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Instruction for Use
TPP Tissue Culture Flasks with Re-Closeable Lid

The tissue culture flasks with re-closeable lid are specifically engineered for manual cell culture applications that require large-scale, top-down access to the growth area. These flasks facilitate seamless sterile handling and storage while providing an expansive opening for easy cell harvesting or manipulation.

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 design features an angled neck that serves a dual purpose: it minimizes the risk of media contamination by preventing contact with the inside of the screw cap and offers excellent maneuverability for serological pipettes and cell scrapers.

To ensure the integrity of the seal, these flasks are available exclusively with filter screw caps. Caution: Do not use VENT screw caps. Even a slight pressure build-up of 0.03 bar or higher may cause the re-closeable lid to loosen or be forced open.

The tissue culture flask with re-closeable lid 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) shall 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.

Instruction

- 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.

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- Open the flask with re-closable lid 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 filter screw cap with ventilation holes.

Open the re-closeable lid (Fig. 1):

- With the re-closeable lid cells can be harvested from the top via the large opening.
- Place the flask on a solid, level surface.
- Locate the recessed area on the lid ❶. Apply controlled pressure to the opening mechanism to unlock the lid.
- While pressing, use the thumb and index finger of your other hand to grasp the lid and lift the lid upward ❷.
- **Important:** Finger pressure on the opening mechanism must be carefully controlled. Excessive force may cause breakage.



Figure 1. ❶ Press here to unlock the lid. ❷ Lift up the lid

- To close the lid, run your fingers along the rim of the lid while applying gentle pressure to ensure that the lid is firmly seated and properly closed.
- The lid can be opened and closed multiple times and remain gas- and liquid-tight.

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.
- Prevention of foam formation: 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.

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- 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 cm² 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.

Sub-Zero Storage

- The TPP Tissue culture flask is not intended 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

- Graduations are for reference only and serve as approximate guidelines for fill volume. For precise measurements, use calibrated pipettes or volumetric instruments.
- Avoid exposing the white 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.
- These devices are stackable. Air vents on the top of the chambers ensure optimal heat distribution between stacked units.
- Continuous gas exchange occurs through the integrated 0.22 µm hydrophobic membrane. If the membrane becomes wet, gas exchange is temporarily reduced.
- Air vents in the bottom rim ensure optimum heat distribution in the incubator when several flasks are stacked on top of each other.

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Technical Data

Component	Material
Cap	Polyethylene (PE)
Membrane	Polytetrafluoroethylene (PTFE), Pore size 0.22 µm
Flask	Polystyrene (PS)
Sealing ring	Non-toxic gasket

Measurement	90552	90652
Re-closable	✓	✓
Barrier	---	✓
Length mm	210	210
Width mm	122	122
Heights mm	50	50
Growth area cm^2	150	115
Recom. volume mL [1]	30 - 75	23 – 57.5
Opening mm	105 x 105	105 x 105
Max volume mL	100	100

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.

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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Disclaimer

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