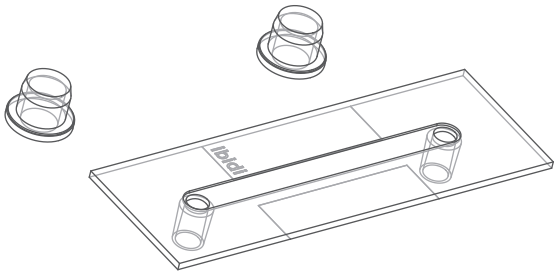
sticky-Slide I Luer

Instruction Manual



The sticky-Slide family allows you to perform cell culture experiments with custom-specific bottom materials such as polymer films, glass coverslips, etc. The self-adhesive “sticky” underside of the bottomless, blank slide can be easily adapted to your specific bottom substrate.
The sticky-Slide I Luer is designed for perfusion applications, where defined shear stress is applied on cells inside the channel. The female Luer adapters allow easy connections to tubing and pump systems.

This document applies to the following products:

81128	**sticky-Slide I $^{0.1}$ Luer**
80168	**sticky-Slide I $^{0.2}$ Luer**
80178	**sticky-Slide I $^{0.4}$ Luer**
80188	**sticky-Slide I $^{0.6}$ Luer**
80198	**sticky-Slide I $^{0.8}$ Luer**

Material

The material of sticky-Slides is identical to that of µ-Slides. All sticky-Slides are delivered sterilized and individually packed. Please keep in mind that sterility is lost when non-sterile substrates are used. The sticky-Slides are not autoclavable, as they are only temperature-stable up to 60 ℃/140 ℉.
The sticky bottom itself is a 50 µm biocompatible double-faced adhesive tape. The tape is covered by a protection film, which must be removed before usage.

Shipping and Storage

The sticky-Slides are 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 ℃)

Shelf Life	
sticky-Slides	36 months

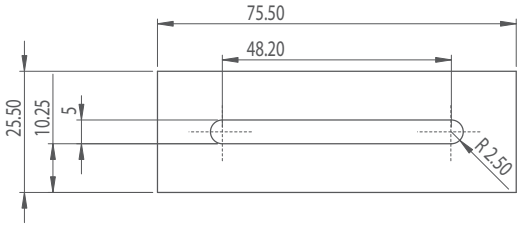
Geometry

Apart from the bottom material, all technical details are identical to those of the µ-Slide I Luer. The sticky-Slides provide standard slide format according to ISO 8037/1.

Please note that the total channel height consists of the channel’s own height (ranging from 100 µm to 800 µm, depending on the product used) plus the thickness of the adhesive tape, which is approximately 50 µm and may vary depending on the contact pressure.

Specifications	
Outer dimensions (w × l)	25.5 × 75.5 mm^2
Channel length	50 mm
Adapters	Female Luer
Growth area per channel	2.5 cm^2
Volume per reservoir	60 µl
Bottom	none

sticky-Slide I Luer	Channel Height (µm)	Channel Volume (µl)
0.1	100 + 50	25 + 12.5
0.2	200 + 50	50 + 12.5
0.4	400 + 50	100 + 12.5
0.6	600 + 50	150 + 12.5
0.8	800 + 50	200 + 12.5



Surface Compatibility

sticky-Slides are compatible with flat, clean, dust-free, fat-free surfaces, such as glass coverslips, plastic, metal, or electrode structures. Best results are achieved with completely dry surfaces. Please test your specific surface with a free sample from ibidi.com.

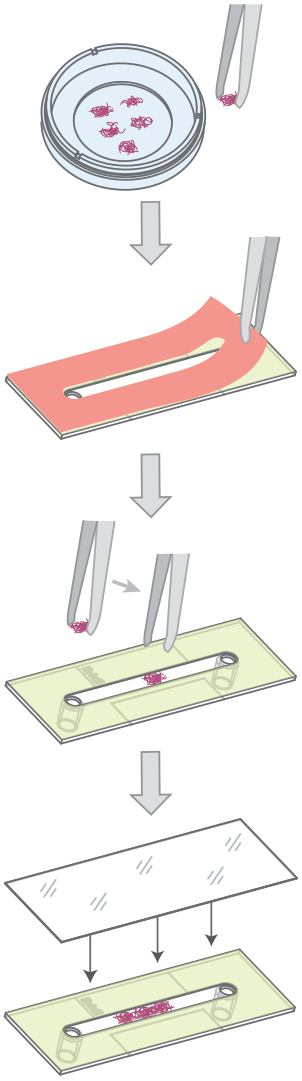
Optional: Direct Sample Insertion Into Channels

The sticky-Slide technology allows for the insertion of samples (e.g., cell clusters, which cannot easily be pipetted, such as spheroids or tissue samples) before the sticky-Slide and bottom material are assembled. In case a sample must not dry out, rinse it with a protein-free buffer solution to ensure a maximum of adhesion. Then, place the sample into the channel and attach the bottom material. Be aware that wet samples, especially those in a culture medium with high protein concentration, might affect the sticky-Slide's performance. Start with the experiment immediately after assembly.

