Surface Areas and Guide for Recommended Medium Volumes for Corning® Cell Culture Vessels

CORNING

DOMINIQUE DUTSCHER SAS

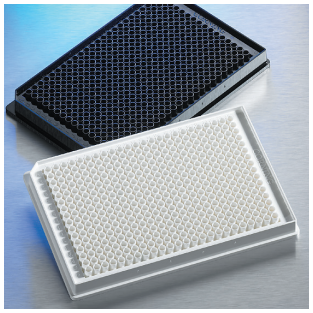
This guide gives the recommended medium volumes, approximate growth surface areas, and average cell yields for Corning disposable cell culture vessels.

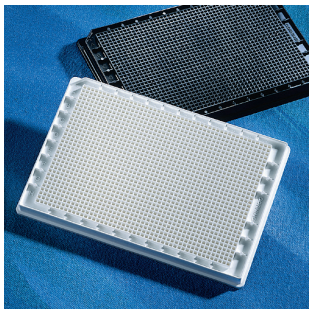
Approximate growth surface areas are based on calculations made from engineering drawings. These calculations do not take into consideration minor variations that can occur in products during molding or the ability of many cell lines to grow up the sides of the vessels which can considerably increase the available surface area. For critical work, we suggest that you fix and stain cultures, and then carefully calculate the actual growth surface area.

In general, at least 1 x 10^5 cells/cm^2 can be produced when growing cells as attached monolayers in culture. The average cell yields used here are based on this number. Actual cell yields can easily be several times higher or lower than this depending on the cell line and culture conditions.

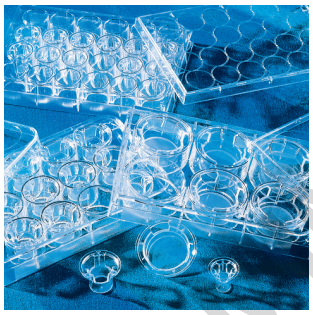
Maintaining optimal cell to medium ratios is important for obtaining good cell growth. As a starting point, we recommend 0.2 to 0.3 mL medium for each square centimeter of culture vessel growth surface area; most of the recommended medium volume levels used in the tables below are based on this ratio. Medium volume recommendations for microplates and Transwell® inserts are higher due to meniscus effects associated with very small spaces and a higher rate of evaporation. Using more medium may reduce the need for feeding the cultures, but, due to the increased medium depth and the static nature of the environment, it will also slow the diffusion of oxygen to the cells.

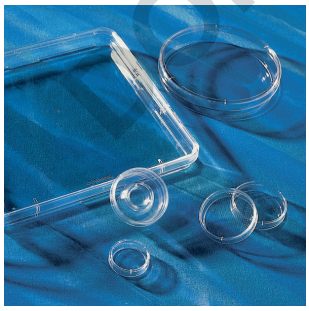












Corning® Microplates

Microplate	Well Diameter (Bottom) (mm)	Single Well Only: Approx. Growth Area (cm^2)	Single Well Only: Average Cell Yield	Single Well Only: Total Well Volume (µL)	Single Well Only: Working Volume (µL)
96-well Microplates					
Flat Bottom	6.4	0.32	3.2×10^4	360	100 - 200
Round Bottom	6.4	N/A**	N/A**	330	100 - 200
V-Bottom	6.4	0.38	3.8×10^4	320	100 - 200
Half Area	4.5	0.16	1.6×10^4	190	50 - 100
384-well Microplates					
Standard	2.7 x 2.7*	0.056	5.6×10^3	112	25 - 50
Low Volume	2.0	0.031	3.1×10^3	50	5 - 40
1536-well Microplates					
Clear Flat Bottom	1.63*	0.025	2.5×10^3	12.5	5 - 10
Solid Flat Bottom	1.53*	0.023	2.3×10^3	12.5	5 - 10

*Square wells.
**Because these wells are round, the surface area available for cell attachment is dependent on the medium volume used.

Corning Multiwell Plates

Plate	Well Diameter (Bottom) (mm)	Single Well Only: Approx. Growth Area (cm^2)	Single Well Only: Average Cell Yield	Single Well Only: Total Well Volume (mL)	Single Well Only: Working Volume (mL)
6-well	34.8	9.5	9.5×10^5	16.8	1.9 - 2.9
12-well	22.1	3.8	3.8×10^5	6.9	0.76 - 1.14
24-well	15.6	1.9	1.9×10^5	3.4	0.38 - 0.57
48-well	11.0	0.95	9.5×10^4	1.6	0.19 - 0.285

Transwell® Permeable Supports

Transwell Insert Format	Transwell Insert Diameter (mm)	Approx. Growth Area (cm^2)	Average Cell Yield	Recommended Volume (mL): Well	Recommended Volume (mL): Insert
6-well	24 mm	4.67 cm^2	4.67×10^5	2.6	1.5
12-well	12 mm	1.12 cm^2	1.12×10^5	1.5	0.5
24-well	6.5 mm	0.33 cm^2	3.3×10^4	0.6	0.1
96-well	4.26 mm	0.143 cm^2	1.4×10^4	0.235	0.075
100 mm dish	75 mm	44 cm^2	4.4×10^6	13.0	9.0

