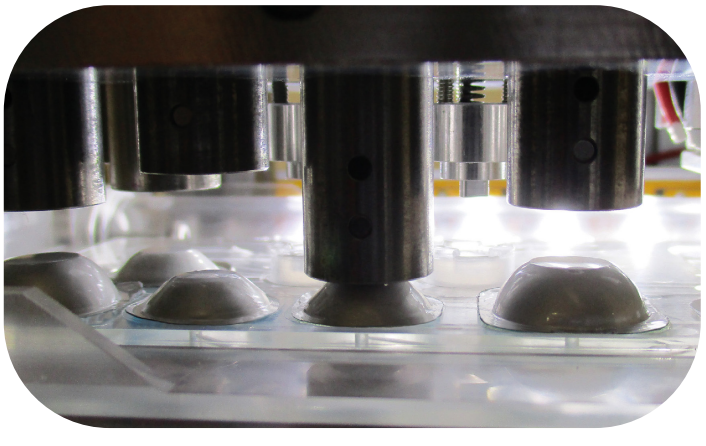
microfluidic ChipShop

Blisters

Efficient long-term liquid reagent storage on lab-on-a-chip devices

Storage of liquid reagents on a microfluidic device is oftentimes a prerequisite for successful lab-on-a-chip applications. The use of blister pouches is not only a convenient way to incorporate liquids on-chip but also ensures long-term storage capability. Blister pouches serve as storage vessels and at the same time enable liquid movement through the application of pressure in a defined manner.



Off-The-Shelf Blister Pouches

- 50 µl - 750 µl filling volumes
- Compatible with inorganic solutions, acids and bases
- Reliable long-term liquid reagent storage
- Minimized contamination risk

Blister Test Chips

- Various off-the-shelf designs to evaluate blister emptying performance
- Feature *microfluidic ChipShop*'s unique piercing blister seat technology for controlled liquid release

ChipGenie® edition BD

- High-precision blister driver instrumentation
- Compatible with most of *microfluidic ChipShop*'s off-the-shelf blister test chips
- Controlled blister actuation operated with user-friendly control software and visual control unit

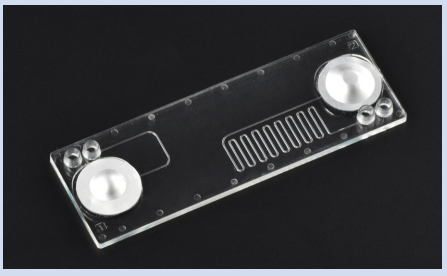
Customer-Specific Solutions & Services

- Blister filling service for customer-specific reagents
- Complex microfluidic cartridge development with comprehensive functional integration incl. liquid and dry reagent storage on-chip

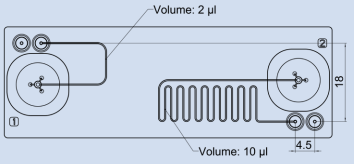
Contact in Japan: **ASICON Tokyo Ltd.**
www.asicon-tokyo.com / asicon-tokyo@asicon-tokyo.com

Blister Test Chip - Small Volume

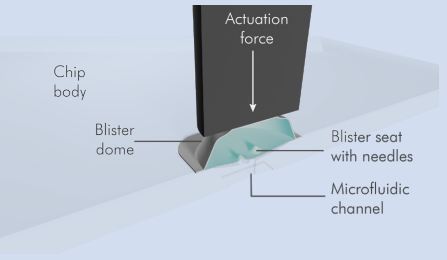
microfluidic ChipShop offers a multitude of microfluidic chips to evaluate blister emptying. The blister test chip Fluidic 289 is particularly suited to investigate blisters with small volumes and comes with two blisters of 50 µl and 100 µl liquid content. For convenient visual assessment, both blisters are filled with dyed water.



