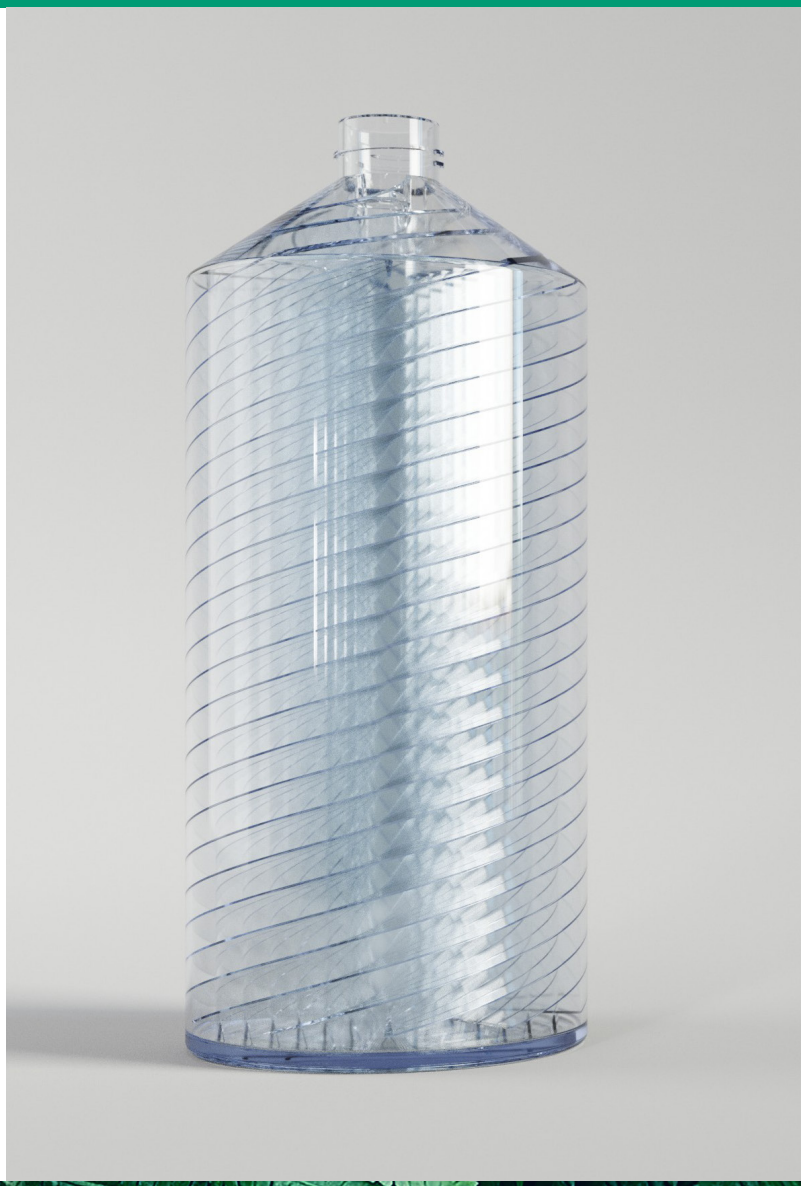
Technical Data Sheet

CellScrew® 10k



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Index

1. Product description

The CellScrew® 10k is a novel single-use cell culture device with a growth area of 10,000 cm², which can simply be used in any bottle or tube roller. The CellScrew®s surface is suitable for the cultivation of demanding adherent cell lines e.g. HEK-293 or MSCs. The CellScrew® is manufactured in an additive manufacturing process and is made from plant derived PLA. Using this renewable polymer reduces its carbon footprint ~90 % when compared to standard single-use cell culture dishes, especially multi-stack systems. Key data is provided below.

2. Technical overview

Dimensions

Dimension	Unit	Value
Heigth	[mm]	283.88
Diameter	[mm]	228.43
Cylinder height	[mm]	120
Konus height	[mm]	32
Konus angle	[°]	34.78
Cap diameter	[mm]	39
Cap heigth	[mm]	24

Properties

Description:	Green Elephant Biotech GmbH CellScrew® 10k GEB-CS-10k: TC treated surface, with filter cap
Packaging dimensions:	130 mm x 130 mm x 300 mm
Weigth:	600 g
Theoretical total volume:	2193 mL
Working volume:	800 – 1,000 mL
Growth area:	10,313 cm²
Material:	Polylactic acid
Color:	Translucent

