



PermeaPad® Plate

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# PermeaPad® Plate



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## Notes for the manual



### Safety equipment

Notes with this symbol indicate that your personal protective equipment is to be worn



### Manual

Notes with this symbol indicate that you have to carefully read the manual before use.



### Information

Notes with this symbol indicate additional information.



### Not for reuse

This is a disposable product. It is not allowed to use it more than once.



### Usable until

The note with date indicates the best before date.



### Batch and serial number

The letters and numbers following the symbol indicate the batch and serial number of the product.



### Temperature limitation

The symbol indicates a temperature limit.

## Qualification of Staff

The use of the product is restricted to technically trained staff. Additionally the manual must be read and fully understood.

## Legal Notice

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## Security



Retain all safety instructions and instructions in order to consult them in the future.

This product may be used by children 14 years old or older, as well as by people with reduced physical, sensory or mental abilities or by people lacking experience and knowledge, if they have been supervised or instructed in the safe use of the device and understand the resulting hazards. Children are not allowed to play with the product.

- Do not use explosive substances with the product.
- Do not use strong chemicals with the product.
- Do not use the product after a fall. The product could have been damaged by the fall.
- The product is not a toy. Keep children and animals away.
- Protect the product from permanent direct sunlight.
- Do not open the product with a tool.
- Use the product only if adequate safety precautions have been taken at the workplace. Otherwise, do not use the product.



Observe the storage and operating instructions. If you store or transport the product improperly, the product may be damaged. Observe the information on handling (Chapter User Guidelines) and on storage of the product.



Do not reuse this product. Results in a used well are not reproducible after the product has been used for the first time and has made contact with the medium.



Wear protective equipment such as gloves, eye protection and protective clothing. Depending on which other products, substances or chemicals you use, further protective measures may be necessary. Pay particular attention to the respective safety data sheets for chemicals before using them.

## Abstract

The developed 96-well plate system enables a breakthrough in high-throughput permeability screening. The innovative structure and plate-integrated biomimetic barriers (PermeaPad® Barrier) enable *in vitro* permeability assays\*. Measurements with the PermeaPad® Plate are simple, fast and reproducible. The PermeaPad® Barrier simulates the passive mass transfer. Due to its unique and innovative composition the barrier is very robust, resistant and has a long shelf-life. As a consequence of these properties measurements are possible within a large pH range. Specific experimental conditions can be selected according to the substance studied.

\* For research use only. Not for use in diagnostic procedures.



## Technical Data

**See data sheet PermeaPad® Barrier:**

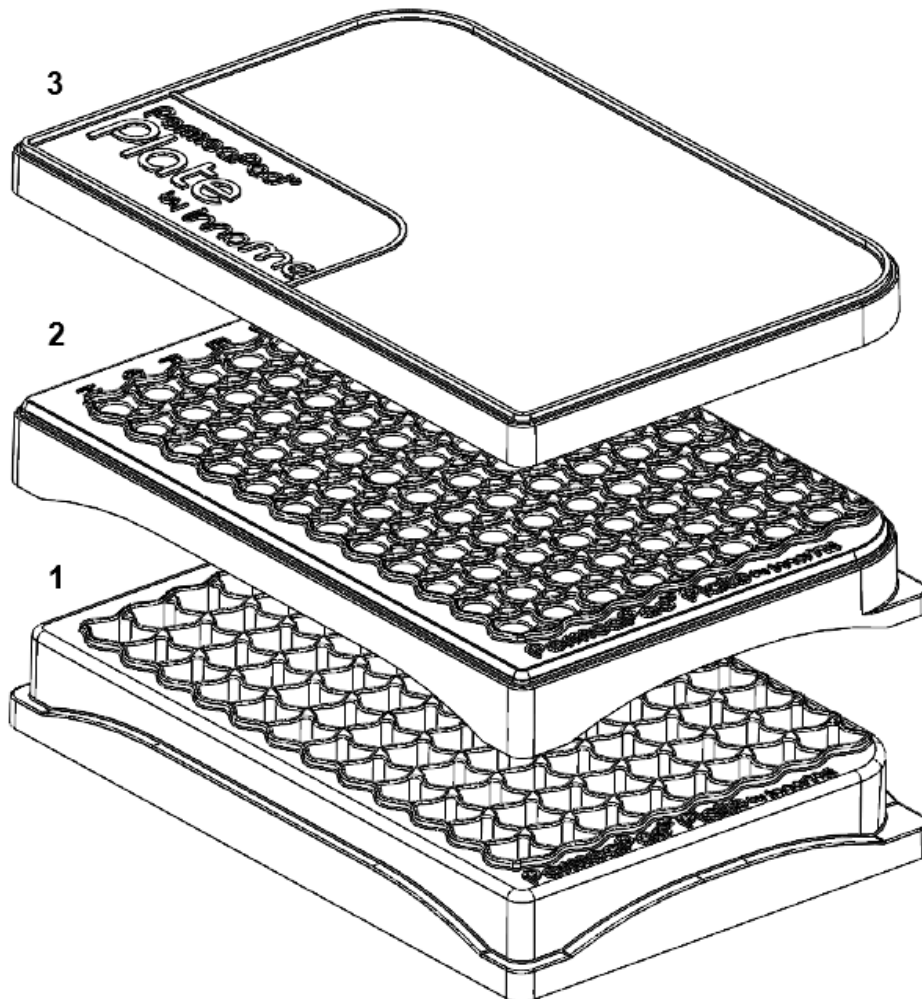
<https://labtastic.shop/produkt/permeapad-barriere-individuell/>