Blister test chip with small volume blisters - blisters contain 50 µl and 100 µl of dyed water



Schematic drawing of small volume blister test chip Fluidic 289 with two blister seats and metering system - view from top

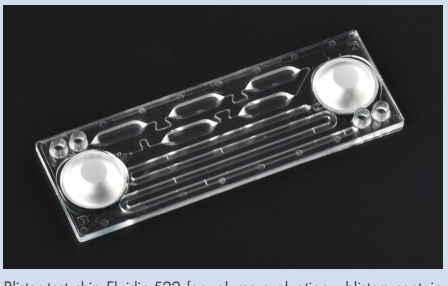


Schematic cross section of a standard blister setup on a microfluidic device

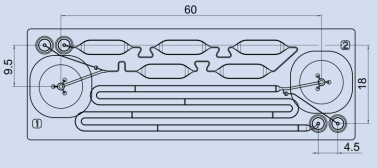
Product Code for Fluidic 289	Description	Blister details	Lid thickness [µm]	Surface treatment	Material
10001305	Blister test chip Small volume	Blister position 1: 50 µl; cyan; H_2O Blister position 2: 100 µl; magenta; H_2O	140	-	Topas
10001306	Blister test chip Small volume	Blister position 1: 50 µl; cyan; H_2O Blister position 2: 100 µl; magenta; H_2O	140	hydrophilized	Topas

Blister Test Chip - Volume Evaluation

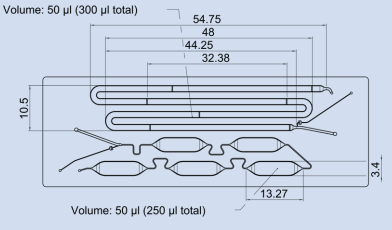
Blister test chip Fluidic 522 comes with two mounted 250 µl blisters, each of which is adjoined to a metering system. The blister emptying can be assessed with the aid of dyed blister content and either a chamber metering (blister position 1) or a channel metering system (blister position 2).



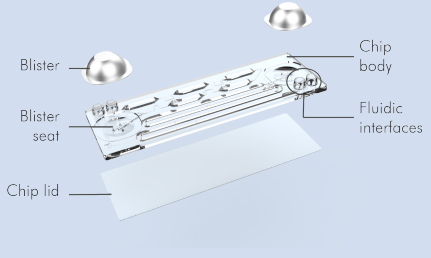
Blister test chip Fluidic 522 for volume evaluation - blisters contain 250 µl of dyed water



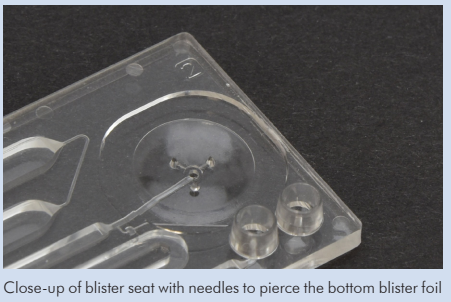
Schematic drawing of blister test chip Fluidic 522 with two blister seats and metering systems - view from top



Schematic drawing of blister test chip Fluidic 522 – view from bottom (metering systems)



General components of a microfluidic chip exemplary shown by blister test chip Fluidic 522. The product consists of a chip body, attached blisters and a bonded cover lid



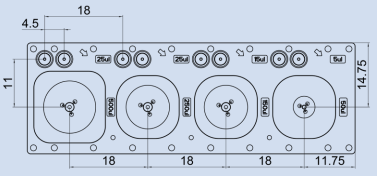
Close-up of blister seat with needles to pierce the bottom blister foil

Product Code for Fluidic 522	Description	Blister details	Lid thickness [µm]	Surface treatment	Material
10001307	Blister test chip Volume evaluation	Blister position 1: 250 µl; cyan; H_2O Blister position 2: 250 µl; magenta; H_2O	140	-	Topas
10001308	Blister test chip Volume evaluation	Blister position 1: 250 µl; cyan; H_2O Blister position 2: 250 µl; magenta; H_2O	140	hydrophilized	Topas

