



The world's most advanced plastic ware essential for  
Agilent Seahorse XF Analyzers

# AGILENT SEAHORSE XF SENSOR CARTRIDGES AND CELL CULTURE MICROPLATES



# AGILENT SEAHORSE XF SENSOR CARTRIDGES

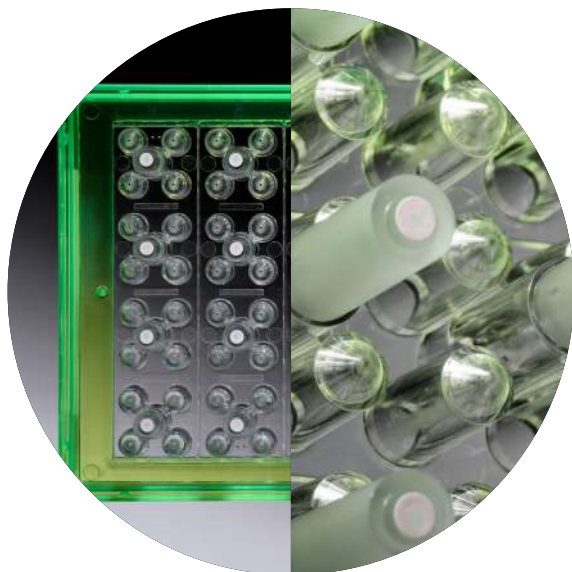
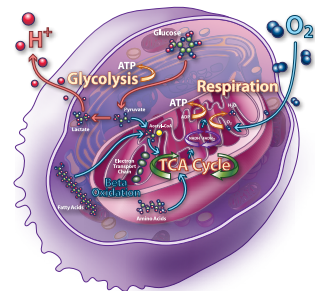


## Live cell, real-time kinetics, label free, complete solutions



Agilent provides researchers with a complete consumables solution ensuring sensitive, kinetic measurements to simultaneously analyze both metabolic energy pathways. Seahorse XF FluxPaks include: sensor cartridges, tissue culture plates, calibrant, and utility plates for performing calibration.

Cellular oxygen consumption (respiration) and proton excretion (glycolysis) cause rapid, easily measurable changes to the concentrations of dissolved oxygen and free protons in our "transient microchamber," which are measured every few seconds by solid state sensor probes residing 200 microns\* above the cells.

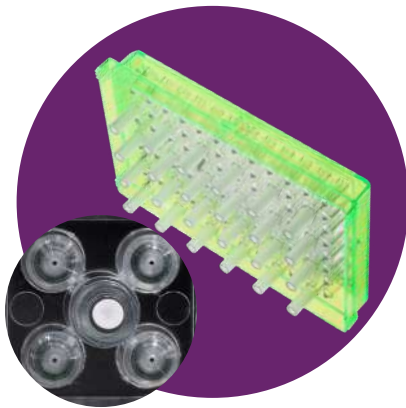


### Key Features : Sensor Cartridges

- Solid state sensor probes containing polymer embedded fluorophores detect oxygen and proton levels in cell culture media
- Patented integrated injection ports for adding compounds, stimulators, inhibitors, substrates, and beads conjugated with antigens
- Patented transient microchamber provides increased analytical sensitivity and signal to noise of OCR and ECAR (PER, gPER) readings when used in an XF Analyzer
- Sensors are spotted onto the cartridge using a multi-step process that includes manual and machine vision inspection
- Every lot is 100% quality controlled for performance and lot-to-lot consistency

# AGILENT SEAHORSE XF FLUXPAKS

A complete solution for performing XF assays. Each FluxPak contains:



## Sensor Cartridges

The essential component to performing simultaneous bioenergetic pathway measurements.

- Non-invasive sensors for measuring dissolved oxygen and free protons
- Four injection ports
- Lot-to-lot consistency
- High precision manufacturing process
- One year shelf life from manufacturing date
- Patented design



## Cell Culture Microplates

There are many plate types specific for the intended application and sample type. A complete list is on page 4.

