

# CitoVac



Vacuum impregnation unit, especially designed for impregnation of porous materials



CitoVac gives you superior impregnation, carried out quickly and efficiently. Perfect for porous materials, such as specimens for failure analysis with cracks, porous casts and composites, electronic components, rocks minerals, ceramics and spray coatings.

CitoVac is extremely user-friendly, and is equipped with a spacious vacuum chamber.

## Easy handling

- Handy inlet tube for trouble-free filling of the mounting cups, and no spilling
- Easy-to-read display and touch pad keys for user-friendly operation
- Transparent lid for a clear view during impregnation
- Disposable consumables for optimal safety and less cleaning

## Room for many and/or large specimens

- Spacious vacuum chamber
- Practical mounting cup holder with room for up to 8 mounting cups (accessory)

# CitoVac

## Impregnation

Perfect impregnation of porous specimens requires that there is no air in the pores and cracks of the specimens when the impregnation material is applied. The only way to obtain this is to impregnate under vacuum. CitoVac ensures perfect impregnation of your specimens.

CitoVac is equipped with a large vacuum chamber and a user-friendly operational panel. The impregnation material (e.g. Struers EpoFix) is supplied through a disposable tube, and is quickly and efficiently distributed, without messy spilling, to the individual mounting cups.

## CitoVac features

### Handy inlet tube

CitoVac is designed for trouble-free filling of the mounting cups, and is operated without spilling of impregnation material in the vacuum chamber or outside on the cabinet. This is achieved by manually rotating the mounting cups on the turn table to the fixed inlet tube. The valve controlling the flow of the impregnation material is also easy to handle.

*Fast and easy impregnating with Struers mounting cup holder*



### User-friendly operation

CitoVac is operated with a few touch pad keys. The display presents both set values and present vacuum and time. Display and touch pad are placed behind the chamber to secure that they will not be soiled with mounting material.

### A clear view during impregnation

The transparent lid allows a clear view when filling the mounting cups in the vacuum chamber. Therefore the amount of impregnation material per cup can be controlled, which results in less waste of impregnation material.

### Optimal safety and less cleaning

All consumables which have contact with the mounting material are disposable. This ensures the optimal safety for the user and reduces cleaning to a minimum.

### A large vacuum chamber

With CitoVac many specimens can be impregnated at the same time. Using 30 mm / 1¼" dia. moulds 10 specimens can be mounted, using 40 mm / 1½" dia. moulds, 8 specimens can be mounted at the same time.

In addition, the large vacuum chamber allows also impregnating large specimens under vacuum. Thus, CitoVac can use a 200 mm / 8" dia. mounting cup to impregnate large samples.

### Practical mounting cup holder

To make it fast and easy to handle many specimens, we have designed a mounting cup holder. The holder can be used with Struers mounting cups ≤ 30 mm / 1¼" dia. (UnoForm) only, as the cups hang on their little 'wings'.



*Easy filling of mounting cups*



*CitoVac with disposable dispensing tube for optimal safety and time-saving*



*CitoVac with Struers impregnation material (EpoFix)*



*User-friendly operation*



*Spacious vacuum chamber for large specimens*

## Efficient impregnation

An efficient impregnation depends on several conditions:

### 1. Open pores

Only pores, cracks etc. which are open can be filled with impregnation material. After the finished preparation, closed pores can be differentiated in the microscope from pores that are filled with impregnation material, due to the different reflection of the light. The contrast of the impregnation material in the pores can be further enhanced by using EpoDye, a fluorescent dye (see specimen impregnated with EpoFix and EpoDye above).

### 2. Vacuum

The specimen is evacuated to the lowest possible pressure. During the impregnation itself the pressure is then adjusted so the impregnation material does not start to foam inside the vacuum chamber (100-150 millibar).

### 3. The viscosity of the impregnation material

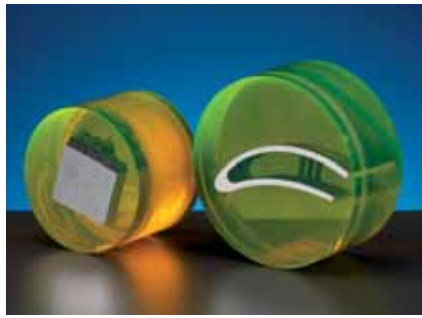
The best impregnation is obtained with the most fluid material. With e.g. EpoFix the lowest viscosity is obtained at 30 - 40°C. The best result is achieved by using the impregnation material immediately after mixing, before the viscosity of the material starts to increase due to the polymerization.

### 4. A clean specimen

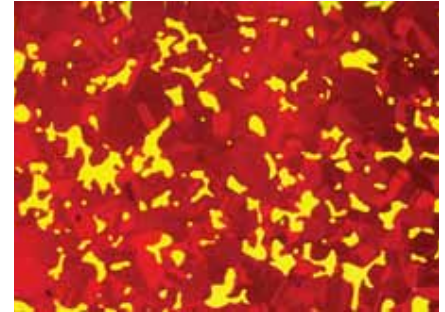
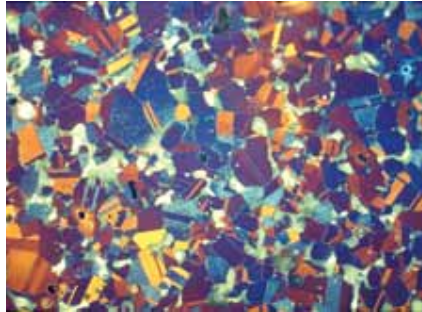
Grinding dust prevents the impregnation material from thoroughly penetrating the specimen. The specimen is best cleaned in an ultrasonic cleaner. Afterwards, it is rinsed with ethanol and dried thoroughly in order to make the impregnation agent adhere better to the surface.

