



Technical Note

DropChips

Distributed in Europe by World Precision Instruments www.wpi-europe.com

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DropChip: for high throughput generation of microdroplets and monodispersed emulsions

DropChips contain three “droplet generators” and one “splitter” (Y-junction channel) for splitting the continuous phase (oil or water). The channel surface properties are optimized according to the type of application:

- Hydrophobic channels for water-in-oil (W/O) droplets
- Hydrophilic channels for oil-in-water (O/W) and gas-in-water droplets.

Frequency and size of the droplets can vary depending on several factors: channel dimensions; flow rates; oil type; surfactant type and surfactant concentration.

Fluidic ports (not displayed in the drawing) allow the user to plug directly a 25 Gauge needle into the inlet without using any additional glue or connector. Suitable tubing sets can be purchased directly from Cellix Ltd.

Recommended tubing sets:

- Biochip-connect single inlet cables pk 10 (product code: BIOCHIP-CONNECT-B1ICPACK10)
- Biochip-connect single outlet cables pk 10 (product code: BIOCHIP-CONNECT-B1OCPACK10)

DropChips are supplied in packs of 2, facilitating 6 droplet generators and 2 splitter per pack.

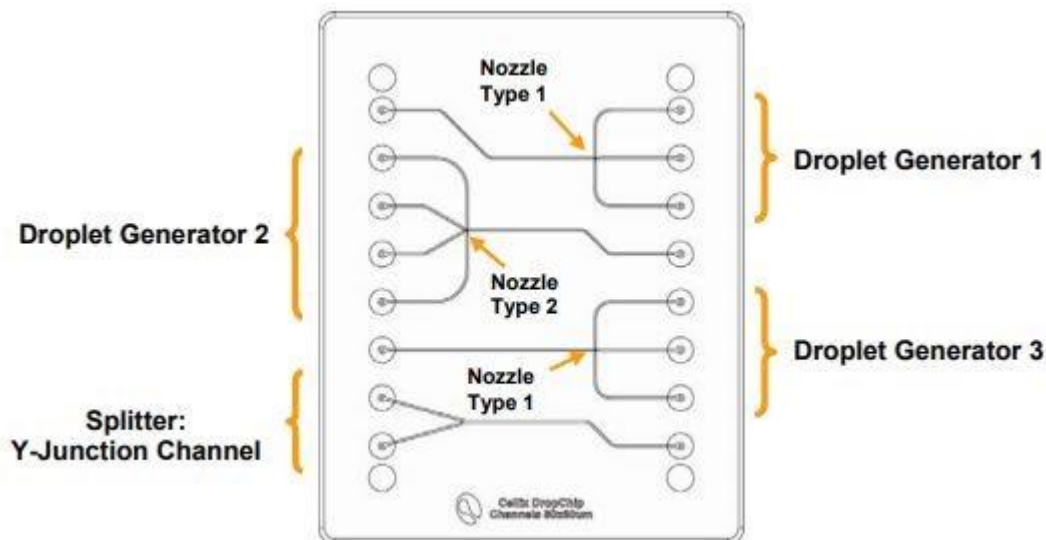


Figure 1: DropChip footprint overview

Technical specifications	
Material	Acrylic
Number of droplet generators per biochip	3
Number of splitters per biochip	1
Dead volume at input port	0.1 μ L
Thickness of biochip	2.5 mm

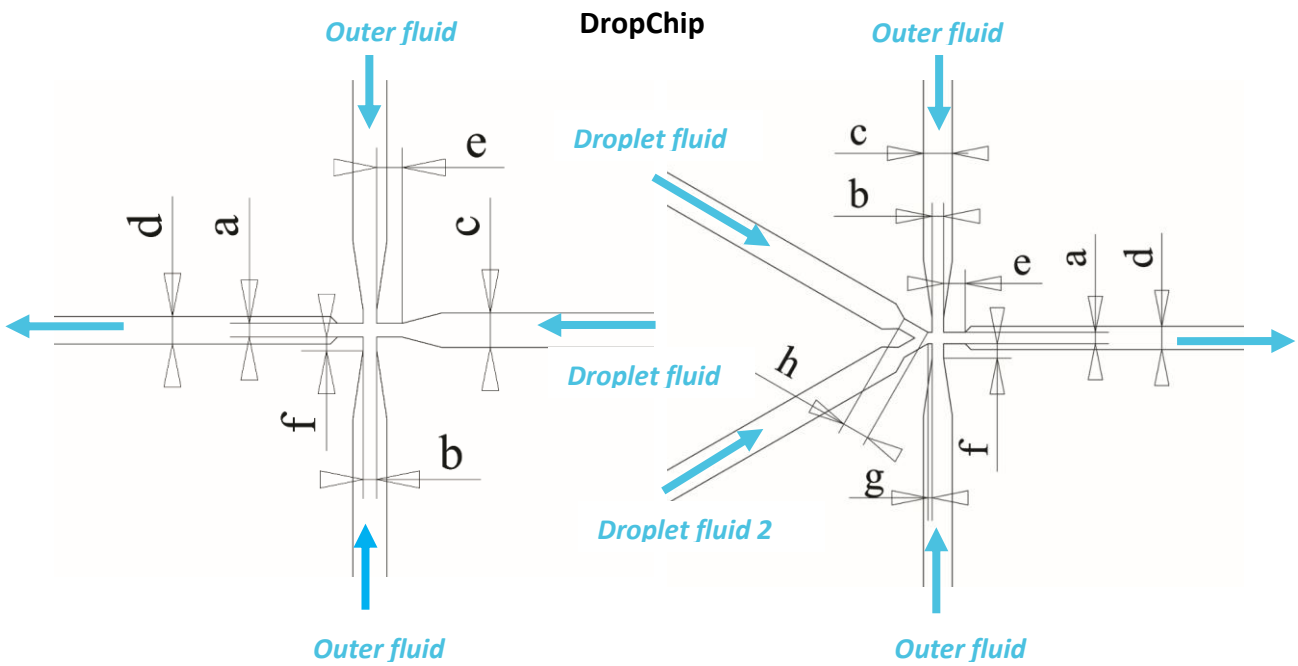


Figure 2: nozzle type 1

Figure 3: nozzle type 2

DropChip channel dimensions (µm)							
Size		DropChip 30 x 30 µm	DropChip 40 x 40 µm	DropChip 50 x 50 µm	DropChip 60 x 60 µm	DropChip 70 x 70 µm	DropChip 80 x 80 µm
Recommended for droplets	Diameter	<30 µm	<40 µm	<50 µm	<60 µm	<70 µm	<80 µm
	Volume	<14 pL	<33 pL	<65 pL	<113 pL	<180 pL	<268 pL
Nozzle 1	a	30	40	50	60	70	80
	b	30	40	50	60	70	80
	c	200	200	200	200	200	200
	d	60	80	100	120	140	160
	e	150	150	150	150	150	150
	f	80	80	80	80	80	80
Nozzle 2	a	30	40	50	60	70	80
	b	30	40	50	60	70	80
	c	200	200	200	200	200	200
	d	60	80	100	120	140	160
	e	150	150	150	150	150	150
	f	100	100	100	100	100	100
	g	60	50	50	40	40	30
	h	200	190	190	190	190	190
Y-junction channel width		200	200	200	200	200	200
Channel depth		30	40	50	60	70	80

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