- Tissue culture treated and irradiated for sterility
- Tapered walls to facilitate reduced volume and cartridge alignment
- Well “bumps” define microchamber height and volume
- Adherence to SBS standards
- PS (Polystyrene) or PET (Polyethylene Terephthalate) material
- Tissue culture plates accommodate living cells, isolated mitochondria, islets, and spheroids



## Calibrant and Calibration Plates

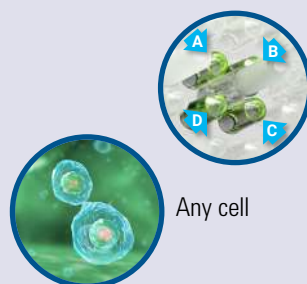
**Calibrant** – This solution has been optimized for XF sensor cartridge calibration. Premixed and ready to use.

**Utility Plates** – For use when performing calibration and hydration.

## Sensor Cartridge Spotting Precision Process



High resolution machine vision image inspects the quality of each spot on every sensor cartridge



4 compound injection ports

Any cell



Real-time, multi-parameter kinetics

# AGILENT SEAHORSE XF PERFORMING MEASUREMENTS



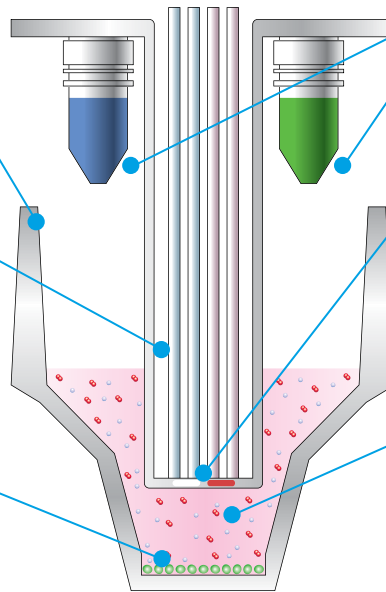
## Measure both metabolic energy pathways simultaneously

### The patented design makes it all possible

Seahorse XF Cell Culture Microplates are tissue culture treated and plate reader compatible.

Sensor probes gently lower to create a transient microchamber, allowing rapid, real time measurement of changes in both oxygen and proton concentrations in the extracellular medium.

The microplate well requires a small number of cells, 10-20 fold fewer cells compared to conventional respirometers.



Integrated injection ports sequentially deliver up to 4 compounds allowing multiple conditions per well.

Biologically compatible optical microsensors measure rates of oxygen consumption and extracellular acidification simultaneously, without addition of dyes.

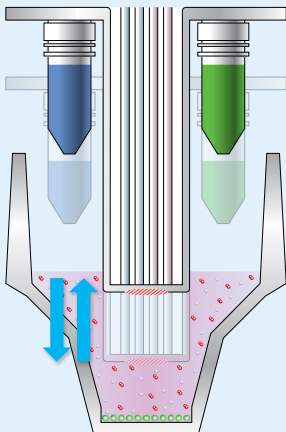
Seahorse XF Analyzers utilize patented transient microchambers which enable sensitive, precise, and label-free metabolic measurements of live cells in real time.

## Measurement Cycle Definition

The integrated drug delivery system allows for sequential addition of up to four compounds\* per well at user-defined intervals resulting in a complete mitochondrial or glycolytic functional kinetic assessment. This functionality enables researchers to modulate metabolism by acute injection. Each measurement cycle, shown below, amounts to one time point and, over time, the kinetic data is plotted and displayed.

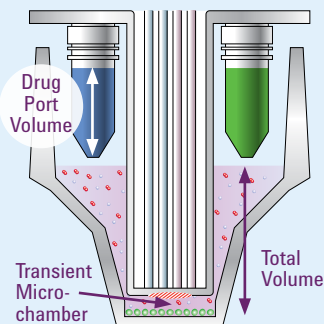
### Mix

When the assay starts, the sensor cartridge probes lower to repeatedly mixes the culture medium.



