free" water/ice in the Primary Drying stage by sublimation or evaporation in the case of vacuum concentration, there is usually residual water present which is strongly bound to the molecules of the sample.

This water bound to the molecular structure invariably has a vapour pressure lower than that in water in its "free" form.

Removal of this bound water is performed in the Secondary Drying stage at higher product temperature because now any biological activity of the sample/product will not be impaired or effected.



This design gives an unrestricted large surface area for ice formation without gaskets or seals to cause breakdowns or leaks, it also allows for easy cleaning and quick, efficient de-icing.

## WHAT CONDENSER TEMPERATURE IS NEEDED?

The choice of condenser temperature is important! If the temperature is too high, then a correct freeze drying process cannot take place.

In the table to the right are the freezing points/collapsing temperatures of some commonly used solvents and known products. These are given for guidance purposes and to assist in deciding the condenser temperature for your application.



If the condenser temperature is near to the freezing point of the sample, then the freeze drying cycle times are extended.

The product could possibly start to melt, thus giving very poor recovery rates and enhancing the possibility of damaging the vacuum pump, eventually polluting the laboratory environment. This phenomenon is known as a "collapse" of the sample.

The driving force in freeze drying is expressed as the temperature/pressure differential between the product and the condenser.

In conclusion, the lower the condenser temperature, the better! For example, for aqueous samples a -55°C condenser temperature is the preferred choice.

However, a lower temperature condenser will provide faster freeze drying, avoiding melting and give better results, with the additional benefit of protecting the vacuum pump and the environment.

### Collapsing temperatures of different products

Products	Temperatures
Apple Juice	-42°C
Citrate Buffer	-40°C
Coffee Extract	-20°C
Dextran	-9°C
Fruktose	-48°C
Gelatin	-8°C
Glucose	-40°C
Inisitol	-27°C
Lactose	-32°C
Lemon Juice	-36°C
Methocel	-9°C
MSG	-50°C
Orange Juice	-24°C
Ovalbumim	-10°C
Phosphate Buffer	-8°C
PVP	-23°C
Sorbitol	-45°C
Sucrose	-32°C
Solutions containing ethanol etc.	-60°C - -110°C
Trichlorethylene	-86,4°C

# CONFIGURE YOUR COOLSAFE FREEZE DRYER

We offer a range of options to configure the freeze dryer to your specific needs:

- Teflon coating of the condenser for longevity, easy cleaning and protection from corrosion, especially when working with aggressive acids.
- Electric de-ice function for fast de-icing of the condenser.
- CoolSafe is easy to place in your laboratory:
  - Available as standard for direct placement on the laboratory table.
  - Available with lockable castors for easy transport and to save laboratory bench space.
  - Available with a trolley and convenient location of the vacuum pump to make the system a mobile freeze-drying unit that can be positioned anywhere in the laboratory.

The fully automated facility offered in the "Touch series" Laboratory Freeze Driers are enhanced with the auto control of vacuum valve to operate/connect to the Freeze Drier Chamber only when safe temperature is attained thereby Vacuum Pump will be isolated when moisture is still in the Product Chamber. This protect both the Product and the Vacuum Pump and premature starting of the freeze drying cycle.

**Smart**  
Touchscreen  
Controller



Contact the LaboGene distributor in your respective country for more information about your options and about freeze dryer customization.

# COOLSAFE

## 4-15 LITRES

CoolSafe 4-15 L is an outstanding and versatile range of advanced bench-top freeze dryers. They are the product of more than 40 years' experience and expertise, and are the ideal choice for research, process development and small-scale production.

### Available In 3 different capacities:

- 4 litres.
- 9 litres.
- 15 litres.

All come with a choice of condenser temperatures and a wide range of high-quality chambers and accessories. All models offer both simplicity of operation and the highest performance characteristics to meet the demands of today's research and development laboratories.

### Proven track record In:

- Quality control – typically for:
  - Food materials.
  - Bacteria.
  - Meat and dairy products.
- Improved preservation – typically for:
  - Floral materials.
  - Vaccines and anti-toxins.
  - Tissues and cells.
  - Fish, shellfish, milk (such as goat & horse milk) and dairy products, vegetables, edible mycelia, soft fruits and berries etc.
- Conservation of archaeological items, such as wood, leather, textiles etc.
- Restoration of water damaged books, documents and paper materials.

*The CoolSafe 4-15 L range is suitable for research, testing and production on a minor scale.*

### What LaboGene's freeze dryers offer:

- Lowest condenser temperatures of -55°C, -95°C, -100°C or -110°C.
- Seamless stainless steel condenser with external cooling coils, heavily insulated to conserve energy and increase performance.
- Easy draining with built-in valve, allowing removal of defrost water and/or solvents after a completed freeze-drying session.
- Easy operation with a built-in vacuum valve connecting the condenser and vacuum pump and allowing the condenser to cool down and the vacuum pump to warm up separately, ensuring an efficient start-up sequence.





# CONFIGURE THE FREEZE DRYER FOR YOUR APPLICATION

The process of selecting the correct freeze dryer for your application is divided into 8 steps:

- **Step 1:** Temperature, volume, voltage, surface of the condenser and the preferred freeze dryer version – Basic, Pro, Touch or Touch Superior.
- **Step 2:** This will guide you to the particular model based on your requirements.
- **Step 3-8:** Select the type and size of the chamber, type and size of a manifold and any accessories you need for your freeze drying application.



## STEP 1

### Temperature:

You can choose between -55°C, -95°C, -100°C and -110°C condenser temperatures. Please refer to the information on the previous pages with regards to which temperature is optimal for your freeze drying requirements.

### Volume:

Based on the chosen temperature you have different condenser volumes to select from.

