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Instruction for Use
TPP Tissue Culture Test Plates

The tissue culture test plates are engineered for high-quality, reliable cultivation and growth of cells in vitro. Their tissue treated surfaces ensure optimal cell adherence and consistent performance, making them ideal for photometric measurements and a wide range of cell-based assays. Available in 6-, 12-, 24-, 48-, and 96-well formats, these plates provide flexible solutions for experiments of varying scales while maintaining reproducible and trustworthy results.

Only the growth surface has been opto-mechanically activated to ensure optimal cell adhesion and improved cell growth. This activation promotes the efficient cultivation of adherent cells and thereby supports the performance of accurate and reproducible experiments.

The plates feature a stacking rim for stable stacking, air vents in the bottom rim for uniform heat distribution, and lid spacers that ensure consistent gas and humidity exchange while minimizing evaporation, eliminating the need to fill the inter-well space. For easy identification, wells are labeled with black alphanumeric codes, and a yellow identification bar is provided on both the lid and the plate.

The tissue culture test plate is for single use only. Re-use disclaims all warranties.

Safety instructions

- Handling and Safety
  Handling of biological materials shall be performed in full compliance with all applicable national and international regulations. Activities must conform to the laboratory's assigned biological safety level, the relevant Safety Data Sheets (SDS), and the manufacturer's Instructions for Use (IFU).
  Appropriate personal protective equipment (PPE) should be always worn during handling.
- Risk of Contamination
  All operations shall be conducted in accordance with aseptic techniques and established Good Laboratory Practices (GLP). Packaging shall be opened immediately prior to use. Only products that are visually intact and free from defects shall be utilized. Products exhibiting visible damage, contamination, or any other irregularities shall be disposed of in accordance with applicable regulations.
- Storage
  TPP products shall be stored under the following conditions:
  - Temperature: 10 °C to 30 °C (50 °F to 86 °F).
  - Light exposure: Products shall be protected from direct ultraviolet (UV) radiation.
  - Relative humidity: ≤ 60 %, with a recommended control range of 50 – 60 %.

  Storage conditions shall be monitored and recorded to ensure compliance with these requirements. Any deviations shall be documented, evaluated, and managed in accordance with the applicable quality.

Instructions

- Check the expiration date (EXP) on the label and packaging. Only use products with a valid EXP date.
- Before use, verify that the packaging is intact, as the consumable is only considered sterile if the packaging is undamaged.

- Open the TPP tissue culture test plate and fill it with the medium and inoculum according to your laboratory routine. Please refer to the optimal fill volume, see: Technical Data, *Recommended volume mL*.
- Avoid touching the treated bottom with sharp objects.
- Close the plate with its lid, ensuring it is properly seated in the correct orientation as indicated by the angled edge to minimize the risk of contamination.
- Optimization of Adherent Cell Growth

To achieve optimal proliferation of adherent cells on the surface, observe the following guidelines:

- Cells must be fully and gently resuspended to obtain a true single-cell suspension. Residual aggregates lead to heterogeneous settling and nonuniform attachment.
- Foam should be minimized during resuspension and seeding, as protein denaturation and trapped air bubbles can impair cell viability and gas exchange.
- Immediately after seeding, the culture vessel should be gently rocked in an orthogonal (cross-shaped) pattern to ensure homogeneous distribution of cells across the growth surface and to prevent central or peripheral accumulation (“bullseye effect”).
- The seeding density must be selected according to cell line specific recommendations. Excessively high densities accelerate contact inhibition, increase metabolic stress, and promote overcrowding artifacts.
- Incubator shelves must be precisely leveled to ensure uniform medium depth across the growth area. Tilted surfaces promote media pooling and cause heterogeneous attachment.
- Follow the vessel’s specified fill volume. Too little medium increases meniscus effects, leading to cell accumulation at the edges. Adjust medium volume and culture duration according to the specific requirements of the cell line.
  Use 0.2–0.5 mL of medium per cm^2 of growth surface, corresponding to a medium height of approximately 2–5 mm [1]. Medium height, and therefore total volume, is a key factor for oxygen supply and influences the oxygen transfer rate (OTR) (Gstraunthaler et al., 1999).
- Vibrations in or around the incubator must be avoided, particularly during the initial attachment period, to maintain reproducible attachment patterns.
- Cultures shall be maintained under controlled environmental conditions (temperature, humidity, and CO_2 concentration). Maintenance of high relative humidity is critical to prevent evaporative loss, which induces a detrimental increase in medium osmolarity.