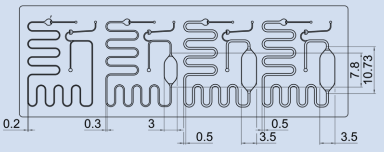
Blister Test Chip - Volume Variation

This blister test chip is suitable for evaluating the emptying of a variety of blisters with volumes ranging from 50 µl to 500 µl. The chip design allows exact metering of 5 µl (for 50 µl blister), 15 µl (for 150 µl blister) and 25 µl (for 250 µl and 500 µl blisters) with the aid of downstream channel/chambers.

Blister test chip Fluidic 1021 with blister pouches of various volumes. Each blister is associated to an appropriate metering system



Schematic drawing of blister test chip Fluidic 1021 with metering systems – view from top (blister seats and fluidic interfaces)



Schematic drawing of blister test chip Fluidic 1021 with metering systems – view from bottom (metering system)

Product Code for Fluidic 1021	Description	Blister details	Lid thickness [µm]	Surface treatment	Material
10001309	Blister test chip - Volume variation	Blister position 1: 500 µl; magenta; H_2O Blister position 2: 250 µl; cyan; H_2O Blister position 3: 150 µl; magenta; H_2O Blister position 4: 50 µl; cyan; H_2O	140	-	Topas
10001310	Blister test chip - Volume variation	Blister position 1: 500 µl; magenta; H_2O Blister position 2: 250 µl; cyan; H_2O Blister position 3: 150 µl; magenta; H_2O Blister position 4: 50 µl; cyan; H_2O	140	hydrophilized	Topas

Did you know?
Controlled blister bursting

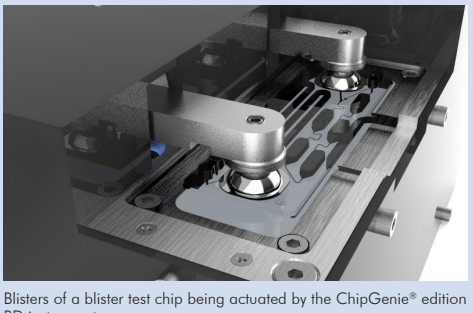
microfluidic ChipShop is using a unique blister seat technology. Thanks to piercing needles the blister content is released in a controlled and even manner. An erratic bursting of the blister is therefore obviated.

ChipGenie® edition BD

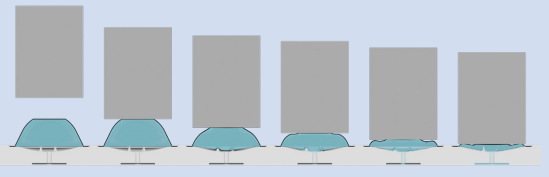
microfluidic ChipShop's blister driver ChipGenie® edition BD is the tailored instrument for evaluation of blister emptying behavior. The device has been specifically developed to be used with *microfluidic ChipShop*'s microscope slide-format blister test chips, such as Fluidic 289 or Fluidic 522. The instrument ensures both a convenient, user-friendly chip insertion and a precise positioning of the inserted blister chip. Blister emptying is facilitated by two independent, high-precision vertical blister drives, while an integrated camera gives immediate visual feedback.