	-55°C	-95°C	-100°C	-110°C
4 litre	X			X
9 litre	X		X	
15 litre	X	X		
80 litre	X	X		

## BASED ON YOUR CHOICE OF TEMPERATURE AND VOLUME SELECT THE MODEL MOST SUITED FOR YOUR REQUIREMENTS:

	Basic	Pro	Touch	Superior Touch xs/XL	Superior Touch
-55°C and 4L	X	X	X		
-55°C and 9L	X	X	X		
-55°C and 15L			X	X	
-55°C and 80L					X
-95°C and 15L			X	X	X
-95°C and 80L					X
-100°C and 9L			X	X	X
-110°C and 4L	X	X	X		



### BASIC

Digital read-out of temperature. Included are hose and flange for connections to the vacuum pump and the vacuum solenoid valve, which is controlled from the front of the freeze dryer.

### PRO

Digital read-out of temperature and pressure. Included are hose and flange for connections to the vacuum pump and the vacuum solenoid valve, which is controlled from the front of the freeze dryer.

### TOUCH

For Manual and Automatic operation, with optimum control and regulation of temperature, pressure and time. Included are vacuum hose and flange connection to the pump.

#### All operations are controlled from the touchscreen display, including:

- Vacuum solenoid valve.
- Pressure regulation valve for primary drying.
- Vacuum release valve.
- Electrical de-icing.
- Software back-up.

### SUPERIOR TOUCH

For manual and automatic operation, with optimum control and regulation of temperature, pressure and time, with the additional facility of pre-freezing. Included are vacuum hose and flange connection to the pump.

#### All operations are controlled from the touchscreen display, including:

- Vacuum solenoid valve.
- Pressure regulation valve for primary drying.
- Vacuum release valve.
- Electrical de-icing.
- Software back-up.

The XS models are inclusive of an electrical heated three-shelf rack for pre-freezing. For the XL models, you can choose between a version inclusive of an electrical heated three-shelf rack and a version inclusive of an electrical heated five-shelf rack. See page 18 for the distances between the shelves.

## VOLTAGE:

You have the possibility of choosing between 115V/60Hz and 230V/50-60Hz.  
For an 80 litre condenser the only option is 3x400V/50-60Hz.

## Surface of the condenser

Some of our freeze dryers can be supplied with teflon coated condensers for use when for freeze drying materials that may contain aggressive acids. Please contact us for further information and advice.

## STEP 2

### The freeze dryer version

Based on your selection of temperature, volume, model, voltage and surface of the condenser you will have specified the exact model, which best suits your exact requirements and needs.



## STEP 3

**TOP LIDS** -Select the lid required for your application

### For CoolSafe Basic, Pro and Touch



**Acrylic lid (ACpl)**  
Acrylic plate on the top of the CoolSafe including vacuum release.

This facilitates all non-heated chambers (CCS200 and 300) and manifold M4 basic.

Art no.: 7001100061



**CCS 300 lid with hole for M4 basic manifold**  
Extra top plate for CCS 300 with drilled hole for adaption of M4 Basic.

Art no.: 7111000615

## STEP 4

### MANIFOLDS -Select the manifold required for your application

#### For CoolSafe Basic, Pro and Touch



##### Manifold 4 Basic

Manifold Basic with 4 rubber valves 3/4 inch for freeze drying in flasks. (Can be extended with the addition of Manifold 4 Extension).

Art no.: 7001000062



##### Manifold 4 Extension

Manifold extension including 4 rubber valves 3/4 inch for freeze drying in flasks.

Art no.: 7001000063



##### Complete M4 Manifold +Manifold 4 Extension + Acpl



##### Drum manifold

Drum manifold made of stainless steel.

Included are 12 3/4 inch rubber valves.

The ACpl lid is not necessary to use this manifold.

Art no.: 7001000163



##### Ampoule manifold 16

Ampoule manifold made of stainless steel for 3/4 inch rubber valves with 16 x 6 mm pipes. Included is 1,5 meter hose.

Art no.: 7001000076



#### Additional information

Please contact the LaboGene distributor in your specific country or visit our webpage [www.labogene.com](http://www.labogene.com)

## For CoolSafe Superior Touch 80 L



### Manifold 5

Side manifold for CoolSafe Superior Touch 55°C/95°C with an 80 litre capacity with 5 quick seal valves 3/4 inch.

Art no.: 7001000862



### Manifold 14

Manifold for CoolSafe Superior Touch 55°C/95°C with an 80 litre capacity with 14 quick seal valves 3/4 inch for freeze drying in flasks.

Art no.: 7001000869

## STEP 5

### CHAMBERS

#### ***Non-heated chambers***

- to be used with the Basic, Pro or Touch models.

Various sizes and formats are available which offer complete flexibility of use. These include options for stoppering, attachment of flasks, and racks with removable shelves.

### Chamber CCS 200



**Chamber CCS 200, ø200 mm**  
Polycarbonate chamber ø200 mm including 2 x ø180 mm adjustable stainless steel shelves and trays.

Distance between shelves:  
Min. 20 mm with 6 shelves.  
Max. 105 mm with 2 shelves.  
(Possibility to have up to 6 shelves and trays).

Art no.: 7001000064



### Rack 200

Extra rack for CCS 200 including 2 shelves and trays for pre-freezing.

Art no.: 7001000287



**Tray 200**  
Extra stainless steel tray ø180 mm x 18 mm for CCS 200 chamber.

Art no.: 7001000264



### Shelf ø180 mm

Extra stainless steel shelf for CCS 200 chamber.

Note it only works as support for the tray.

Art no.: 7001000164

## Chamber CCS 300



**Chamber CCS 300, ø300 mm**  
Acrylic chamber ø300 mm with 3 stainless steel shelves ø250 mm and 3 trays with adjustable height.

Distance between shelves:  
Min. 28 mm with 12 shelves.  
Max. 328 mm with 2 shelves.  
(Possibility to have up to 12 shelves and trays).

