



TPP Tissue Culture Test Plate Edge Effect and Airflow

Definition

Edge effect is a phenomenon seen in experiments using 96-well plates. It refers to the observation of the volume loss at the outer edges - compared to the inner wells (see Fig. 1).

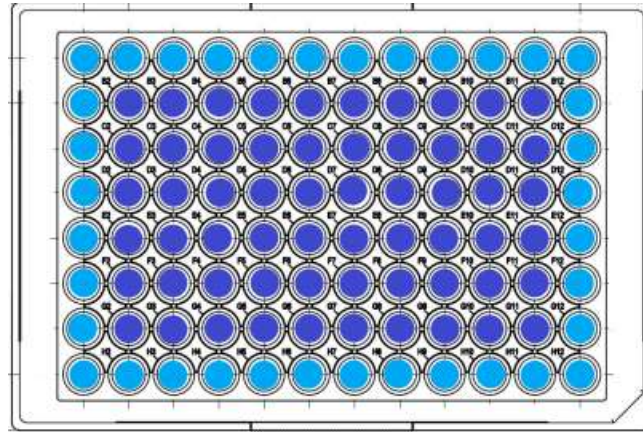


Fig. 1: Edge effect. Outer wells (light blue), inner wells (dark blue)

Reasons & Consequences:

The primary cause of edge effects is uneven evaporation during the incubation. Wells on the outer edge are more exposed to evaporation than the inner wells. Even a minor loss of medium can greatly influence the results, turning this microscopic issue into a significant problem.

The loss of medium volume can concentrate media components and metabolites, which in turns affects cell growth, rate, viability and enzyme activity, as well as the path length for measurements.

All these effects are reflected in:

- Inconsistent assay results
- Reduced reproducibility of experiments

Solution

To address this issue, TPP Tissue Culture Plates are engineered with a specialized well geometry (Fig. 3), paired with a uniquely designed lid featuring a raised ring structure above each well. These features create a labyrinthine airflow pathway (Fig. 2), which facilitates controlled gas exchange across the plate surface. This design effectively reduces evaporation and supports the maintenance of aseptic and stable conditions, thereby minimizing the edge effect and enhancing experimental reproducibility.

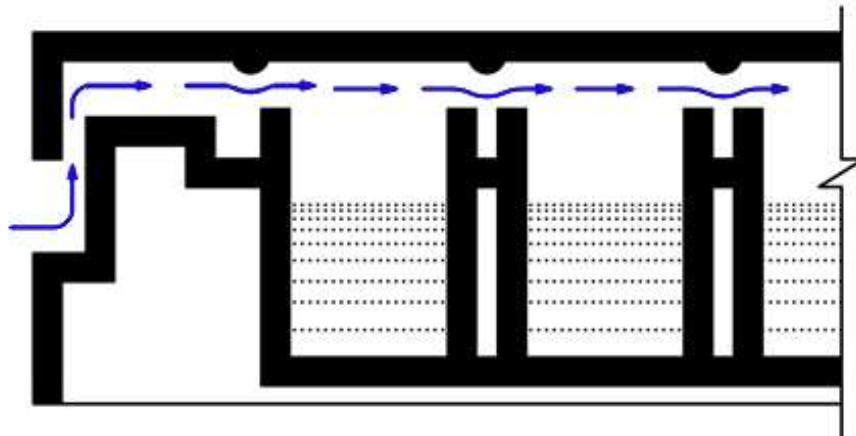


Fig. 2: Airflow (blue) across the 96-well plate

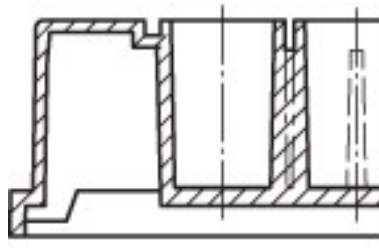


Fig. 3: Well geometry F-bottom

Additionally: Instructions for use (IFU), chemical resistance lists, and quality certificates for each product are available for download from www.tpp.ch.

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