



# Cultivation Systems From Discovery to Production



Engineering for Life



 **apollikon**<sup>®</sup>  
BIOTECHNOLOGY  
PRESSURE 0 - 2.5 barg  
made in Holland

# Glass Autoclavable Bioreactors | The World Wide Standard

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- Wide range of volumes to fit many applications
  - Interchangeable modules to tailor the systems to research demands
  - Easy cleanability by electropolished finish of product
  - Simple set-up and easy handling
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In the laboratory bioreactor and fermentor range Applikon is a worldwide market leader because of its dependable and easy to use systems. The bioreactors and fermenters excel in quality and modularity. An Applikon laboratory system is easy to upgrade if a change in research activities occurs. Applikon offers glass autoclavable bioreactors for cell culture applications and for microbial culture applications. The systems are built according to the specific demands of a process using an extensive array of high quality components. Because of the modularity and flexibility, the user can always adapt the systems to changed process demands. This results in low initial investment and low running costs. The stirred tank reactor (STR) is the most widely used bioreactor type. Glass autoclavable bioreactors and fermenters are available in 2 - 3 - 5 - 7- 15 and 20 liter total volume.

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## Features

- No welded parts in the bioreactor topplate
  - Optional high torque magnetically coupled agitator
  - All metal parts are constructed of stainless steel 316L
  - External mirror polished finish
  - Glass bioreactor vessels can be used up to 0.5 barg (7.5 psig) of overpressure.
  - Glass dished bottom vessels are made of borosilicate glass to guarantee:
    - resistance to thermal shock
    - excellent corrosion resistance
    - smooth, non porous surface for easy cleaning
    - optimal transparency for visual inspection of the culture
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## Applications

- Microbial cultures
  - Cell cultures
  - Batch
  - Fed-Batch
  - Perfusion
  - Continuous cultivation
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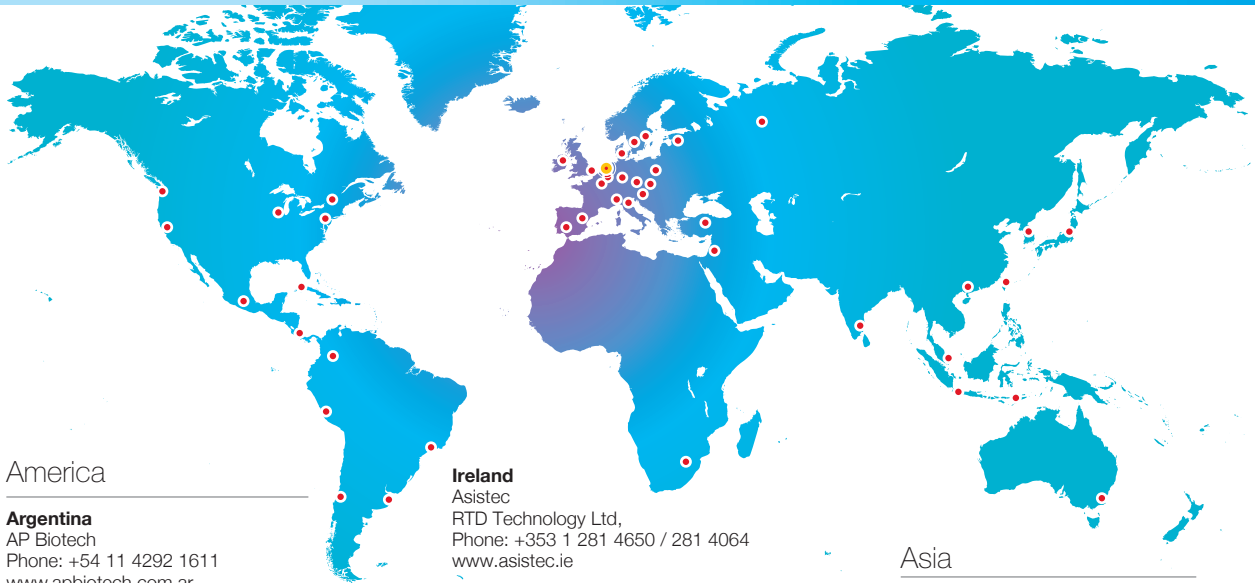
## Related products