Art no.: 7001000085



**Chamber, CCS 300 4V, ø300 mm**  
Acrylic chamber ø300 mm with 3 stainless steel shelves ø250 mm, 3 trays with adjustable height and 4x 3/4 inch rubber valves.

Distance between shelves:  
Min. 28 mm with 12 shelves.  
Max. 328 mm with 2 shelves.  
(Possibility to have up to 12 shelves and trays).

Art no.: 7001000086



**Chamber, CCS 300 8V, ø300 mm**  
Acrylic chamber ø300 mm with 3 stainless steel shelves ø250 mm, 3 trays with adjustable height and 8x 3/4 inch rubber valves.

Distance between shelves:  
Min. 28 mm with 12 shelves.  
Max. 328 mm with 2 shelves.  
(Possibility to have up to 12 shelves and trays).

Art no.: 7001000087



**Chamber, CCS 300 with stoppering arrangement**  
Acrylic chamber ø300 mm with 3 shelves ø250 mm with mechanical stoppering arrangement.

Distance between shelves:  
Min. 20 mm  
Max. 78 mm  
Total 0,15 m<sup>2</sup> shelf area.

Art no.: 7001000187



**Shelf ø250 mm**  
Extra stainless steel shelf for CCS 300 chamber.

Please note that the shelf only acts as support for the tray.

Art no.: 7001000185



**Tray 300**  
Extra stainless steel tray ø250 mm x 21 mm for CCS 300 chamber.

Art no.: 7001000285



**Rack 300**

Extra rack for CCS 300 including 3 shelves and trays for pre-freezing.

Art no.: 7001000387



**Rack micro-titre plate**

Rack for 3x14 micro-titre or 3x7 micro-titre plates for CCS 300 chamber.

Art no.: 7001000479

## Chamber CCS 500



**Chamber, CCS 500, ø500 mm**  
Acrylic chamber ø500 mm. The internal height is 480 mm.

Included are 3 stainless steel shelves and trays with adjustable height.

Distance between shelves:  
Min. 39 mm with 9 shelves.  
Max. 318 mm with 2 shelves.  
(Possibility to have up to 9 shelves and trays.)

Lid with 40 NV flange and NV 40 flex hose for connection to the CoolSafe are also included.

Art no.: 7001500085



**Tray 500**

Extra stainless steel tray ø435 x 23 mm for CCS 500 chamber.

Art no.: 7001500285



**Shelf ø440 mm**

Extra stainless steel shelf for CCS 500 chamber.

Art no.: 7001500185



LABOGENE

## Heated chambers

- to be used with the CoolSafe Touch and Superior Touch XL & XS

We offer a wide selection of chambers with electrical heated shelves that ensure uniform and faster drying, especially in the secondary drying stage. Giving increased recovery rates with controlled programmable energy input.

### ***Versatility with Adaptability!***

#### **Chamber CCS 300 E**



**Chamber, CCS 300 E, ø300 mm, heated**  
Acrylic chamber ø300 mm with 5 heated shelves ø250 mm.

Distance between shelves:  
Min. 38 mm with 5 shelves.  
Max. 89 mm with 3 shelves.  
(no. 2 and no. 4 shelves have been removed).

Included are the connection kit and product sensor.

Art no.: 7001300082



**Chamber, CCS 300 4VE, ø300 mm, heated**  
Acrylic chamber ø300 mm with 5 heated shelves ø250 mm and 4 3/4 inch rubber valves.

Distance between shelves:  
Min. 38 mm with 5 shelves.  
Max. 89 mm with 3 shelves.  
(no. 2 and no. 4 shelves have been removed).

Included are the connection kit and product sensor.

Art no.: 7001300083



**Chamber, CCS 300 8VE, ø300 mm, heated**  
Acrylic chamber ø300 mm with 5 heated shelves ø250 mm and 8 3/4 inch rubber valves.

Distance between shelves:  
Min. 38 mm with 5 shelves.  
Max. 89 mm with 3 shelves.  
(no. 2 and no. 4 shelves have been removed).

Included are the connection kit and product sensor.

Art no.: 7001300184



**Chamber, CCS 300 E Stop, heated**  
Acrylic chamber ø300 mm with 3 heated shelves ø250 mm and stoppering arrangement.

Distance between shelves:  
Min. 20 mm  
Max. 78 mm.

Included are the connection kit and product sensor.

Art no.: 7001300197



**Tray 300**  
Extra stainless steel tray ø250 mm x 21 mm for CCS 300 E chamber.

Art no.: 7001000285

#### **LaboGene Worldwide**

LaboGene™ has achieved and been granted full ISO 9001-2008 Accreditation. The internationally recognised standard for quality management.

If you are interested in speaking with the LaboGene distributor in your particular country, please visit [www.labogene.com](http://www.labogene.com)

## Chamber CCS 500 E



### Chamber, CCS 500 E, ø500 mm, heated

Acrylic chamber ø500 mm. The internal height is 480 mm. Included are 2 electrical heated shelves ø435 mm with adjustable height. The minimum distance is 65 mm with 5 electrical heated shelves.

Please note that the distance(s) increase when the shelf or shelves are removed.

Included are the connection kit and product sensor. Lid with 40 NV flange and NV 40 flex hose for connection to the CoolSafe are also included.

Art no.: 7001300194



### Tray 500

Extra stainless steel tray ø435 x 23 mm for CCS 500 E chamber.

Art no.: 7001500285

## Racks for CoolSafe Superior Touch XS and XL

XS (9 L volume/1 kg. ice capacity) and XL (15 L volume/2 kg. ice capacity)

The standard model XS is supplied with an electrical heated three-shelf rack for pre-freezing. For model XL, you can either choose a version supplied with an electrical heated three-shelf rack or a version supplied with an electrical heated five-shelf rack.

This provides a fully automatic research freeze drying system that incorporates the highest performance characteristics and technical features to meet the demands of today's research, analytical and development laboratories.



