

# Product Specification

**Product: DryCon HPCS© 1700-1**  
**High Pressure Closed System for Whole Body**  
**Preservation and Mummification without Formalin**  
**Cat.-No.: MA-1700-1**

## “DryCon HPCS© 1700-1” for one corpus

Used for the fixation, preservation and mummification of whole bodies in anatomy. For teaching purposes, mummification of whole bodies and long term “dry” storage of anatomical corpses by means of a **patented** high pressure, **non-formalin**, lacervation system.

**Type: 1700-1**

## Concept and Features

This new anatomical technology, a first worldwide, was designed to eliminate the use of formalin and to create a closed system for the processing of whole bodies for teaching purposes in anatomy. Consisting of modular units that work autonomous and may be programmed individually, the system also allows the modular units to be fitted together to allow preservation of an unlimited number of cadavers.

The number of units to be installed must be determined at the design stage if units are to be located in different rooms.

A special advantage is the processing not just of the whole body but also of organs and body parts in a fully closed process chamber, whereby the infiltration solution is pumped into the chamber until the body / organ is fully covered (akin to a closed Tissue Processor in pathology). After this procedure, the body maybe “mummified” for long term storage in a dry environment on a simple shelf. If the body is to be used for a student dissecting course, it can be readily restored to its original “soft” condition.

The DryCon unit is also designed for the regeneration, resoftening, examination and repair of ancient mummies in a careful manner.

The DryCon unit (module) consists of a solid, and self-carrying construction with automatic electronic control functions to enable one-man operation. Specially developed to guarantee pollution-free fixation and conservation of whole bodies **without the use of formalin** in a fully closed system that is pressurized with 3 bars in order to speed up, enhance and intensify the infiltration.

The DIS infiltration solution is a **patented**, quality controlled solution



„DryCon HPCS 1700-1“ with Siemens Control Unit



“DryCon HPCS 1700-1” patented Lacervation Unit



MA-1700-1 “DryCon© HPCS” Modular Unit with highpressure process chamber for best tissue infiltration

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based on a harmless, none-toxic, organic product called "Shellac" (with low concentrations of ethanol). With the approval of leading anatomists, because of the use of Shellac, the patented method is termed "Lacservation".

## The Processing Steps

### 1. Embalming / Perfusion

It is of great advantage to the infiltration of any corpus that the embalming is done upfront on a special, extracted embalming table with our "PerfuTek" system. This system contains a pump with an adjustable pressure, a container with DIS-solution and several needles for the injection of DIS. This operation requires to drill a 15mm hole into the forehead of the body in order to have a good throughflow of DIS. Without this "PerfuTek" embalming procedure the infiltration time is much longer and less intensive having a possible negative impact on the quality of even infiltration.

Note: The extracted embalming table MA-1005 is necessary only for the odourless embalming of the body if formalin is used!

After the embalming / perfusion is complete the body can be transferred without touching it to the DryCon unit for infiltration.

For information and download of "PerfuTek" specs see website!

### 2. Automatic Body Transfer into DryCon Unit

The embalmed body will be transferred by means of the Universal Transporter to the DryCon unit. After the insertion the body tray is secured by a locking mechanism and the DryCon unit is ready for operation.

The special door closes automatically when the switch "close door" is pushed and held in position until the automatic locking mechanism has stopped it's operation.

Note: the transfer must be made on a MEDIS-KUGEL body tray because of it's correct placement into the DryCon process chamber

### 3. Infiltration

Before starting the infiltration process the controls will acknowledge that the tanks are fully filled with DIS solution. Now the



MA-1450 PerfuTek perfusion system – ready for use



MA-1005 Embalming table with downdraft sidewall extraction, transfer body tray and electronic height adjustment. When using DIS-solution, the extraction is not necessary.



MA-2010 Universal Transporter with electr. height adj. for automatic body-transfer to / from dissecting table.