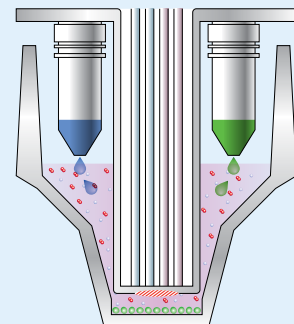
### Measure

Following the mixing step, the probes lower to form the exquisitely small volume of the transient microchamber.



### Inject

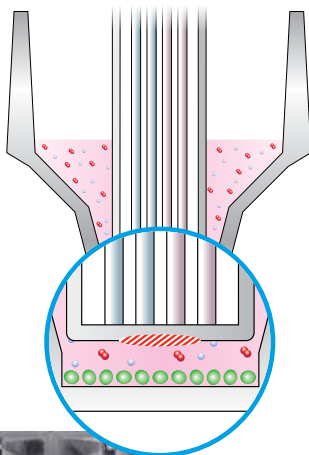
After a series of basal measurements, injection of the constituents from one of the drug ports into the culture medium begins at user programmable intervals.



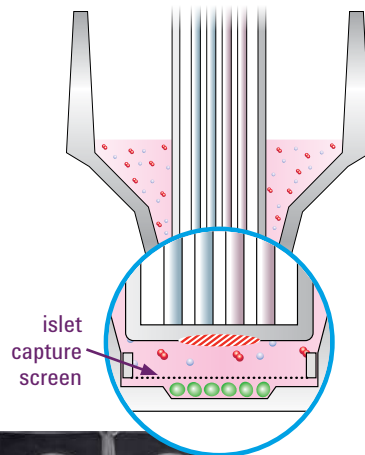


# AGILENT SEAHORSE XF CELL CULTURE MICROPLATES

### Standard Microplate

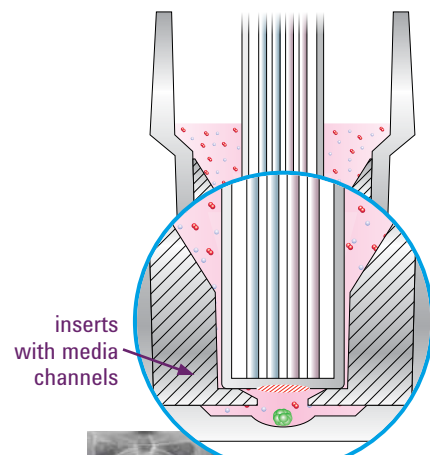


### Islet Capture Microplate



Recommended  
Islet Size >125µm

### Spheroid Microplate



Recommended  
Spheroid Size =  
200-500µm in  
diameter

## Cell Culture Microplates Types and Specifications

Analyzers	Plate Type	Part Number	Number of Wells	Total Volume (µL)	Micro-chamber Volume (µL)	Height of Micro-chamber (µm)	Material	Cell Types	Isolated Mitochondria
XFe96 or XF96	V3 PS	101085-004	96	250	2.28	200	PS	2-D, Monolayer	Yes
XFe96 or XF96	V3 PET	101104-004	96	250	2.28	200	PET	2-D, Monolayer	Yes
XFe24 or XF24	V7 PS	100777-004	24	1000	5.65	200	PS	2-D, Monolayer	Yes
XFe24 or XF24	V7 PET	101037-004	24	1000	5.65	200	PET	2-D, Monolayer	Yes
XFe24 or XF24	V28 PS	100882-004	24	1000	22	812	PS	2-D, Monolayer	No
XFe24 or XF24	Islet	101122-100	24	1000	16.6	1422	PS	3-D, Islets	No
XFe96	Spheroid	102978-100	96	250	1.88	250	PS	3-D, Spheroids	No
XFp	V3 PS	103022-100	8	250	2.28	200	PS	2-D, Monolayer	Yes

PS = Polystyrene    PET = Polyethylene Terephthalate

Seahorse XF Cell Culture Microplates are either Polystyrene or Polyethylene Terephthalate. Both surfaces can be modified\* with protein substrates to improve cellular adherence. Polyethylene Terephthalate has special properties that make it 10X less diffusive for O<sub>2</sub> and CO<sub>2</sub> molecules.