### Superior Touch XS

Freeze dryer including rack with 3 heated shelves ø180 mm.

Distance between shelves is 34 mm.

Contact us for further information if teflon coating is needed.

Art no. for XS 230V: 700059

Art no. for XS 115V: 700060



### Superior Touch XL 3 Shelves

Freeze dryer including rack with 3 heated shelves ø180 mm.

Distance between shelves is 79 mm.

Contact us for further information if teflon coating is needed.

Art no. for XL 3S, 230V: 700061

Art no. for XL 3S, 115V: 700062



### Superior Touch XL 5 Shelves

Freeze dryer including rack with 5 heated shelves ø180 mm.

Distance between shelves is 34 mm.

Contact us for further information if teflon coating is needed.

Art no. for XL 5S, 230V: 703178

Art no. for XL 5S, 115V: 703179

## Chambers for CoolSafe Superior Touch (80 L volume / 10 kg. ice capacity)

CoolSafe Superior Touch which has a condenser capacity of 80L can be configured with bulk rack or vial rack with heated shelves for pre-freezing. This provides a fully automatic research freeze drying system that incorporates the highest performance characteristics and technical features to meet the demands of today's research, analytical and development laboratories.



### Vial rack Superior Touch

Vial rack including the stoppering arrangement pneumatic and 2 electrical heated shelves (250 x 400 mm) for stoppering of vials. It takes up to 5 shelves.

Distance between shelves:  
(without/with radiation shelf)  
2 shelves mounted: 106/101 mm  
3 shelves mounted: 67/63 mm  
4 shelves mounted: 47/45 mm  
5 shelves mounted: 36 mm

Art no.: 7001001881



### Compressor up to 6 Bar, 230V/50-60 Hz

Compressor up to 6 Bar for the stoppering arrangement.

Can be purchased locally.

Art no.: 7001300885



### Shelf 2540 for Superior Touch Vial

Extra electrical heated shelf 2540 (250 x 400 mm). Each shelf is 0,10 m<sup>2</sup>, and a maximum of 3 extra shelves can be added.

Art no.: 7001001883



### Tray 2540 for Superior Touch Vial

Tray 2540 in stainless steel for operation in vials rack. (30 x 250 x 400 mm).

Art no.: 7001001884



### Bulk Pack Superior Touch no. 1

Bulk rack including 2 electrical heated shelves (300 x 500 mm). It accommodates up to 5 shelves.

Distance between shelves:  
Min. 35 mm with 5 shelves.

Art no.: 7001001882



### Tray 3050 for Superior Touch Bulk no. 1

Tray 3050 in stainless steel for bulk drying (30 x 300 x 500 mm).

Art no.: 7001001806



**Bulk rack Superior Touch no. 2**  
Bulk rack including 2 electrical heated shelves (300 x 500 mm), with a maximum of up to 8 shelves.  
Distance between shelves:  
Min. 18 mm with 8 shelves.  
Max. 200 mm with 2 shelves.

Art no.: 7001001897



**Tray 3050 for Superior Touch for Bulk no. 2**  
Tray 3050 in stainless steel for bulk drying (15 x 300 x 500 mm).

Art no.: 7001001802



**Shelf 3050 for Superior Touch Bulk**  
Extra electrical heated shelf 3050 (300 x 500 mm).  
Each shelf is 0,15 m<sup>2</sup>. A maximum of 3 extra shelves can be added for Bulk no.1 and 6 extra shelves for bulk no.2.

Art no.: 7001001801

## STEP 6

### PUMPS

Select the vacuum pump most suited for your freeze dryer/chamber combination.



**Vacuum pump, RZ 2.5**  
30 L/min and 2,5 m<sup>3</sup>/hour. The ultimate vacuum is 0,001 mBar with anti-blow back valve.  
Included is the oil mist filter – art no.: 7001500071.

Art no. for 230V/50Hz version: 7001500069  
Art no. for 110V/60Hz version: 7001506069



**Vacuum pump, RZ 6**  
105 L/min and 6,0 m<sup>3</sup>/hour. The ultimate vacuum is 0,001 mBar with anti-blow back valve.  
Included is the oil mist filter – art no.: 7001500071.

Art no. for 230V/50Hz version: 7001510070  
Art no. for 110V/60Hz version: 7001516070



**Vacuum pump, RC 6 Chemistry hybrid pump**  
Chemistry hybrid vacuum pump. 5,9/6,9 m<sup>3</sup>/hour.  
The ultimate vacuum is 0,002 mBar.  
Included is the oil mist filter – art no.: 7001500071.

Art no. for 230V/50Hz version: 7001510071



**Vacuum pump, RZ 9**  
140 L/min and 8,6 m<sup>3</sup>/hour. The ultimate vacuum is 0,0002 mBar. Included is the oil mist filter – art no.: 7001201070.

Art no. for 230V/50Hz version: 7001201169

## STEP 7

### ACCESSORIES

Practical accessories for your consideration.



#### SVM 85

ScanVac Vacuum Meter, absolute pressure is 1200-0.001 mBar, with data-logging facility, NV 10 and flange. Including connection kit for SVM 85.

For CoolSafe Basic.

Art no.: 7001000269



#### Connection kit for 2 chambers

T-kit with 2 x 1/4 inch rubber valves for connection of 2 chambers to 1 vacuum pump.

Art no.: 7001000077



#### Trolley, freeze drying

Compact trolley for one CoolSafe and Vacuum pump.

Art no.: 7001100950



#### Gate valve

Valve enabling closure between CoolSafe and a ø500 chamber.

Art no.: 7001500879



#### Castors

Set of 4 pieces, with 2 which are lockable. For mounting on a freeze dryer. It can be mounted on the following versions: CoolSafe 55-4, CoolSafe 55-9 and CoolSafe 110-4.

