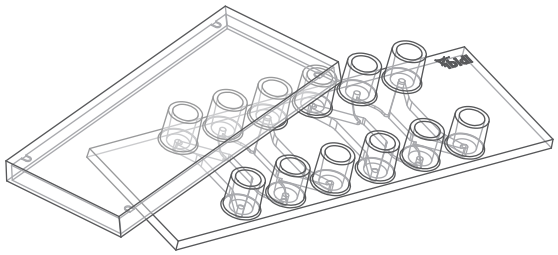
µ-Slide Tissue Engineering

Instruction Manual



The ibidi labware comprises a variety of µ-Slides, µ-Dishes, and µ-Plates, which have all been designed for high-end microscopic analysis of fixed or living cells. The high optical quality of the ibidi Polymer Coverslip is similar to that of glass, enabling a variety of recommended microscopy techniques with uncompromised resolution and choice of wavelength.
The µ-Slide Tissue Engineering is intended for microfabricated tissue models with full fluidic access. 2D surface patterns or 3D hydrogel structures in combination with the channel structures allow a multitude of setups for cell and tissue culture applications.

This document applies to the following products:

80236	**µ-Slide Tissue Engineering ibiTreat**
80231	**µ-Slide Tissue Engineering Untreated**

Material

The µ-Slide Tissue Engineering is made of a polymer that has the highest optical quality. The ibidi Polymer Coverslip bottom exhibits extremely low birefringence and autofluorescence, similar to that of glass. It is not possible to detach the bottom from the upper part. The plate is intended for one-time use and is not autoclavable, since it is only temperature-stable up to 80 °C/175 °F. Please note that gas exchange between the medium and the incubator's atmosphere occurs partially through the polymer coverslip, which should not be covered.

Optical Properties of Polymer Coverslip	
Refractive index (589 nm)	1.52
Abbe number	56
Thickness	No. 1.5 (180 µm)
Material	Polymer

WARNING – The ibidi Polymer Coverslip is compatible with certain types of immersion oil only. A list of suitable oils can be found in the Section "Immersion Oil".

Shipping and Storage

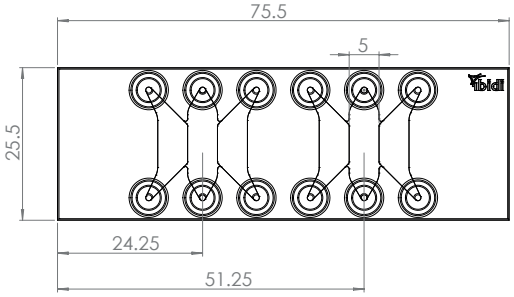
This product is sterilized and sealed in a gas-permeable packaging. The shelf life under proper storage conditions (in a dry place, no direct sunlight) is outlined in the following table.

Conditions	
Shipping conditions	Ambient
Storage conditions	RT (15–25 °C)

Shelf Life	
ibiTreat, Untreated	36 months

Geometry

The µ-Slide Tissue Engineering provides a standard slide format according to ISO 8037/1.



Specifications	
Outer dimensions (w × l)	25.5 × 75.5 mm
Adapters/reservoirs	Female Luer
Volume per reservoir	60 µl
Workspace:	
- Volume	30 µl
- Height	0.4 mm
- Growth area	0.77 cm^2
- Coating area	1.56 cm^2
Each side channel:	
- Volume	115 µl
- Height	1.6 mm
- Growth area	0.64 cm^2
- Coating area	2.00 cm^2
Bottom	ibidi Polymer Coverslip

Surface

The µ-Slide Tissue Engineering is available with either an ibiTreat or an Untreated surface.

The tissue culture-treated, hydrophilic ibiTreat surface of the ibidi Polymer Coverslip is ideal for culturing adherent cells. It ensures excellent cell adhesion without the necessity for any additional coatings. Nonetheless, extracellular matrix (ECM) protein coatings can be applied to the ibiTreat surface without any restrictions, if required.

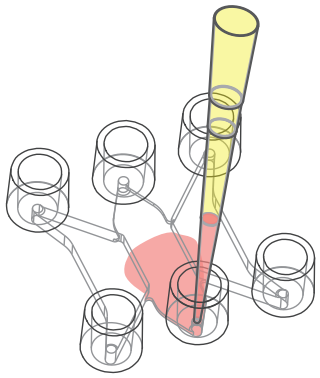
The hydrophobic Untreated surface of the ibidi Polymer Coverslip offers weak cell adhesion unless pre-coated with an ECM protein. You can apply coatings to the Untreated surface without any restrictions. This surface is suitable for culturing adherent cells that require a specific coating.

For establishing a particular coating, we advise testing your procedure on both ibiTreat and Untreated surfaces, as proteins and biomolecules may adhere differently to hydrophilic or hydrophobic surfaces.

