



safematic

Provider of
critical-point
drying systems

ONE patented device
full-automated
dehydration and
critical point drying



make it visible

CDS-020 COMPACT DRYING SYSTEM

Safematic CDS-020 COMPACT DRYING SYSTEM

Dehydration and critical point drying of your samples, **fully automatic** in **ONE** device.

The advantages:

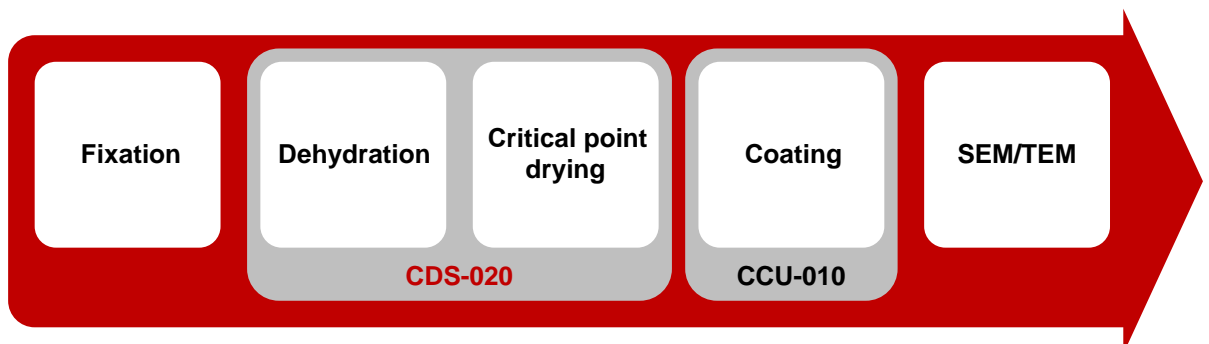
- Dehydration and critical point drying in **one** compact instrument
- Fully automated, hands-off process without necessity of monitoring
- Start a process in the evening retrieve your dried specimens in the morning
- Recipes and process tracking - greater reliability and traceability
- Compact design - saves valuable laboratory space
- Specimens up to the size of 30mm
- Minimal sample handling
- No use of refrigerants

Applications and process

Water-containing structures or moist samples (usually biological, but also aerogels and hydrogels) can be altered or destroyed during drying in air or in a vacuum.

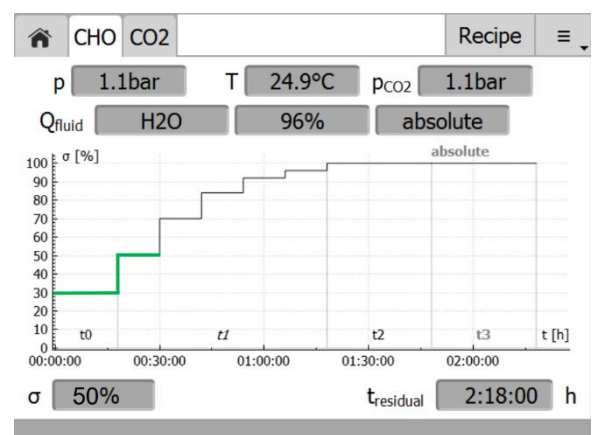
Critical point drying with the safematic CDS-020 is an efficient method for preserving these structures. The tangential forces of interfacial tension that occur during drying between water and air are avoided by transferring the liquid phase of CO₂ into the gas phase without a phase transition. For this purpose, water is replaced by ethanol (miscible with liquid CO₂) which in turn is exchanged for liquid CO₂ and to CO₂ gas during the drying process. The steps required to prepare hydrated biological samples for SEM/TEM include fixation, dehydration, critical point drying, mounting, and coating with metal to improve electron conductivity of specimen imaging.

The Safematic Compact Drying System CDS-020 covers the steps of dehydration and critical point drying. The automated process ensures repeatable high quality results.



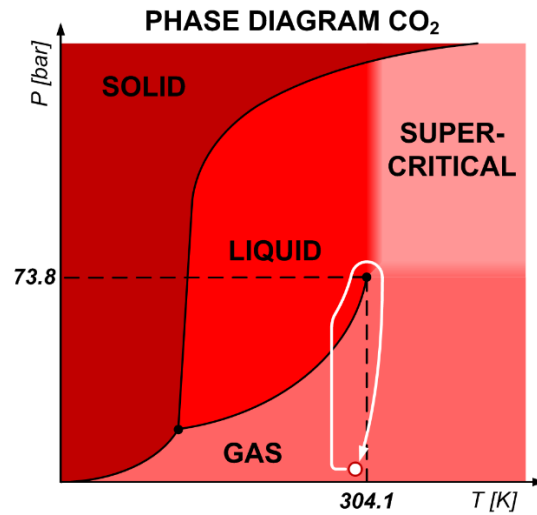
Dehydration

The high water content of chemically fixed biological specimens requires gentle, controlled dehydration. Under high vacuum conditions (e.g. in an SEM, residual water would evaporate and damage biological structures. Similarly, drying the specimens directly from water leads to severe structural deformation due to surface tension effects. An exchange of the water for a liquid with a lower surface tension and subsequent drying by evaporation of the substitution fluid improves morphological structure.



Critical point drying

Critical point drying is a preparation technique used to prepare soft tissue specimens for imaging under vacuum conditions (e.g. SEM) without the artifacts caused by evaporative drying. During evaporation, the liquid in the specimen crosses a phase boundary, which can lead to distortion and collapse of specimen structure. By increasing the temperature and pressure in the processing chamber, the critical point of the liquid can be reached when sublimation to the gaseous phase occurs. After the critical point is passed, the pressure can be lowered so that dried specimens can be removed.



Specimen holders included with the CDS-020

Coverslips Ø 12mm	Coverslips Ø 18mm	Coverslips □ 22mm	Strainer holder

The specimen holders are handled with the included grabber and can be stacked in the chamber. Additional specimen holders can be customized on request.

Specifications	CDS-020
Dimensions (L x W x H)	55 x 37 x 43cm
Weight	42kg
Electrical connection	100 to 240VAC, 50 / 60Hz, max. 500W
Noise level	maximum 55dB(A)
Chamber dimensions	Ø 60 x 44mm
Cup (vessel for sample holders)	Ø 50 x 34mm
Chamber volume	160ml
Operating pressure	maximum 80bar
Bursting pressure	125bar @ 20°C (bursting membrane)
Operating temperature environment	+17 to +27°C
Temperature range dehydration	+1 to +24°C
Storage temperature	+5 to +40°C
Exchange fluid	Ethanol (only), distilled water
Exchange fluid consumption	< 1L per run and fluid type (depending on recipe)
Transitional fluid	Carbon dioxide (CO ₂)
Gas inlet	3/8 inch external thread
Gas cylinder type	With or without feed pipe
Gas cylinder size	≥ 10L
CO ₂ purity	≥ 99.9%
CO ₂ consumption	< 0.3kg per run
Min. pressure CO ₂ (Inlet)	52 bar
Waste out	Ø 8mm
Waste bin	Container 5L (monitored)



THE COMPANY

Our company is nestled along the upper Rhine in Switzerland, with its long history of innovation in vacuum and coating technology. **With our new compact drying system CDS-020 we are proud to support our customers in a further step in sample preparation with an innovative and fully automated solution.** We are Swiss made, guaranteeing quality and a deep understanding of your needs and how to meet them.

Swiss made

Your preparation solution

Apart from our standard products, we also offer customised extensions

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