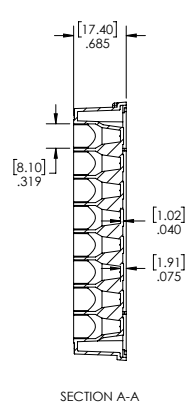
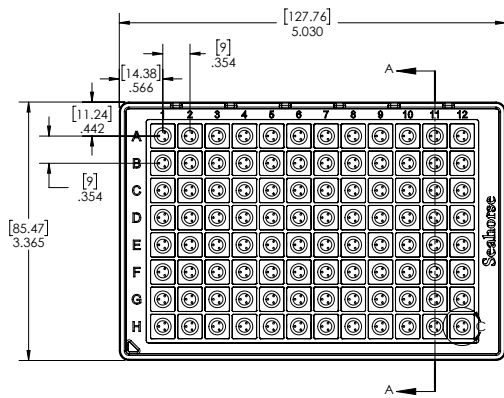
\*Customer required modification (eg. Poly-D-Lysine, collagen, Cell-Tak™)

# AGILENT SEAHORSE XF CELL CULTURE MICROPLATE SPECIFICATIONS

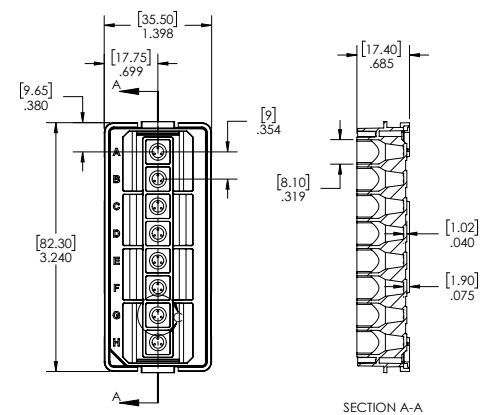


## XFe96 Cell Culture Microplates

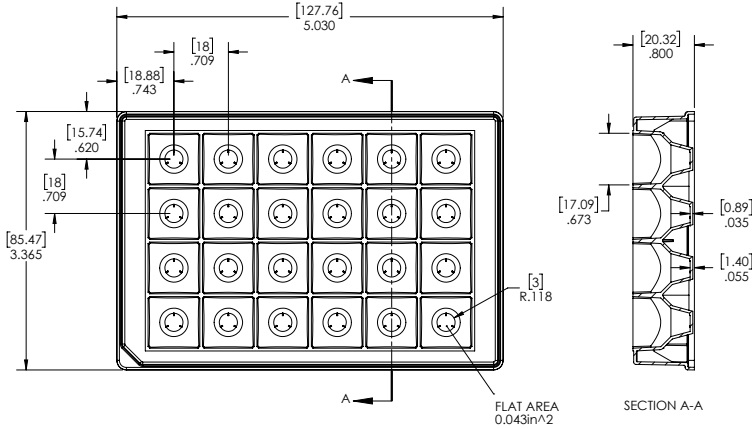
Dimensions are [mm] in.



## XFp Cell Culture Miniplates



## XFe24 Cell Culture Microplates



All plate dimensions can be found online  
[www.agilent.com/cs/library/images1/5991-8747EN\\_seahorse\\_microplates\\_schematic.pdf](http://www.agilent.com/cs/library/images1/5991-8747EN_seahorse_microplates_schematic.pdf)

## Cell Culture Microplates Dimensions

	Max Volume (μL)	Well Depth (mm)	Well Diameter Top/Bottom (mm)	Plate Length (mm)	Plate Width (mm)	Plate Height (mm)	A1 Row offset (mm)	A1 Column Offset (mm)	Well-to-Well Row Center Spacing (mm)	Well-to-Well Column Center Spacing (mm)	Well Bottom Elevation (mm)	Well Bottom Thickness (mm)	Well Bottom Area (mm <sup>2</sup> )
XFe96	250	15.49	8.1/3.81	127.76	85.47	17.4	11.24	14.38	9	9	0.89	1.02	11.40
XFe24	1000	18.92	17.09/6	127.76	85.47	20.32	15.74	18.88	18	18	0.51	0.89	28.26
XFp	250	15.49	8.1/3.81	35.5	82.3	17.4	9.65	17.75	9	N/A	0.89	1.02	11.40
XFe24 Islet	1000	19.18	17.09/3.15	127.76	85.47	20.32	15.74	18.88	18	18	0.5	0.65	7.79
XFe96 Spheroid	250	15.75	8.1/3.18	127.76	85.47	17.4	11.24	14.38	9	9	0.89	0.76	7.94