Art no.: 7001000066



LABOGENE

## STEP 8

### FLASKS

Choose between round bottom and normal freeze drying flasks.

#### Freeze drying flasks

#### Round bottom freeze drying flasks



**Flasks 150 mL**  
Freeze drying flasks/chamber 150 mL with rubber lid for connection to 3/4 inch rubber valves, ø52 x 60 mm.

Art no.: 7001200100

**Flasks 300 mL**  
Freeze drying flasks/chamber 300 mL with rubber lid for connection to 3/4 inch rubber valves, ø52 x 120 mm.

Art no.: 7001200101

**Flasks 600 mL**  
Freeze drying flasks/chamber 600 mL with rubber lid for connection to 3/4 inch rubber valves, ø75 x 100 mm.

Art no.: 7001200102

**Flasks 1200 mL**  
Freeze drying flasks/chamber 1200 mL with rubber lid for connection to 3/4 inch rubber valves, ø75 x 200 mm.

Art no.: 7001200103

**Round bottom flasks 250 mL**  
Round bottom 250 mL freeze drying flasks for cone 29/32.

Art no.: 7001200105

**Round bottom flasks 500 mL**  
Round bottom 500 mL freeze drying flasks for cone 29/32.

Art no.: 7001200106

**Round bottom flasks 1000 mL**  
Round bottom 1000 mL freeze drying flasks for cone 29/32.

Art no.: 7001200107

**Round bottom flasks 2000 mL**  
Round bottom 2000 mL freeze drying flasks for cone 29/32.

Art no.: 7001200108

#### Cone connectors, that enables freeze drying flasks to connect directly to manifold valves.

#### Round bottom freeze drying flasks



**Cone 24/29**  
3/4 inch aluminium cone 24/29.

Art no.: 7001000074

**Cone 29/32**  
3/4 inch aluminium cone 29/32.

Art no.: 7001000072

**Cone 34/36**  
3/4 inch aluminium cone 34/36.

Art no.: 7001000073



**Spin freeze drive**  
Spin freeze drive for spin freezing of flasks for freeze drying.

Art no.: 7001000372



Having completed the configuration procedure, you will have the freeze dryer tailored to your specific requirements.

**Why not try our online configurator on our webpage!**

This will guide you through the complete process, and will also enable you to connect with our distributor in your particular country.

For additional information, please contact the LaboGene distributor in your specific country or visit our webpage [www.labogene.com](http://www.labogene.com)

MAKE YOUR OWN  
CONFIGURATION...  
Check it at  
[www.labogene.com](http://www.labogene.com)

# COOLSAFE 55-4

## SPECIFICATIONS



For more information please visit:  
[www.labogene.com](http://www.labogene.com)

CoolSafe 55-4	Unit	Part no 7001000060
Digital read-out of temperature		Yes
Digital read-out of pressure		No
Ultimate temperature at 20°C room temperature	°C	-55
Power requirements	V/Hz	230/50-60
Power consumption	W	500
Insulation	mm	90
Condenser capacity	kg	3
Condenser capacity per 24 hours	kg	2,5
Total volume of Condenser	L	4
Weight net	kg	40
Cabinet dimensions (DxWxH)	mm	500x400x520
Cabinet material		Polyester coated steel
Condenser material		Stainless steel AISI 316
Cooling media		R 507
Vacuum Valve		Solenoid
Draintap		Yes
Keypad for control options		No
R 485/USB port for Labogene software		No

# COOLSAFE 110-4

## SPECIFICATIONS



For more information please visit:  
[www.labogene.com](http://www.labogene.com)

CoolSafe 110-4	Unit	Part no: 7001000115
Digital read-out of temperature		Yes
Digital read-out of pressure		No
Ultimate temperature at 20°C room temperature	°C	-110
Power requirements	V/Hz	230/50-60
Power consumption	W	600
Insulation	mm	90
Condenser capacity	kg	3
Condenser capacity per 24 hours	kg	2,5
Total volume of Condenser	L	4
Weight net	kg	55
Cabinet dimensions (DxWxH)	mm	500x400x520
Cabinet material		Polyester coated steel
Condenser material		Stainless steel AISI 316
Cooling media		R 507/R1150
Vacuum Valve		Solenoid
Draintap		Yes
Keypad for control options		No
R 485/USB port for Labogene software		No

# COOLSAFE PRO 55-4

## SPECIFICATIONS



For more information please visit:  
[www.labogene.com](http://www.labogene.com)

CoolSafe Pro 55-4	Unit	Part no: 7001100058
Digital read-out of temperature		Yes
Digital read-out of pressure		Yes
Ultimate temperature at 20°C room temperature	°C	-55
Power requirements	V/Hz	230/50-60
Power consumption	W	500
Insulation	mm	90
Condenser capacity	kg	3
Condenser capacity per 24 hours	kg	2,5
Total volume of Condenser	L	4
Weight net	kg	40
Cabinet dimensions (DxWxH)	mm	500x400x520
Cabinet material		Polyester coated steel
Condenser material		Stainless steel AISI 316
Cooling media		R 507
Vacuum Valve		Solenoid
Drain tap		Yes
Keypad for control options		No
R 485/USB port for Labogene software		No

# COOLSAFE PRO 110-4

## SPECIFICATIONS



For more information please visit:  
[www.labogene.com](http://www.labogene.com)

CoolSafe Pro 110-4	Unit	Part no: 7001000516
Digital read-out of temperature		Yes
Digital read-out of pressure		Yes
Ultimate temperature at 20°C room temperature	°C	-110
Power requirements	V/Hz	230/50-60
Power consumption	W	600
Insulation	mm	90
Condenser capacity	kg	3
Condenser capacity per 24 hours	kg	2,5
Total volume of Condenser	L	4
Weight net	kg	55
Cabinet dimensions (DxWxH)	mm	500x400x520
Cabinet material		Polyester coated steel
Condenser material		Stainless steel AISI 316
Cooling media		R 507/R1150
Vacuum Valve		Solenoid
Draintap		Yes
Keypad for control options		No
R 485/USB port for Labogene software		No