Sterilization method:	Gamma irradiation
Operating temperature:	2 °C to 45 °C
Storage:	Room temperature
Centrifugability:	No
Autoclavability:	No
Recommended rotating speed:	0.5 – 2 rpm
Mixing time:	< 27 min (@0.5 rpm)
kLa - value:	> 1.95 h^{-1} (@0.5 rpm)
Shelf life:	12 months
Packing unit:	1 CellScrew®, 1 bag of 1 piece
Certificates:	-
Quality management:	-

3. Instructions for use

Prepare a sufficient seed train several days prior to starting the CellScrew® depending on the desired cell line and its growth rate. We recommend not to use the minimal inoculation density but a slightly higher concentration of cells to achieve a good growth rate and a viable culture. After reaching a confluency of 80 – 95 %, the cells can be processed and used to inoculate the CellScrew®.

Cellline	Inoculation density	Expected max. cell density	Doubling time
293	80,000 – 120,000 cells* cm^{-2}	~ 250,000 cells*cm^{-2}	24-30 h
HeLa	12,500 – 25,000 cells* cm^{-2}	55,000 - 85,000 cells*cm^{-2}	40-48 h
L-929	25,000 – 37,500 cells* cm^{-2}	~ 187,500 cells*cm^{-2}	20-24 h
Vero-B4	6,250 – 12,500 cells* cm^{-2}	~ 250,000 cells*cm^{-2}	25 h

Table 1: *Characteristics of popular cell lines according to DSMZ (Leibniz Institut: Deutsche Sammlung von Mikroorganismen und Zellkulturen).*

Prepare 800 - 1,000 mL of growth medium and prewarm it, until it reaches the desired temperature. Take the seed train bottles out of the incubator and check for contaminations, the right morphology and the confluence using a microscope.

Detach the confluent and exponential growing cells from the seed train bottles, wash them, and suspend them in fresh medium. Add the concentrated cell suspension to the prepared volume of growth medium to adjust the correct cell density of the inoculum. Transfer the inoculum into the CellScrew® by

pouring the cell suspension from the bottle. Hold the CellScrew® at an angle and rotate it clockwise to distribute the cell suspension equally inside the inner structure.

Remove the CellScrew® from the aseptic working bench. Hold the angle during transport to prevent the liquid to flow back to the bottom of the CellScrew®. Place the CellScrew® into a roller device located in an incubator with the desired temperature, humidity, and atmosphere. Set the roller device to a rotation speed between 0.5 – 2 rpm. Close the incubator and start cell expansion.

Depending on the cell line and inoculation density, the CellScrew® is ready for harvest after 3-7 days. Take the CellScrew® out of the incubator and place it upright in an aseptic working bench. Discard the spent medium using an aspiration pipette and/or a 50 mL serological pipette.

Pour phosphate buffered saline (PBS) into the CellScrew®, hold it at an angle and turn the CellScrew® clockwise to wash the surface area and the cells attached to it. Discard the PBS using an aspiration pipette and/or a 50 mL serological pipette. Add Trypsine or a detachment agent of your choice to the CellScrew®. Hold it at an angle and turn the CellScrew® clockwise to distribute the detachment agent. Hold the angle during transport to prevent the liquid to flow back to the bottom of the CellScrew®. Place the CellScrew® into a roller device located in an incubator with the desired temperature, humidity, and atmosphere. Set the roller device to a rotation speed between 0.5 – 2 rpm. Close the incubator and incubate for the desired detachment time depending on the detachment agent and the cell line.

Take the CellScrew® out of the incubator and place it upright in an aseptic working bench. Add FBS containing growth medium or a similar inhibitor to the detachment agent. Hold the CellScrew® at an angle and rotate it clockwise 10 – 15 times to rinse off still lightly attached cells. Bring the CellScrew® to an upright position and let the cell suspension flow to the bottom of the CellScrew®. Harvest the cell suspension with a 50 mL serological pipette and transfer it into a harvest bottle for further use.

4. Technical support

For technical support, questions or remarks please contact the technical department of Green Elephant Biotech GmbH via e-mail (tech-service@greenebt.com).

The CellScrew® is a novel single-use cell culture device with a compact design and a huge growth area, which can simply be used in any bottle or tube roller. The CellScrew®s surface is suitable for the cultivation of demanding adherent cell lines e.g. HEK-293 or MSCs. It is manufactured from plant derived PLA in an additive manufacturing process. Using this renewable polymer reduces the carbon footprint of the CellScrew® ~ 90% when compared to standard single-use cell culture dishes. Key data is provided below. If you have any questions, contact us at tech-service@greenebt.com.