### 5. Time

The smaller the specimen, the shorter the evacuation time to ensure that all air is removed from the voids and cracks. Depending on number and size of the specimens, the vacuum time can vary from a few minutes to 20 minutes or more.



Steel components mounted with EpoFix and EpoDye



Left: Bright field, 200x. Right: Long pass blue/short pass orange filter, 200x  
Material: Powder Metallurgy, stainless steel with 10% volume  $Cr_3C_2$

Specimen impregnated with EpoFix and EpoDye, using CitoVac. The micrograph to the right shows the specimen material in reddish colours and the voids filled with the mounting material in yellow. This impregnation technique, combined with the proper filters in the optical microscope, makes it easy to evaluate voids and/or cracks present within a specimen.

## Consumables

CitoVac is designed for optimal use with a disposable dispensing tube. In the CitoVac Consumable Kit 100 pcs. of disposable dispensing tubes and one clip to hold the tube are included.

For easy maintenance of the vacuum chamber, a disposable chamber protector to shield the chamber against the impregnation material will be available in the Consumable Kit.

## e-Training

CitoVac is available with Struers e-Training. Practical help right when you need it is waiting at the Struers e-Training site. View videos with clear explanations demonstrating unpacking, installation and operation of CitoVac. Brush up your knowledge or introduce new employees to CitoVac whenever convenient. Please contact your local representative for more information.



[www.struers.com/e-Training](http://www.struers.com/e-Training)



Electronic components mounted with EpoFix and EpoDye

## Technical data

### Dimensions:

Height: 190 mm / 7.5"  
Width: 380 mm / 15"  
Depth: 370 mm / 14.5"  
Weight: 9.5 kg / 21 lbs.

## Specifications

### CitoVac with built-in vacuum ejector

Vacuum impregnation unit. Compressed air supply 4.5 - 6 bar required. 1 x 100-240 V / 50-60Hz.  
Code: VACWI  
Cat. no: 05926119

### CitoVac for external pump

Vacuum impregnation unit. External vacuum pump required. 1 x 100-240 V / 50-60Hz.  
Code: VACUT  
Cat. no: 05926219

### Mounting Cup Holder for UnoForm ≤ 30 mm / 1¼" dia.

For easy handling of mounting cups. Holder for 8 Struers UnoForm 25 mm / 30 mm / 1¼".  
Code: VACFU  
Cat. no: 05926903

### Consumable Kit for CitoVac

Disposable consumables for CitoVac. 100 dispensing tubes, one chamber protector and one clip for dispensing tube.  
Code: VACKI  
Cat. no: 40300080

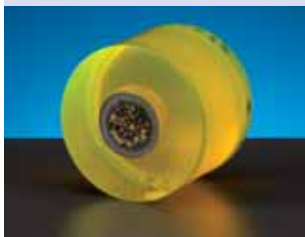
### e-Training module, CitoVac

Online CitoVac training module illustrating unpacking, installation and operation. Subscription is valid for one year for up to three named users. Please state user names and e-mail addresses upon ordering.  
Code: ETRAI  
Cat. no: 86210400

### EpoDye

Fluorescent dye to use in microscopy to make cracks and pores visible. For use with Specifix, EpoFix, ClaroCit and ViaFix. Special filters for microscope required.  
Code: EPOLU  
Cat. no: 40300002

Cable mounted with EpoFix and EpoDye



### EpoFix kit

Epoxy cold mounting system curing at room temperature in about 8 hours, with no shrinkage, especially suited for vacuum impregnation. Transparent.  
Code: EPOFI  
Cat. no: 40200029

### EpoFix resin. 1 l

For EpoFix epoxy cold mounting system. 1 l EpoFix Resin corresponds to 130 ml EpoFix Hardener.  
Code: EPOES  
Cat. no: 40200030

### EpoFix hardener. 500 ml

For EpoFix epoxy cold mounting system. 500 ml EpoFix Hardener corresponds to 4 l EpoFix Resin.  
Code: EPOAR  
Cat. no: 40200031

### Specifix-20 kit

Epoxy cold mounting system curing at room temperature in about 8 hours, with no shrinkage, especially suited for vacuum impregnation. Transparent.  
Code: EPO20  
Cat. no: 40200048

### Specifix-40 kit

Epoxy cold mounting system curing at elevated temperature (40-60 °C) in about 3.5 hours, with very low shrinkage, suitable for vacuum impregnation. Transparent.  
Code: EPO40  
Cat. no: 40200049

### Specifix resin. 1 l

For Epoxy cold mounting system. The resin can be mixed with different curing agents to achieve various properties. For use with Specifix-20 or Specifix-40 Curing Agent.  
Code: EPOIN  
Cat. no: 40200051

### Specifix-20 curing agent. 500 ml

For Epoxy cold mounting system for room temperature curing. 500 ml Specifix-20 Curing Agent corresponds to 2.5 l Specifix Resin.  
Code: EHA20  
Cat. no: 40200052

### Specifix-40 curing agent. 1 l

For Epoxy cold mounting system curing at elevated temperature (40 - 60 °C). 1 l Specifix-40 Curing Agent corresponds to 2 l Specifix Resin.  
Code: EHA40  
Cat. no: 40200053

Please see special brochure for mounting cups, dye, taper section angles and other accessories for cold mounting.

Struers' products are subject to constant product development. Therefore, we reserve ourselves the right to introduce changes in our products without notice

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