LaboGene A/S  
Bjarkesvej 5  
DK-3450 Allerød

Tel (+45) 3940 2566  
Fax (+45) 3995 2566  
Mail [info@labogene.com](mailto:info@labogene.com)  
Web [www.labogene.com](http://www.labogene.com)

  
**LABOGENE**  
Scandinavian by Design



# COOLSAFE PRO 100-9

## SPECIFICATIONS



For more information please visit:  
[www.labogene.com](http://www.labogene.com)

CoolSafe Pro 100-9	Unit	Part no: 7001000617
Digital read-out of temperature		Yes
Digital read-out of pressure		Yes
Ultimate temperature at 20°C room temperature	°C	-100
Power requirements	V/Hz	230/50-60
Power consumption	W	800
Insulation	mm	90
Condenser capacity	kg	7
Condenser capacity per 24 hours	kg	4
Total volume of Condenser	L	9
Weight net	kg	75
Cabinet dimensions (DxWxH)	mm	620x495x745
Cabinet material		Polyester coated steel
Condenser material		Stainless steel AISI 316
Cooling media		R 507/R170
Vacuum Valve		Solenoid
Draintap		Yes
Keypad for control options		No
R 485/USB port for Labogene software		No

LaboGene A/S  
Bjarkesvej 5  
DK-3450 Allerød

Tel (+45) 3940 2566  
Fax (+45) 3995 2566  
Mail [info@labogene.com](mailto:info@labogene.com)  
Web [www.labogene.com](http://www.labogene.com)

  
**LABOGENE**  
Scandinavian by Design



# COOLSAFE PRO 95-15

## SPECIFICATIONS



For more information please visit:  
[www.labogene.com](http://www.labogene.com)

CoolSafe Pro 95-15	Unit	Part no: 7001300951
Digital read-out of temperature		Yes
Digital read-out of pressure		Yes
Ultimate temperature at 20°C room temperature	°C	-95
Power requirements	V/Hz	230/50-60
Power consumption	W	800
Insulation	mm	90
Condenser capacity	kg	10
Condenser capacity per 24 hours	kg	6
Total volume of Condenser	L	15
Weight net	kg	85
Cabinet dimensions (DxWxH)	mm	620x495x745
Cabinet material		Polyester coated steel
Condenser material		Stainless steel AISI 316
Cooling media		R 507/R170
Vacuum Valve		Solenoid
Draintap		Yes
Keypad for control options		No
R 485/USB port for Labogene software		No

LaboGene A/S  
 Bjarkesvej 5  
 DK-3450 Allerød

Tel (+45) 3940 2566  
 Fax (+45) 3995 2566  
 Mail [info@labogene.com](mailto:info@labogene.com)  
 Web [www.labogene.com](http://www.labogene.com)

  
**LABOGENE**  
 Scandinavian by Design



# COOLSAFE TOUCH 55-4

## SPECIFICATIONS



For more information please visit:  
[www.labogene.com](http://www.labogene.com)

CoolSafe Touch 55-4	Unit	Part no: 700047
Digital read-out of temperature		Yes
Digital read-out of pressure		Yes
Ultimate temperature at 20°C room temperature	°C	-55
Power requirements	V/Hz	230/50-60
Power consumption	W	800
Insulation	mm	90
Condenser capacity	kg	3
Condenser capacity per 24 hours	kg	2,5
Total volume of Condenser	L	4
Weight net	kg	40
Cabinet dimensions (DxWxH)	mm	500x400x520
Cabinet material		Polyester coated steel
Condenser material		Stainless steel AISI 316
Cooling media		R 507
Vacuum Valve		Electric
Draintap		Yes
Touch screen for control options		Yes
USB port for LaboGene software/SD card for data		Yes

Revision date | rev. version: May 2020 | 0.2 | CoolSafe Touch 55-4 - 230V

LaboGene A/S  
Bjarkesvej 5  
DK-3450 Allerød

Tel (+45) 3940 2566  
Fax (+45) 3995 2566  
Mail [info@labogene.com](mailto:info@labogene.com)  
Web [www.labogene.com](http://www.labogene.com)

  
**LABOGENE**  
Scandinavian by Design



# COOLSAFE TOUCH 110-4

## SPECIFICATIONS



For more information please visit:  
[www.labogene.com](http://www.labogene.com)

CoolSafe Touch 110-4	Unit	Part no: 700049
Digital read-out of temperature		Yes
Digital read-out of pressure		Yes
Ultimate temperature at 20°C room temperature	°C	-110
Power requirements	V/Hz	230/50-60
Power consumption	W	1300
Insulation	mm	90
Condenser capacity	kg	3
Condenser capacity per 24 hours	kg	2,5
Total volume of Condenser	L	4
Weight net	kg	55
Cabinet dimensions (DxWxH)	mm	500x400x520
Cabinet material		Polyester coated steel
Condenser material		Stainless steel AISI 316
Cooling media		R 507/R1150
Vacuum Valve		Electric
Draintap		Yes
Touch screen for control options		Yes
USB port for LaboGene software/SD card for data		Yes

# COOLSAFE 110-4 TEFLON SPECIFICATIONS



For more information please visit:  
[www.labogene.com](http://www.labogene.com)