Centrifugation Safety and Performance

To ensure operational safety and optimal performance, strictly adhere to the centrifuge manufacturer's instructions and use appropriate rotors and adapters.

- Ensure the centrifuge load is correctly balanced. Test plates must be positioned symmetrically relative to the rotational center and axis to maintain a horizontal orientation. Improper loading may result in uneven separation, vibration, or product damage.
- Several factors influence the structural integrity of the plates during operation:
    - Proper fit within the designated adapter.
    - Centrifugation parameters: Temperature, duration, Relative Centrifugal Force (RCF).
    - Sample properties (density and viscosity).
    - Rotor type (fixed-angle vs. swing-out).
- RCF (g-force) ratings are determined at room temperature using water-filled tubes in a horizontal rotor for 5 minutes. Using fixed-angle rotors or with unsupported tubes may significantly reduce mechanical performance.
- Perform a test run with the specific sample and settings before routine use to verify suitability for the intended application.

Sub-Zero Storage

- The TPP tissue culture test plate is not suitable for sub-zero storage. Polystyrene (PS) exhibits significantly increased brittleness at temperatures below 0 °C (32 °F). Storage of PS products below this temperature shall not be performed, as the material is prone to spontaneous cracking and shattering, which may result in product failure and potential safety hazards.

General Handling and Limitations

- Avoid exposing the black and yellow labeling area to 90 % alcohol in combination with mechanical stress (e.g., rubbing or wiping), as this may cause the ink to dissolve or smear.
- The plates are not designed for use in ELISA assays.

Literature

[1] Amanda Capes-Davis, R. Ian Freshney (2010) Freshney's Culture of Animal Cells: A Manual of Basic Technique and Specialized Applications (8th Ed.) - Wiley (p.180)

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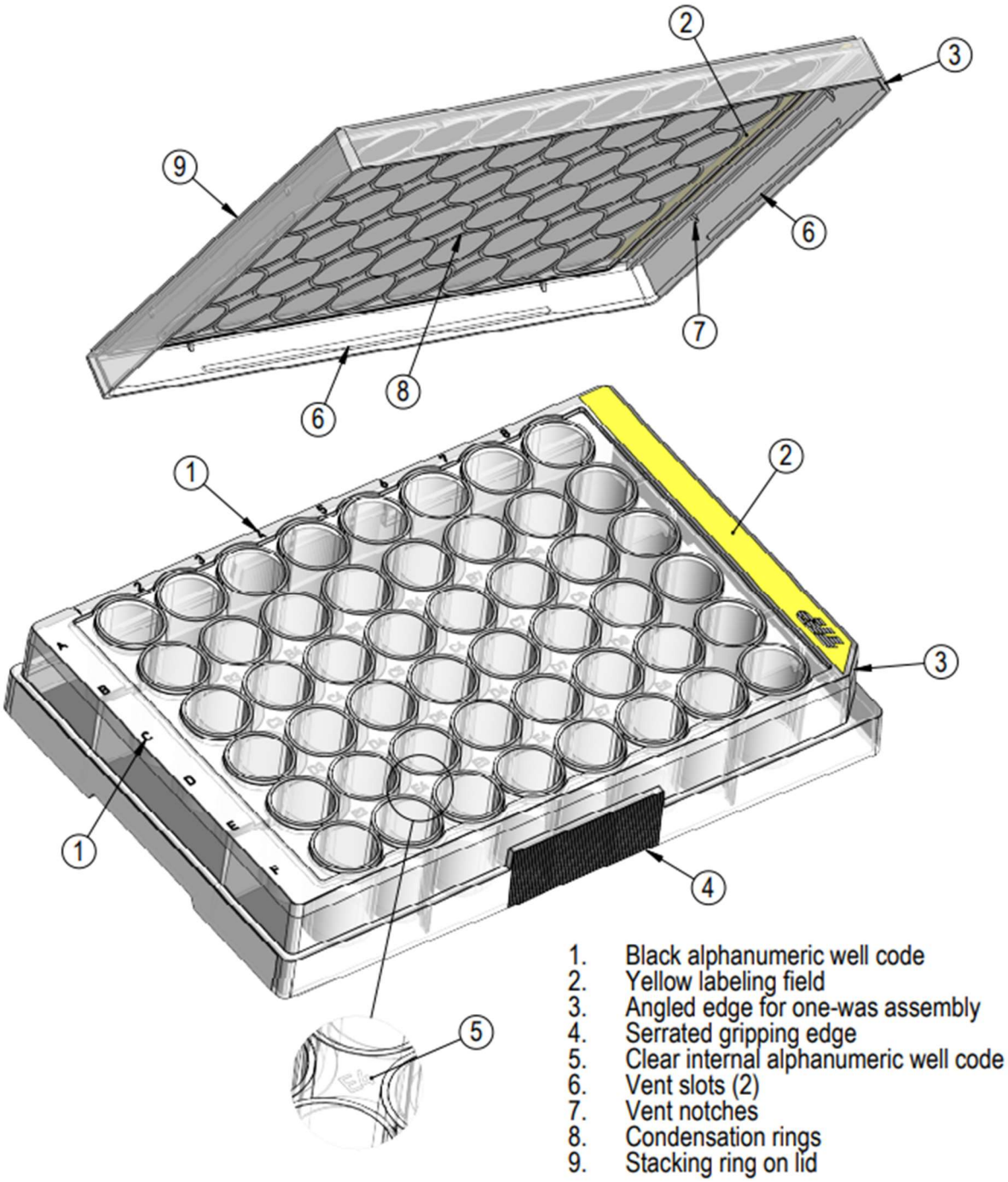
Technical Data