**See data sheet PermeaPad® Plate:**

<https://labtastic.shop/produkt/permeapad-plate/>



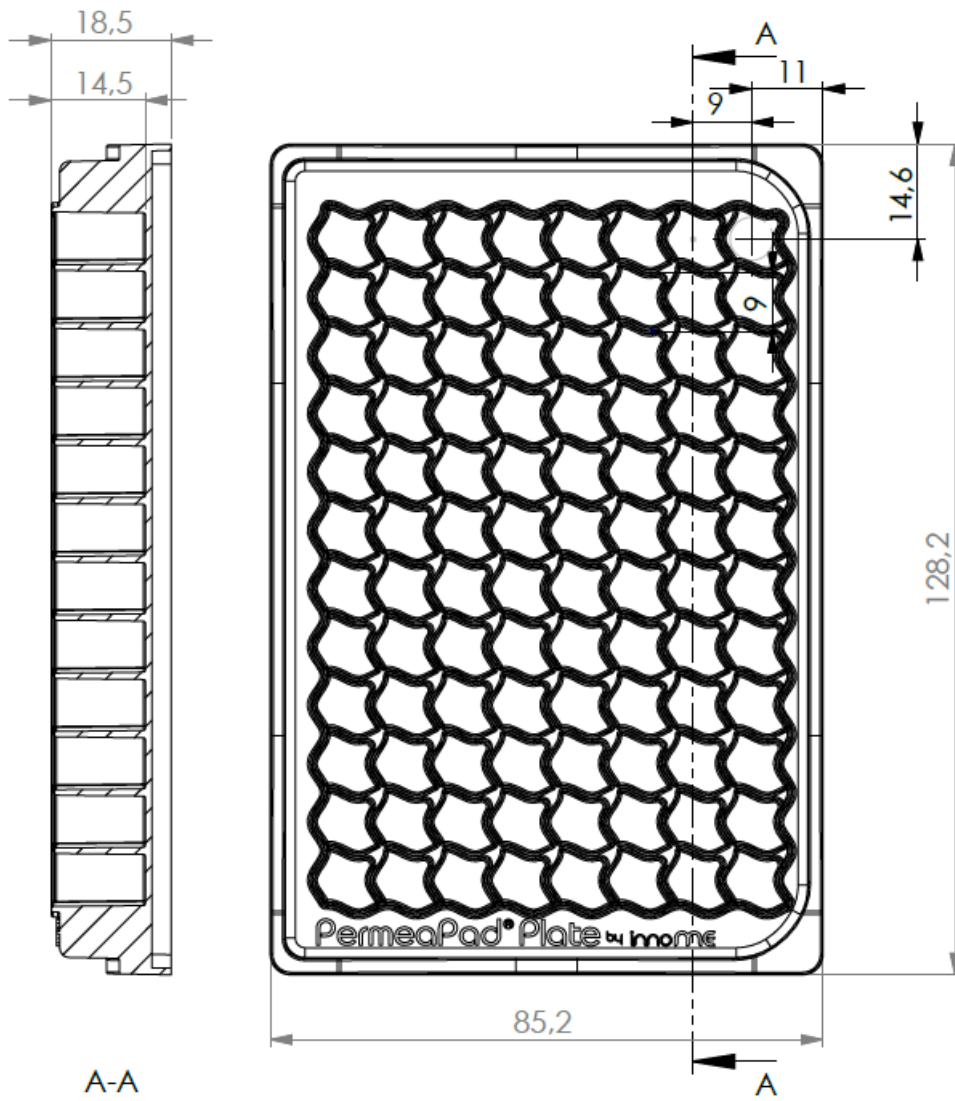
**PermeaPad® Plate:**



- 1: Bottom plate**
- 2: Insert-plate**
- 3: Cover**

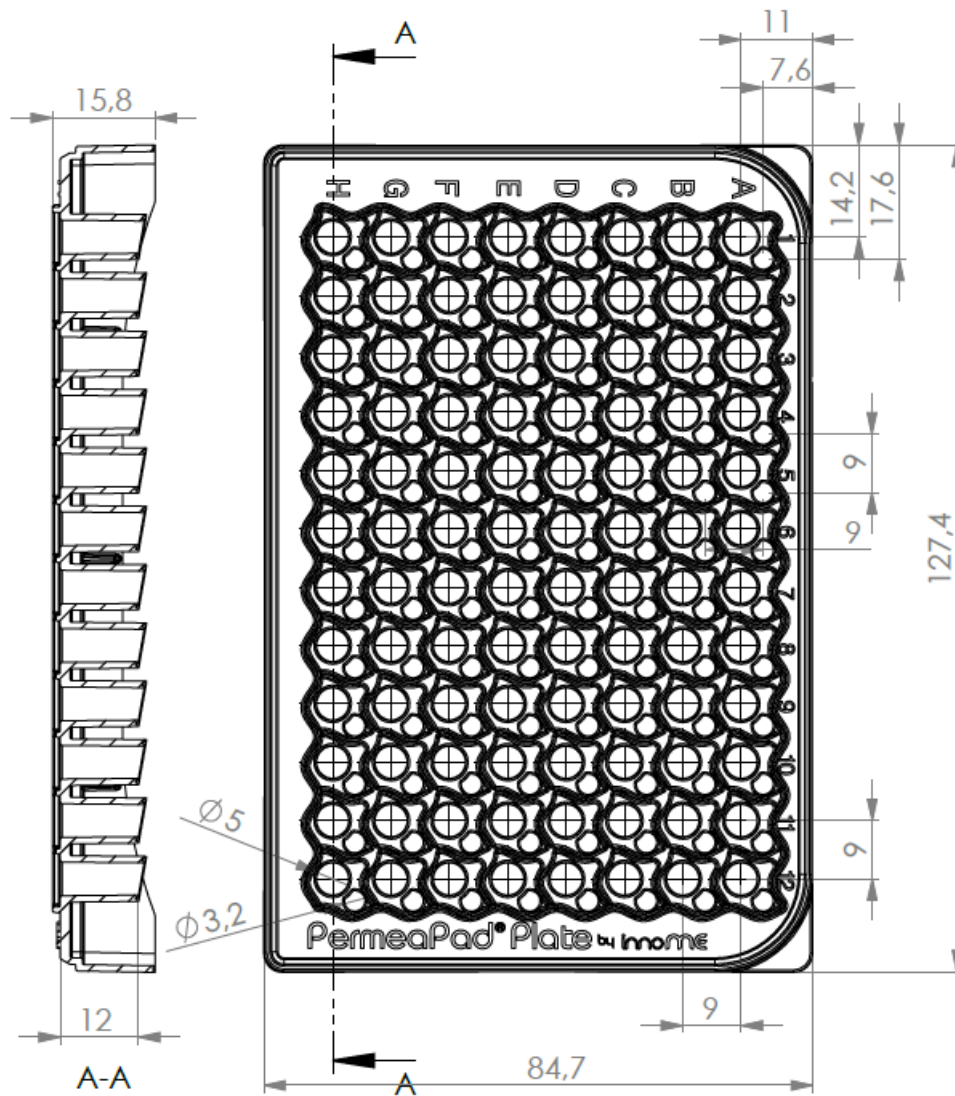


**Measurements of the bottom plate (mm):**





Measurements of the Insert-plate (mm):







## Scope of delivery

PermeaPad® Plate:

- 96-well bottom plate
- 96-well Insert-plate with integrated PermeaPad® Barrier
- Cover

## Storage



- dry and dark at 25°C
- protected from extreme temperatures
- protected from dust and sun



- in horizontal orientation
- store in the packaging until use

## Please Note

If you store or transport the product improperly, the product may be damaged. Observe the information on handling (see User Guidelines) and storage of the product.