Revision date | rev. | version: May 2020 | 0.2 | CoolSafe 110-4 Teflon - 230V

CoolSafe 110-4 Teflon	Unit	Part no: 702204
Digital read-out of temperature		Yes
Digital read-out of pressure		No
Ultimate temperature at 20°C room temperature	°C	-110
Power requirements	V/Hz	230/50-60
Power consumption	W	600
Insulation	mm	90
Condenser capacity	kg	3
Condenser capacity per 24 hours	kg	2,5
Total volume of Condenser	L	4
Weight net	kg	55
Cabinet dimensions (DxWxH)	mm	500x400x520
Cabinet material		Polyester coated steel
Condenser material		Stainless steel AISI 316, covered with teflon coating
Cooling media		R 507/R1150
Vacuum Valve		Solenoid
Draintap		Yes
Keypad for control options		No
R 485/USB port for Labogene software		No

LaboGene A/S  
Bjarkesvej 5  
DK-3450 Allerød

Tel (+45) 3940 2566  
Fax (+45) 3995 2566  
Mail [info@labogene.com](mailto:info@labogene.com)  
Web [www.labogene.com](http://www.labogene.com)



LABOGENE  
Scandinavian by Design



# COOLSAFE PRO 110-4 TEFLON SPECIFICATIONS



For more information please visit:  
[www.labogene.com](http://www.labogene.com)

CoolSafe Pro 110-4 Teflon	Unit	Part no: 702205
Digital read-out of temperature		Yes
Digital read-out of pressure		Yes
Ultimate temperature at 20°C room temperature	°C	-110
Power requirements	V/Hz	230/50-60
Power consumption	W	600
Insulation	mm	90
Condenser capacity	kg	3
Condenser capacity per 24 hours	kg	2,5
Total volume of Condenser	L	4
Weight net	kg	55
Cabinet dimensions (DxWxH)	mm	500x400x520
Cabinet material		Polyester coated steel
Condenser material		Stainless steel AISI 316, covered with teflon coating
Cooling media		R 507/R1150
Vacuum Valve		Solenoid
Draintap		Yes
Keypad for control options		No
R 485/USB port for Labogene software		No

LaboGene A/S  
Bjarkesvej 5  
DK-3450 Allerød

Tel (+45) 3940 2566  
Fax (+45) 3995 2566  
Mail [info@labogene.com](mailto:info@labogene.com)  
Web [www.labogene.com](http://www.labogene.com)

  
**LABOGENE**  
Scandinavian by Design



# COOLSAFE TOUCH 110-4 TEFLON SPECIFICATIONS



For more information please visit:  
[www.labogene.com](http://www.labogene.com)

CoolSafe Touch 110-4 Teflon	Unit	Part no: 702194
Digital read-out of temperature		Yes
Digital read-out of pressure		Yes
Ultimate temperature at 20°C room temperature	°C	-110
Power requirements	V/Hz	230/50-60
Power consumption	W	1300
Insulation	mm	90
Condenser capacity	kg	3
Condenser capacity per 24 hours	kg	2,5
Total volume of Condenser	L	4
Weight net	kg	55
Cabinet dimensions (DxWxH)	mm	500x400x520
Cabinet material		Polyester coated steel
Condenser material		Stainless steel AISI 316, covered with teflon coating
Cooling media		R 507/R1150
Vacuum Valve		Electric
Drain tap		Yes
Touch screen for control options		Yes
USB port for LaboGene software/SD card for data		Yes

# COOLSAFE TOUCH 100-9 SPECIFICATIONS



For more information please visit:  
[www.labogene.com](http://www.labogene.com)

CoolSafe Touch 100-9	Unit	Part no: 700053
Digital read-out of temperature		Yes
Digital read-out of pressure		Yes
Ultimate temperature at 20°C room temperature	°C	-100
Power requirements	V/Hz	230/50-60
Power consumption	W	1300
Insulation	mm	90
Condenser capacity	kg	7
Condenser capacity per 24 hours	kg	4
Total volume of Condenser	L	9
Weight net	kg	75
Cabinet dimensions (DxWxH)	mm	620x495x745
Cabinet material		Polyester coated steel
Condenser material		Stainless steel AISI 316
Cooling media		R 507/R170
Vacuum Valve		Electric
Draintap		Yes
Touch screen for control options		Yes
USB port for LaboGene software/SD card for data		Yes

Revision date | rev. | version: May 2020 | 0.2 | CoolSafe Touch 100-9 - 115V

LaboGene A/S  
Bjarkesvej 5  
DK-3450 Allerød

Tel (+45) 3940 2566  
Fax (+45) 3995 2566  
Mail [info@labogene.com](mailto:info@labogene.com)  
Web [www.labogene.com](http://www.labogene.com)

  
**LABOGENE**  
Scandinavian by Design



# COOLSAFE TOUCH 95-15

## SPECIFICATIONS



For more information please visit:  
[www.labogene.com](http://www.labogene.com)

CoolSafe Touch 95-15	Unit	Part no: 700057
Digital read-out of temperature		Yes
Digital read-out of pressure		Yes
Ultimate temperature at 20°C room temperature	°C	-95
Power requirements	V/Hz	230/50-60
Power consumption	W	1400
Insulation	mm	90
Condenser capacity	kg	10
Condenser capacity per 24 hours	kg	6
Total volume of Condenser	L	15
Weight net	kg	85
Cabinet dimensions (DxWxH)	mm	620x495x745
Cabinet material		Polyester coated steel
Condenser material		Stainless steel AISI 316
Cooling media		R 507/R170
Vacuum Valve		Electric
Draintap		Yes
Touch screen for control options		Yes
USB port for LaboGene software/SD card for data		Yes

Revision date | rev. version: May 2020 | 0.2 | CoolSafe Touch 95-15 - 230V

LaboGene A/S  
Bjarkesvej 5  
DK-3450 Allerød

Tel (+45) 3940 2566  
Fax (+45) 3995 2566  
Mail [info@labogene.com](mailto:info@labogene.com)  
Web [www.labogene.com](http://www.labogene.com)

  
**LABOGENE**  
Scandinavian by Design



# COOLSAFE TOUCH 95-15 TEFLON SPECIFICATIONS



For more information please visit:  
[www.labogene.com](http://www.labogene.com)