Handling and Assembly

Assemble the sticky-Slide with a convenient bottom material, matching your experimental needs. The following steps describe the process of assembling:

1. Prepare your sample and/or bottom material.
2. Remove the protection film of the sticky-Slide.
3. Mount bottom material and sticky-Slide by pressing firmly with your fingers (use gloves) until the bottom is completely sealed. Make sure there is no air between the sticky-Slide and the bottom material.
4. To confirm strong adhesion, invert the sticky-Slide and check for air gaps. If air gaps are detected, remove them by pressing on the adhesive interface. For best results, use our Clamp for sticky-Slides (ibidi, 80040) and the corresponding adapter after assembly.
5. For a maximum of adhesion, incubate the assembled sticky-Slide at 37 ℃ for 8 hours in a dry or humid incubator.



TIP – The day before seeding the cells, we recommend placing the cell medium, the slide, and possible tubing for perfusion into the incubator for equilibration. This will prevent the liquid inside the channel from emerging air bubbles during the incubation time. Quick dispensing of the cell suspension helps to avoid trapped air bubbles and leads to maximal homogeneity of cell distribution.

Seeding Cells

CAUTION – The sticky-Slide I $^{0.1}$ Luer and the sticky-Slide I $^{0.2}$ Luer are not recommended for use in static cell culture.

1. Trypsinize and count cells as usual. Dilute the cell suspension to the desired concentration. The cell density after seeding strongly depends on the channel's height. Please use the following recommended cell concentrations:

sticky-Slide I Luer	Volume (µl)	Cell Conc. (× 10^6 cells/ml)
0.1	37.5	0.80–6.5
0.2	62.5	0.50–4.0
0.4	112.5	0.25–2.2
0.6	162.5	0.20–1.5
0.8	212.5	0.15–1.2

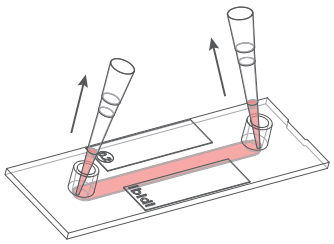
2. Add the respective volume of cell suspension directly into the channel. Depending on the cell concentration and the specific application, optical confluency can be achieved within a few hours to several days.
3. Cover the reservoirs with the supplied caps. Incubate as usual (e.g., at 37 °C and 5% CO_2).
4. After cell attachment, fill each reservoir with 60 µl medium.
5. The slide is now ready for applying flow conditions on the adherent cells. Don't trap air bubbles when plugging in the connecting tubes.

We recommend exchanging the medium every day in static culture, following the protocol in the Section "Medium Exchange".

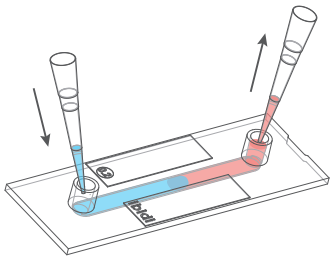
Medium Exchange

The following protocol for continuous medium exchange should be applied for cell culture medium replacement, staining, and washing procedures.

1. Remove the medium from the reservoirs with a pipet, putting the pipet tip away from the channel inlet. Do not remove any liquid from the channel itself.



2. Slowly fill the respective channel volume fresh medium into one of the reservoirs, which will replace the channel volume by gravity flow. Aspirate from the other reservoir by carefully using a pipet.



3. For a 99% exchange, repeat the steps 1 and 2 three times.
4. Refill the reservoirs using 60 µl per reservoir.

CAUTION – Be careful when using a cell culture aspiration device, as this may flush away partially attached cells or clusters.

CAUTION – Take care that the channel never falls dry during the exchange process. This helps avoiding air bubbles.

Disassembly

To remove sticky-Slides from the substrate, dissolve the adhesive bottom with acetone. Place the sticky-Slide overnight in a suitable, acetone-filled glass container (e.g., a beaker). Be aware that acetone may damage the used substrate. Once the sticky bottom is removed, the sticky-Slides cannot be reused.

Chemical Compatibility

The following table provides basic information on the chemical and solvent compatibility of the sticky-Slide I Luer. 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	No
Mineral oil	Yes
Silicone oil	Yes
Immersion oil	See Section “Immersion Oil”

Shear Stress Calculations

To calculate the shear stress (τ) in sticky-Slides with a flat and rigid bottom material, insert the flow rate (Φ) and the dynamic viscosity (η) in the formulas provided below:

sticky-Slide I $^{0.1}$ Luer: $\tau = \eta \cdot 906.0 \cdot \Phi$

sticky-Slide I $^{0.2}$ Luer: $\tau = \eta \cdot 330.4 \cdot \Phi$

sticky-Slide I $^{0.4}$ Luer: $\tau = \eta \cdot 104.7 \cdot \Phi$

sticky-Slide I $^{0.6}$ Luer: $\tau = \eta \cdot 51.6 \cdot \Phi$

sticky-Slide I $^{0.8}$ Luer: $\tau = \eta \cdot 31.0 \cdot \Phi$

sticky-Slide VI $^{0.4}$: $\tau = \eta \cdot 97.1 \cdot \Phi$

For simplicity, the calculations include conversions of units (not shown). Please insert the values in the unit definitions given below:

Shear stress $\tau \left[\frac{dyn}{cm^2}\right]$

Dynamical viscosity $\eta \left[\frac{dyn \cdot s}{cm^2}\right]$

Flow rate $\Phi \left[\frac{ml}{min}\right]$

TIP – When using the ibidi Pump System for wall shear stress applications, please select the equivalent µ-Slide I Luer Glass Bottom. This ensures the correct conversion of flow rate and shear stress. Please make sure you select the correct channel height version.

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.