## User Guidelines

### Application:

1. **Remove the PermeaPad® Plate (consisting of 3 parts) from its packaging.**
2. **Make sure that the plate has no visible damage.**
  - a. Is a membrane missing in any well of the insert-plate?
  - b. Are there any cracks, bubbles or other signs of inhomogeneity on the membrane?
3. **If there is no visible damage in particular according to 2 a)-b), continue with step 4 Set-up A or step 5 Set-up B.**
4. **Set-up A: Donor compartment in the bottom plate:**
  - a. Pipette the donor medium into the wells of the bottom plate (donor compartment). Set insert plate in place. Pipette acceptor medium into the wells of the Insert-plate (acceptor compartment).
  - b. The membranes must be completely covered with liquid.
  - c. The volume the sample in each well of the bottom plate must be between 200-400  $\mu\text{L}$ .
  - d. The maximum volume in the wells of the Insert-plate is 200  $\mu\text{L}$ .
  - e. Continue with step 6.
5. **Set-up B: Donor-Compartment in the Insert-plate:**
  - a. Pipette acceptor medium into the wells of the bottom plate (acceptor compartment). Set the Insert-plate into place. Pipette donor medium into the wells above the membrane of the Insert-plate
  - b. The membranes must be completely covered with liquid.
  - c. The volume of the sample in each well of the bottom plate must be between 200-400  $\mu\text{L}$ .
  - d. The maximum volume in the wells of the Insert-plate is 200  $\mu\text{L}$ .



6. **After the desired test period, take samples of appropriate size from the acceptor compartment and analyze the content (concentration) of the drug in the sample with an established method (e.g., HPLC, LC-MS/MS, etc.).**



If a time series is recorded for the permeation and therefore several samples taken from the acceptor compartment, there are two different set-ups:

- a. Take samples from the acceptor compartment, replenish the appropriate amount of liquid with the medium you have used.
  - b. You can also move the entire Insert-plate at the given time points to new bottom plates pre-filled with acceptor medium. Take care that no air bubbles are trapped under the membrane. Only possible if step 5 is applied.
- 
7. **Calculate the total amount permeated, or plot the amount permeated over time. This allows to also calculate permeation coefficients, apparent permeation coefficients etc. see references [1-2].**



### Additional Application Details [1-2]:

- The membrane (PermeaPad® Barrier) should not be pierced or torn off e.g. by touching it with a pipette tip.
- The bottom plate must not be overfilled, as flooding will occur when placing the center plate.  
→ Maximum 400 µL volume per well.
- The PermeaPad® Barrier is functionally stable in a wide pH range and in the presence of co-solvents, surfactants and biomimetic media:
  - The PermeaPad® Barrier is stable in the pH range of 1-10.
  - The PermeaPad® Barrier is compatible with pH-gradient permeation set-ups:
    - Example: Donor compartment (pH=1) to the acceptor compartment (pH<sub>start</sub>=7.3, pH<sub>end</sub>=7.0) after 5 hours of trial.
  - Published co-solvents:
    - Ethylalcohol (up to 40%)
    - DMSO (up to 20%)
    - PEG400 (up to 10%)
  - Published surfactants:
    - Brji 97 (up to 5%)
    - Macrogolglycerol Ricinoleate; Cremophor® EL (up to 5%)
    - Polysorbate 60 (up to 4%)
    - Polysorbate 80 (up to 5%)
    - Natriumdodecylsulfat (up to 5%)
    - Triton-X (up to 1%)
  - Published biomimetic Media:
    - FaSSIF
    - FeSSIF
    - FaSSGF
    - Pancreatic extract



## References

- [1] M. di Cagno et al. (2015): New biomimetic barrier Permeapad™ for efficient investigation of passive permeability of drugs. *European Journal of Pharmaceutical Sciences* 73: 29-34
- [2] H. A. Bibi et al. (2015): Permeapad™ for investigation of passive drug permeability: The effect of surfactants, co-solvents and simulated intestinal fluids (FaSSIF and FeSSIF). *International Journal of Pharmaceutics* 493: 192-197



**Version 3: Changes, including technical, reserved. 01.01.2019**

In case of a defect, please contact [support@labtastic.shop](mailto:support@labtastic.shop).

[www.labtastic.shop/support](http://www.labtastic.shop/support)



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