Body tray fully inserted into process chamber

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switch "Infiltration" is pushed and the 1000 litres of DIS are pumped into the process chamber. After the corpus is fully covered, the filling process stops automatically and the unit is building up the 3 bar pressure inside the process chamber. Depending on the size of the corpus the infiltration phase is normally finished after 12 hours if 3 bar pressure was applied. Also the fat has been removed from the body and is separated automatically by means of an integrated fat-separator device.

## The Processing Steps (contd.)

The DIS is now returned to the DIS-reservoir so that there is no DIS left inside the process chamber. After a safety check by the control unit the door will open automatically and the corpus on the transfer tray can be removed directly into the dissecting table without touching it. Now dissection can start.

### 4. Mummification for Long Term "Dry" Storage of Corpuses

There is no need to store the infiltrated / embalmed corpses in liquid DIS because of the unique "Dry Storage" feature of the DryCon system. After the infiltration of the body the corpus must be transferred to the embalming table again. Here it is covered with the odourless "Gummi" mummification solution containing wax ("Gummi") from Shellac and ethanol. This viscous solution must be brushed on the complete corpus in several layers. The corpus then must be left in open air so the "Gummi" at the surface will dry and become hard i. e. a fully airtight layer around all parts of the corpus.

This mummified corpus can be stored on a standard shelf for an unlimited period of time. If the corpus is needed for the dissection course it can be brought back into it's original soft condition by immersing it into DIS – solution again.

This solution will completely dissolve the "Gummi" layer around the corpus. N. B. The same procedure will be applied on original ancient mummies e. i. infiltrate them with DIS solution. If you are interested in reconditioning of ancient mummies, please contact us. We are very much experienced in combination with our DryCon system.

Anatomy-Forensic Medicine-Pathology

### 5. Evaporation

In order to keep the corpus soft for dissecting purposes the DryCon unit has an integrated so called "evaporation" system. This means, whenever the corpus is loosening it's softness And the Shellac is drying on the surface, it can be inserted into the process chamber again and the process "evaporation"



A photograph showing the mummified corpus Prepared for long term storage..Courtesy of Prof. Al-Hayani, Director, Dpt. Of Anatomy, King Abdul Aziz University, Jeddah/Saudi Arabia.

Note: Prof. Al-Hayani has 10 DryCon units working routinely for dissecting courses installed in his department!



A photograph showing dissected front of the th with well preserved and normal discolored mus of the anterior compartment .

Courtesy of Prof. Al-Hayani, Director, Dpt. Of A King Abdul Aziz University, Jeddah / Saudi Ar

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can be started. This will fill the process chamber with DIS only until up to 5 cms below the body tray. This means the corpus will not be immersed in DIS at all. Due to the evaporation of the Shellac/ Ethanol mixture the environment above the liquid will be totally vaporised – keeping the corpus wet and soft. The complete fast process can be programmed in and runs automatically.

The corpses may also kept soft by putting them into a plastic bag with zipper – leaving them on the dissecting tables for a longer period of time. However, this is sometimes not so convenient for the students.

## 6. Dissecting

This procedure can be carried out with no extraction of the dissecting tables. This is an odourless procedure. However, as shown at the photograph to the right, the colours of the tissue is very original and all negative influences caused by the formalin are no longer present. This means students can do the dissecting procedures without being afraid of hazardous fumes or negative impacts.

## Content of Delivery

The DryCon HPCS 1700-1 modular unit will be delivered as follows:

- 1 x MA-1700 DryCon Unit for 1 corpus
- 1 x MA-1710 DryCon "DIS" Infiltration Solution\*, 1000 L safety container
- 1 x MA-1720 "pH-Regulation-Solution" for DryCon System (200 litres)
- 1 x MA-1719 Mummification Solution (ready for use), 100L container
- 1 x MA-1712 Electrical Barrel- und Container Pump, expl. proof
- 1 x MA-2010 Universal Transporter w. electrical height adj. for loading
- 1 x MA-1705 Power Cord, 5m
- 1 x MA-1709 Electronical pH-meter (integrated in DryCon Unit)
- 1 x MA-1706 Operating & Service Manual

- Note: The DryCon DIS-Solution has a shelf life of 12 months!