# AGILENT SEAHORSE XF PLASTIC WARE SELECTION GUIDE



## Product Ordering Information

### XFe96/XF96

Part #	Product Description	Product Content
102416-100	Seahorse XFe96 FluxPak	18 XFe96 Sensor Cartridges, 20 XF96 V3 PS Tissue Culture Microplates
102601-100	Seahorse XFe96 FluxPak mini	6 XFe96 Sensor Cartridges, 10 XF96 V3 PS Tissue Culture Microplates
102905-100	Seahorse XFe96 Spheroid FluxPak	6 XFe96 Sensor Cartridges, 6 XFe96 Spheroid Culture Microplates
101085-004	Seahorse XF96 V3 PS Culture Microplates	10 Polystyrene plates
101104-004	Seahorse XF96 V3 PET Culture Microplates	10 Polyethylene terephthalate plates
102959-100	Seahorse XFe96 Spheroid Plate	1 Polystyrene plate. 1mm (divot diameter)
102978-100	Seahorse XFe96 Spheroid Microplates	6 Polystyrene plates. 1mm (divot diameter)

### XFe24

Part #	Product Description	Product Content
102340-100	Seahorse XFe24 FluxPak	18 XFe24 Sensor Cartridges, 20 XF24 V7 PS Tissue Culture Microplates
102342-100	Seahorse XFe24 FluxPak mini	6 XFe24 Sensor Cartridges, 10 XF24 V7 PS Tissue Culture Microplates
103518-100	Seahorse XFe24 Islet Capture FluxPak	6 XFe24 Sensor Cartridges, 6 XF24 Islet Capture Culture Microplates
100777-004	Seahorse XF24 V7 PS Culture Microplates	10 Polystyrene plates
100882-004	Seahorse XF24 V28 PS Culture Microplates	10 Polystyrene plates
101037-004	Seahorse XF24 V7 PET Culture Microplates	10 Polyethylene terephthalate plates
101122-100	Seahorse XF24 Islet Capture Microplates	6 Polystyrene plates

### XF24

Part #	Product Description	Product Content
100850-001	Seahorse XF24 FluxPak	18 XF24 Sensor Cartridges, 20 XF24 V7 PS Tissue Culture Microplates
100867-100	Seahorse XF24 FluxPak mini	6 XF24 Sensor Cartridges, 10 XF24 V7 PS Tissue Culture Microplates
101174-100	Seahorse XF24 Islet Capture FluxPak	6 XF24 Sensor Cartridges, 6 XF24 Islet Capture Culture Microplates
100777-004	Seahorse XF24 V7 PS Culture Microplates	10 Polystyrene plates
100882-004	Seahorse XF24 V28 PS Culture Microplates	10 Polystyrene plates
101037-004	Seahorse XF24 V7 PET Culture Microplates	10 Polyethylene terephthalate plates
101122-100	Seahorse XF24 Islet Capture Microplates	6 Polystyrene plates

### XFp

Part #	Product Description	Product Content
103022-100	Seahorse XFp FluxPak	12 XFp Sensor Cartridges, 12 XFp PS Tissue Culture Microplates
103025-100	Seahorse XFp Cell Culture Miniplate	12 Polystyrene plates

All plate dimensions can be found online [www.agilent.com/cs/library/images1/5991-8747EN\\_seahorse\\_microplates\\_schematic.pdf](http://www.agilent.com/cs/library/images1/5991-8747EN_seahorse_microplates_schematic.pdf)  
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