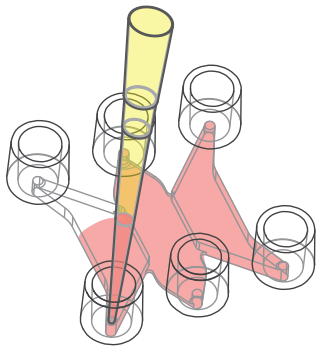
General Handling

The following steps describes a general handling of the µ-Slide Tissue Engineering. Specific protocols highly depend on the experimental approach.

1. Fill the workspace by injecting the solution directly into the opening.



2. Continue filling the side channels until both the side channels and the workspace are completely filled.



3. Create the desired structures.

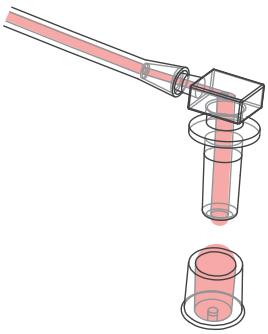
NOTE – The workspace and the side channels are directly connected. Therefore, they cannot be filled independently without first establishing a fluidic barrier.

TIP – ibidi provides a photomask template of the µ-Slide Tissue Engineering on the ibidi Products Webpage, under “ibidi Micro Illumination System”.

Connecting Tubing for Perfusion

The µ-Slide Tissue Engineering is compatible with the ibidi Pump System as well as with other pump setups designed for cell cultivation under flow conditions. Various perfusion configurations can be applied depending on the experimental design, including perfusion of the workspace only, perfusion of one or both side channels, or perfusion across the entire workspace. For use under flow, please follow the protocol below.

1. Fill the Luer ports that will be connected to the tubing completely with cell-free medium to ensure an air bubble-free connection. Close the remaining Luer ports using Luer plugs (e.g., ibidi Luer Plug Male, Cat. No. 10822).
2. Prepare the perfusion system: Fill the tubing completely with medium, then pinch it off using a screw clamp or hose clip.
3. Connect the male Luer ends of the clamped tubing to the Luer ports one at a time, ensuring no air is trapped. Remove any excess medium with a tissue.



4. Open the clamped tubing and conduct your perfusion experiment.

Microscopy

To image your cells, no special preparations are necessary. Living or fixed cells can be directly observed, preferably on an inverted microscope. The bottom cannot be removed. For optimal results in fluorescence microscopy and for storage of fixed and stained samples, ibidi provides mounting media that are optimized for ibidi labware:
Cat. No. 50001: ibidi Mounting Medium
Cat. No. 50011: ibidi Mounting Medium with DAPI

Chemical Compatibility

The following table provides some basic information on the chemical and solvent compatibility of the µ-Slide Tissue Engineering. For a full list of compatible solvents and more information on chemical compatibility, visit ibidi.com/chemicals.

Chemical / Solvent	Compatibility
Methanol	Yes
Ethanol	Yes
Formaldehyde	Yes
Acetone	Yes, without lid
Mineral oil	No
Silicone oil	Yes
Immersion oil	See Section “Immersion Oil”

Immersion Oil

WARNING – When using oil immersion objectives with the ibidi Polymer Coverslip, use only the immersion oils specified in the table below. The use of any non-recommended oil could damage the ibidi Polymer Coverslip. The resulting leakage may harm objectives and microscope components. All immersion oils that are not listed in the table below should be considered non-compatible.

Company	Product	Ordering No.	Lot Number	Test Date
ibidi	ibidi Immersion Oil 2	50102	24-07-04	07/2024
Cargille	Type A	16482	100592	01/2017
Cargille	Type HF	16245	92192	01/2017
Carl Roth	Immersion oil	X899.1	414220338	01/2017
Leica	Immersion Liquid	11513859	n.a.	03/2023
Leica	Immersion Liquid Type G	11513910	n.a.	04/2024
Nikon	Immersion Oil F2 30cc	MXA22192	n.a.	01/2020
Nikon	Silicone Immersion Oil 30cc	MXA22179	20191101	01/2020
Olympus	Silicone Immersion Oil	SIL300CS-30CC	N4190800	01/2017
Zeiss	Immersol 518 F	444960-0000	220211	03/2023
Zeiss	Immersol 518 F (30 ℃)	444970-9010	220816	03/2023
Zeiss	Immersol 518 F (37 ℃)	444970-9000	220302	03/2023
Zeiss	Immersol W 2010	444969-0000	101122	04/2012
Zeiss	Immersol Sil 406	444971-9000	80730	03/2023
Zeiss	Immersol G	462959-9901	211117	03/2023

For research use only!

Further information can be found at ibidi.com. For questions and suggestions, please contact us by e-mail at info@ibidi.com or by telephone at +49 (0)89/520 4617 0.