CoolSafe Touch 95-15 Teflon	Unit	Part no: 702198
Digital read-out of temperature		Yes
Digital read-out of pressure		Yes
Ultimate temperature at 20°C room temperature	°C	-95
Power requirements	V/Hz	230/50-60
Power consumption	W	1400
Insulation	mm	90
Condenser capacity	kg	10
Condenser capacity per 24 hours	kg	6
Total volume of Condenser	L	15
Weight net	kg	85
Cabinet dimensions (DxWxH)	mm	620x495x745
Cabinet material		Polyester coated steel
Condenser material		Stainless steel AISI 316, covered with teflon coating
Cooling media		R 507/R170
Vacuum Valve		Electric
Draintap		Yes
Touch screen for control options		Yes
USB port for LaboGene software/SD card for data		Yes

Revision date | rev. version: May 2020 | 02 | CoolSafe Touch 95-15 Teflon - 230V

LaboGene A/S  
Bjarkesvej 5  
DK-3450 Allerød

Tel (+45) 3940 2566  
Fax (+45) 3995 2566  
Mail [info@labogene.com](mailto:info@labogene.com)  
Web [www.labogene.com](http://www.labogene.com)

  
**LABOGENE**  
Scandinavian by Design



# COOLSAFE SUPERIOR TOUCH XS SPECIFICATIONS



For more information please visit:  
[www.labogene.com](http://www.labogene.com)

CoolSafe Superior Touch XS	Unit	Part no: 700059
Digital read-out of temperature		Yes
Digital read-out of pressure		Yes
Ultimate temperature at 20°C room temperature	°C	-100
Power requirements	V/Hz	230/50-60
Power consumption	W	1300
Insulation	mm	90
Condenser capacity when equipped with the rack	kg	1
Condenser capacity per 24 hours when equipped with the rack	kg	1
Total volume of Condenser	L	9
Weight net	kg	75
Cabinet dimensions (DxWxH)	mm	620x495x745
Cabinet material		Polyester coated steel
Condenser material		Stainless steel AISI 316
Cooling media		R 507/R170
Vacuum Valve		Electric
Draintap		Yes
Touch screen for control options		Yes
USB port for LaboGene software/SD card for data		Yes
3 electric heated shelves ø180, for pre freeze and freeze drying		Yes, 0,25L/shelf
Distance between shelves	mm	34

Revision date | rev. version: May 2020 | 0.2 | CoolSafe Superior Touch XS - 230V

LaboGene A/S  
Bjarkesvej 5  
DK-3450 Allerød

Tel (+45) 3940 2566  
Fax (+45) 3995 2566  
Mail [info@labogene.com](mailto:info@labogene.com)  
Web [www.labogene.com](http://www.labogene.com)

  
**LABOGENE**  
Scandinavian by Design



# COOLSAFE SUPERIOR TOUCH XL 3 SHELVES SPECIFICATIONS



For more information please visit:  
[www.labogene.com](http://www.labogene.com)

CoolSafe Superior Touch XL 3 Shelves	Unit	Part no: 700061
Digital read-out of temperature		Yes
Digital read-out of pressure		Yes
Ultimate temperature at 20°C room temperature	°C	-95
Power requirements	V/Hz	230/50-60
Power consumption	W	1400
Insulation	mm	90
Condenser capacity when equipped with the rack	kg	2
Condenser capacity per 24 hours when equipped with the rack	kg	2
Total volume of Condenser	L	15
Weight net	kg	85
Cabinet dimensions (DxWxH)	mm	620x495x745
Cabinet material		Polyester coated steel
Condenser material		Stainless steel AISI 316
Cooling media		R 507/R170
Vacuum Valve		Electric
Draintap		Yes
Touch screen for control options		Yes
USB port for LaboGene software/SD card for data		Yes
3 electric heated shelves ø180, for pre freeze and freeze drying		Yes, 0,25L/shelf
Distance between shelves	mm	79

# COOLSAFE SUPERIOR TOUCH XL 5 SHELVES SPECIFICATIONS



For more information please visit:  
[www.labogene.com](http://www.labogene.com)

CoolSafe Superior Touch XL 5 Shelves	Unit	Part no: 703178
Digital read-out of temperature		Yes
Digital read-out of pressure		Yes
Ultimate temperature at 20°C room temperature	°C	-95
Power requirements	V/Hz	230/50-60
Power consumption	W	1400
Insulation	mm	90
Condenser capacity when equipped with the rack	kg	2
Condenser capacity per 24 hours when equipped with the rack	kg	2
Total volume of Condenser	L	15
Weight net	kg	85
Cabinet dimensions (DxWxH)	mm	620x495x745
Cabinet material		Polyester coated steel
Condenser material		Stainless steel AISI 316
Cooling media		R 507/R170
Vacuum Valve		Electric
Draintap		Yes
Touch screen for control options		Yes
USB port for LaboGene software/SD card for data		Yes
5 electric heated shelves ø180, for pre freeze and freeze drying		Yes, 0,25L/shelf
Distance between shelves	mm	34

# 40

# 10+ YEARS OF EXPERIENCE

LaboGene are experts in the fields of Clean Air & Laminar Flow, Centrifugation, Vacuum & Cooling. We provide both standard and perfectly customized solutions. Designing, developing, manufacturing and marketing laboratory and industrial equipment is our speciality.

Leading supplier in:

Microbiological safety cabinets  
Freeze dryers  
Freezers  
Centrifuges

Learn more at [www.labogene.com](http://www.labogene.com)



LaboGene ApS  
Bjørkesvej 5  
DK-3450 Allerød

Tel (+45) 3940 2566  
Fax (+45) 3995 2566  
Email [info@labogene.com](mailto:info@labogene.com)  
Web [www.labogene.com](http://www.labogene.com)



LABOGENE  
Scandinavian by Design