Instrument features:

- Two independent, high-precision vertical blister drives (driver speed 0.1 µm/s up to 200 µm/s; positioning accuracy +/- 20 µm)
- Integrated camera for direct visual feedback
- Includes user-friendly software for easy system control
- Connection to PC established via USB port



Blisters of a blister test chip being actuated by the ChipGenie® edition BD instrument



Schematic succession of blister actuation by means of the ChipGenie® edition BD instrument

Product Code	Description	Dimensions [cm]
10000686	ChipGenie® edition BD – Blister Driver instrument	20 x 12 x 11

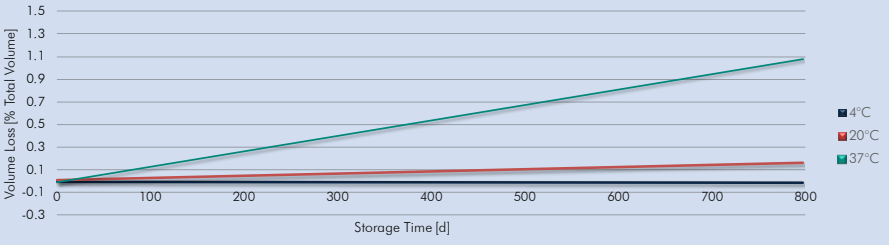
Blisters - Liquid Reagent Storage

Spare Blister Pouches

Blisters can be ordered as stand-alone parts being available with volumes ranging from 50 µl to 750 µl off-the-shelf. All blisters come with matching double-sided adhesive tape for convienent mounting on the microfluidic device. After use, blisters can be easily removed and replaced. All blisters can be ordered filled either with dye (cyan, magenta, yellow) or water (clear).

If you are interested in blisters filled with your customer-specific reagents please inquire our custom filling service. Simply write an e-mail with your requirements to inquiries@microfluidic-ChipShop.com.

Individual blister pouches with different filling volumes



Storage time dependent volume loss assessed for three different storage temperatures - blisters with 200 µl ddH_2O filling were stored at 4 °C, 20 °C and 37 °C and volumes were monitored over a time period of more than two years. At room temperature blister filling loss was less than 0.2% over 797 days

Product code (color-dependent)				Description	Blister Volume [µl]
Cyan	Magenta	Yellow	Clear		
10001605	10001606	10001607	10001608	Blister pouch	50
10001610	10001611	10001612	10001613	Blister pouch	100
10001615	10001616	10001617	10001618	Blister pouch	150
10001620	10001621	10001622	10001623	Blister pouch	200
10001597	10001537	10001538	10001625	Blister pouch	250
10001602	10001601	10001600	10001599	Blister pouch	350
10001603	10001626	10001627	10001628	Blister pouch	500
10001665	10001666	10001667	10001668	Blister pouch	750

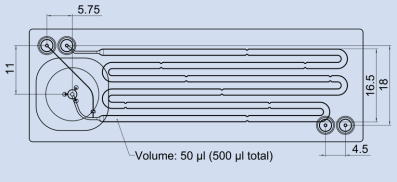
Did you know?
Liquid storage in tanks

Blisters are not the only way liquid reagents can be stored in microfluidics. In fact, for large volumes and short-term storage the use of tanks might be advisable. To learn more visit our webpage or have a look at our catalogue and our „Accessories“ leaflet!

Tailored Blister Solutions

microfluidic ChipShop offers a variety of services on the subject of blister pouches. Looking to fill our standard blister pouches with reagents specific to your experiment? Simply inquire our blister filling service.

microfluidic ChipShop is also your specialized partner when it comes to the development of blister-containing microfluidic cartridges - from relatively simple customer-specific blister test chips to sophisticated, fully integrated lab-on-a-chip platforms. No matter how basic or complex your microfluidic assay requirements are, please contact us with your idea at inquiries@microfluidic-ChipShop.com!



Simple blister test chip to evaluate blister emptying of a blister with a larger volume of 500 µl. This test chip with Fluidic 761 is available as catalogue product with *microfluidic ChipShop*

Blister of different sizes mounted on a complex microfluidic cartridge, which has been developed at *microfluidic ChipShop* and features a great variety of functional units

A sophisticated lab-on-a-chip device with mounted blister, which are protected by a cover from unintentional actuation

FIJD1BLV3Jap

EFRE EUROPE FOR THURINGIA EUROPEAN REGIONAL DEVELOPMENT FUND

EUROPEAN UNION

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