- Bottle holder
  - Sensors
  - LumiSens Optical DO<sub>2</sub> sensor
  - BioSep
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# Specifications

	<b>Total volume (L)</b>	<b>Working volume (L)</b>	<b>Minimum working volume (L)</b>	<b>Aspect ratio total volume (L)</b>	<b>Aspect ratio working volume (L)</b>
2 liter single wall	2.2	1.7	0.5	2.2	1.9
2 liter jacketed	2.2	1.7	0.5	2.2	1.9
3 liter single wall	3.1	2.7	0.5	1.9	1.5
3 liter jacketed	3.1	2.7	0.5	1.9	1.5
5 liter single wall	4.8	3.4	0.9	1.6	1.1
5 liter jacketed	4.8	3.4	0.9	1.6	1.1
7 liter single wall	6.8	5.4	1.5	2.2	1.8
7 liter jacketed	6.8	5.4	1.5	2.2	1.8
15 liter single wall	16.5	12	3.0	1.7	1.5
15 liter jacketed	18.2	12	3.0	1.5	1.2
20 liter single wall	23.4	16	3.0	2.4	2.0
	<b>Internal Diameter (mm)</b>	<b>Internal Height (mm)</b>	<b>Autoclave dimensions (WxH mm)</b>		
2 liter single wall	105	240	ø190 x 436		
2 liter jacketed	105	240	ø219 x 486		
3 liter single wall	130	240	ø190 x 436		
3 liter jacketed	130	240	ø235 x 436		
5 liter single wall	160	250	ø260 x 436		
5 liter jacketed	160	250	ø260 x 480		
7 liter single wall	160	350	ø260 x 600		
7 liter jacketed	160	350	ø264 x 645		
15 liter single wall	222	440	ø381 x 710		
15 liter jacketed	240	440	ø391 x 740		
20 liter single wall	222	620	ø381 x 900		
<b>Drive system</b>	Direct drive, lipsealed or magnetically coupled				
<b>Stirrer speed (rpm)</b>	Standard range is 50 - 1250. 2 and 3 liter systems can be supplied with 2000 rpm motor				
<b>Impellers</b>	Rushton and marine with outside diameters 45 mm, 60 mm 75 mm or 85 mm				
<b>Gas sparger</b>	Porous sparger or L-type sparger				
<b>Gas overlay</b>	Yes				
<b>Exhaust gas</b>	Water cooled exhaust gas condenser				
<b>Sampling</b>	Fixed height or height adjustable sample pipe with optional sampling system Sample pipe internal diameters choices are: 1.7 mm, 4 mm, 6 mm or 10 mm				
<b>Draining</b>	Drain pipe				
<b>Additions</b>	Triple or single inlet ports and optional micro liquid injectors				
<b>pH</b>	Measurement: 12 mm classic pH sensor Control: via acid pump or CO <sub>2</sub> gas (rotameter or MFC) in combination with alkali pump				
<b>DO<sub>2</sub></b>	Measurement: 12 mm classic polarographic DO <sub>2</sub> sensor or LumiSens for 2-5 L. Control: via a combination of N <sub>2</sub> , Air, O <sub>2</sub> (Rotameter or MFC) and agitation				
<b>Temperature</b>	Measurement: Pt-100 sensor in thermowell in topplate Control: cooling and/or heating jacket via bioreactor wall or via internal heat exchanger				
<b>Foam</b>	Measurement: Height adjustable conductivity based foam sensor Control: anti-foam addition pump				
<b>Level</b>	Measurement: Height adjustable conductivity based level sensor Control: pump for liquid addition or removal				
<b>Optional inlets</b>	Septum, chemostat tube, liquid entry system				





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