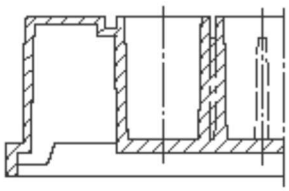
Component	Material
Lid	Polystyrene (PS)
Plate	Polystyrene (PS)



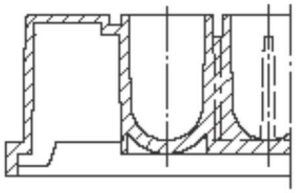
Measurement **Standard Case** **Small Case** **Multi Pack**	**92006** **92106** **92406**	**92012** **92112** **92412**	**92024** **92124** **92424**	**92048** **92148** **92448**	**92096** **92196** **92696**	**92097** **92197** **92697**
Well count	6-well	12-well	24-wp	48-well	96-well	96-well
Base version	F	F	F	F	F	U
Length mm	128	128	128	128	128	128
Width mm	86	86	86	86	86	86
Height mm	22	22	22	22	17	17
Internal Ø mm	33.9	21.0	15.4	10.6	6.6	6.4
Recom. volume mL/well [1]	1.8 – 4.5	0.7 – 1.7	0.4 – 0.9	0.2 – 0.4	0.07 – 0.17	0.07 – 0.17
Max. volume mL/well	15.52	5.87	3.19	1.51	0.38	0.32
Growth area cm^2	9.026	3.464	1.863	0.882	0.342	0.0.965

* ANSI/SBS 3D Standard

Base Version



F-Base (Flat)



U-Base (Round/U)

Packaging Type	**6 / 12 / 24 / 48 Wells**	**96-Well (F & U)**
Multi Pack (Pcs/Bag – Pcs/Case)	4 - 72	6 - 108
Small Case (Pcs/Case)	42	54
Standard Case (Pcs/Case)	126	162

Additional Information

Instructions for use, chemical resistance lists, and quality certificates for individual products can be downloaded from the TPP website at www.tpp.ch.

Disclaimer

TPP products are intended for Research Use Only (RUO) and are not approved for clinical, diagnostic, or in vitro fertilization (IVF) applications. The full Terms & Conditions, including limitations of warranty and liability, intended use, and reseller obligations, are available at: https://www.tpp.ch/page/qualitaets_sicherung/index.php

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