



PermeaPad® Barrier

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# PermeaPad® Barrier

by innome

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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 of a used Barrier 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

This developed biomimetic barrier enables an innovative approach for *in vitro* permeability assays\*. Measurements with the barrier are easy, fast and reproducible. The simulation of passive mass transport can be performed by applying the PermeaPad® Barrier in a conventional Franz-Cell, side-by-side diffusion cell or other set-up thereby measuring the permeability of a drug. Due to its unique and innovative structure 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/>

### Delivery Scope

The PermeaPad® Barrier.

### 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<sup>®</sup> Barrier carefully from its packaging using a pair of tweezers. It consists of 2 round support membranes with a lipid layer in-between.
2. Make sure that the barrier has no visible damage.
  - a. Are there cracks in the barrier?
  - b. Are there any air bubbles between the membranes?
  - c. Are the membranes displaced against each other?
3. If there is no visible damage in particular according to 2 a)-c), fix the PermeaPad<sup>®</sup> Barrier into (1) a Franz-Cell or (2) a side-by-side diffusion cell, or (3) into an alternative experimental setup.
4. Pipette the donor medium and the acceptor medium into the respective chambers, start the stirrer(s) if applicable, and start the timer for the experiment.
5. After the desired test period, take samples of appropriate volume from the acceptor compartment and analyze the content (concentration) of the drug with an established method (e.g., HPLC, LC-MS/MS, etc.).



If a time series is recorded for the permeation and therefore several samples are taken from the acceptor compartment, it is advisable to replenish an appropriate amount of fluid with the buffer used.

6. Calculate the total amount of drug permeated at each time point, or plot the amount permeated over time. This allows to also calculate permeation coefficients, apparent permeation coefficients etc. see references [1-4].

### Additional Application Details [1-4]:

- Valid experiments require separation between donor and acceptor compartments and the absence of leakage. Use packings if appropriate.
- The membrane (PermeaPad® Barrier) should not be pierced or torn off, e.g. with a pipette tip.
- 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
- [3] H. A. Bibi et al. (2016): Use of Permeapad® for prediction of buccal absorption: A comparison to in vitro, ex vivo and in vivo method. *European Journal of Pharmaceutical Sciences* 93: 399-404
- [4] H. A. Bibi et al. (2017): Simultaneous lipolysis/permeation in vitro model, for the estimation of bioavailability of lipid based drug delivery systems. *European Journal of Pharmaceutics and Biopharmaceutics* 117: 300-307.



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

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