Optional important accessories:

If you don't do any embalming of the corpses before the insertion in to the process chamber / preservation-fluid we strongly recommend to order the following perfusion system for the embalming of the body:

- 1 x MA-1005 EmbalmingTable, extracted and height adjustable
- 1 x MA-1450 "PerfuTek" Body Perfusion System incl. adjustable pump, 50litre container for DIS solution, set of perfusion needles, handpiece, operating manual.

## Technical Set-Up of the DryCon Unit

The process chamber, similar to a process-chamber of a closed system Tissue Processor like the V.I.P. or Hyper Centre, is fully closed and has a drain port in the bottom of the chamber which leads the DIS solution

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back to it's main container with 820 litres lacservation fluid.

After the unit has been installed in a levelled place the only necessary connections must be made to 400V / 16A electricity.

These are the only in-house preparations for the DryCon unit. It is not necessary to install expensive fume extraction systems – nor is it of importance to protect the students / employees against the fatal negative effects of inhaling formalin fumes.

## Main Elements of the DryCon Unit

- Pressure pump for operating pressure up to: 3,0 bars
- Seamless drawn body tray with positive (convex) embossment, 8 wheels and handle on both ends.
- 820 litre reservoir for DIS solution
- 200 litre reservoir for reserve DIS solution
- 180 litre reservoir for concentrate DIS solution in order to automatically adjust the pH value if it should change out of range.
- Automated computerized control system for remote maintenance-check / diagnosis / repair to any part of the world
- Automatic "closed system" filling system for the 3 reservoirs
- Fat separator device with free drain to the outside

## Advantages

- Preservation system using no formalin at all
- Environmental- and eco-friendly system
- Odourless process
- Fully closed system
- Fully automatic body loading / unloading system throughout
- Possibility of "long term dry storage" of corpuses
- Fast and intensive infiltration by means of high pressure (3 bar)
- Huge cost saving factor:
  - a) Usage of 1000 litres DIS conservation fluid p. a. only instead of appr. 120.000 litres of formalin in several tanks
  - b) No necessity of installing expensive fume extraction systems or extracted dissecting tables.
  - c) No special waste drain system necessary
- System for the examination of ancient mummies

## Technical Data

Total outer dimensions:: 4512(L) x 940(W) x 1963(H)mm

Weight: net 2700kgs / gross (filled) 3.500kgs

Dim. of boy tray: 2080(L) x 940(W) x 80(H)mm

Material: Stainless steel EN / DIN 1.4571 K 320 polished (AISI 316)

Dim. of door: 700(B) x 600(H)mm

Door with special pressurized viton gasket

Tank 1 with DIS solution: 1000 litres

Tank 2 with reserve DIS solution: 200 litres

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Tank 3 with DIS concentrate for autom. pH – value adjustm.: 180 litres  
Loading height of body tray measured from floor:900mms  
Operating pressure during infiltration: 3bars  
Unit with rollers for easy movement in case of maintenance  
Unit with crane lifting devices on top of unit for easy placement  
Complete filling volume at first installation: 1200 litres DIS solution\*

\*this volume lasts for one year, depending how many corpses were infiltrated and if the corpses have been embalmed with the PerfuTek perfusion system before insertion into the DryCon process chamber!

## In-house-preparations before installation

- Waterlevel floor
- Electr. supply 400V / 16A / 3Ph / 50/60Hz
- Doors with sufficient height and width (please double check)
- Rooms with enough space. 7,2 meters are needed to fully operate the DryCon unit (4,5m for the unit / 2,2 meters for the Universal Transporter for loading / unloading / 0,5 meters for operator).
- There must be appr. 1meter space between the wall and the DryCon unit for handling / filling / maintenance.

Installation by our specialists.  
Delivery incl. operating & service instructions.

## Country of Origin

Manufactured by MEDIS MT GmbH in Germany under ISO 9001 certification and according to valid EC / DIN norms and Health & Safety regulations.