Corning Dishes

Dish	Approx. Growth Area (cm^2)	Average Cell Yield	Recommended Volume (mL)
35 mm*	9	9.0×10^5	1.8 - 2.7
60 mm*	21	2.1×10^6	4.2 - 6.3
100 mm*	55	5.5×10^6	11 - 16.5
150 mm*	152	1.52×10^7	30.4 - 45.6
245 mm†	500	5.0×10^7	100 - 150

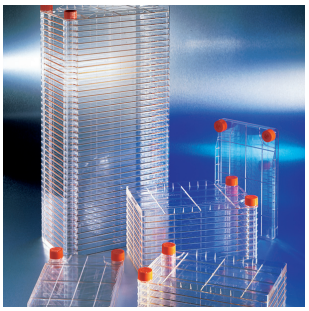
*Not actual bottom diameters.
†Dish is square.

UNIQUE DUTSCHER SAS



Corning® Flasks

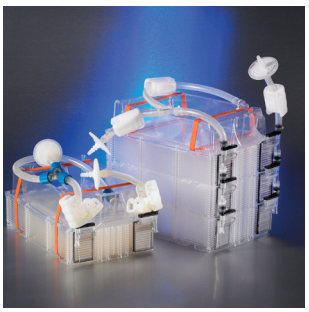
Flask	Approx. Growth Area (cm^2)	Average Cell Yield	Recommended Medium Volume (mL)	Approx. Total Flask Volume (mL)
25 cm^2	25	2.5 x 10^6	5 - 7.5	70 rectangular
75 cm^2	75	7.5 x 10^6	15 - 22.5	265 U-shaped
150 cm^2	150	1.5 x 10^7	30 - 45	377 U-shaped
175 cm^2	175	1.75 x 10^7	35 - 52.5	513 U-shaped
225 cm^2	225	2.25 x 10^7	45 - 67.5	1,006 traditional
Corning HYPERFlask®	1,720	2.5 x 10^8	560 - 565	560 - 565



Corning Stacked Chambers

Corning CellSTACK® Chambers

Chamber Size	Approximate Growth Area (cm^2)	Average Cell Yield	Recommended Medium Volume (mL)
1-stack	636	6.36 x 10^7	127 - 191
2-stack	1,272	1.27 x 10^8	254 - 382
5-stack	3,180	3.18 x 10^8	636 - 954
10-stack	6,360	6.36 x 10^8	1,272 - 1,908
40-stack	25,440	2.54 x 10^9	5,088 - 7,632
Corning HYPERStack® Chambers			
12-stack	6,000	6.0 x 10^8	1,300
36-stack	18,000	1.8 x 10^9	3,900



Corning Roller Bottles

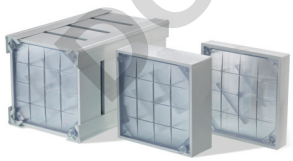
Roller Bottle	Approximate Growth Area (cm^2)	Average Cell Yield	Recommended Medium Volume (mL)
490 cm^2	490	4.9 x 10^7	100 - 150
850 cm^2	850	8.5 x 10^7	170 - 255
1,700 cm^2 (extended surface)	1,700	1.7 x 10^8	340 - 510
1,750 cm^2	1,750	1.75 x 10^8	350 - 525



Corning CellCube® Systems

Module	Approximate Growth Area (cm^2)	Average Cell Yield	Recommended Medium Volume (mL)
10-stack	8,500	8.5 x 10^8	N/A*
25-stack	21,250	2.13 x 10^9	N/A*
100-stack	85,000	8.5 x 10^9	N/A*

*Not applicable; these systems are perfused with medium from a reservoir.



DOMINIQUE DUTSCHER SAS

DOMINIQUE DUTSCHER SAS

Warranty/Disclaimer: Unless otherwise specified, all products are for research use or general laboratory use only.* Not intended for use in diagnostic or therapeutic procedures. Not for use in humans. These products are not intended to mitigate the presence of microorganisms on surfaces or in the environment, where such organisms can be deleterious to humans or the environment. Corning Life Sciences makes no claims regarding the performance of these products for clinical or diagnostic applications. *For a listing of US medical devices, regulatory classifications or specific information on claims, visit www.corning.com/resources.

Corning's products are not specifically designed and tested for diagnostic testing. Many Corning products, though not specific for diagnostic testing, can be used in the workflow and preparation of the test at the customers discretion. Customers may use these products to support their claims. We cannot make any claims or statements that our products are approved for diagnostic testing either directly or indirectly. The customer is responsible for any testing, validation, and/or regulatory submissions that may be required to support the safety and efficacy of their intended application.

CORNING

Corning Incorporated
Life Sciences

www.corning.com/lifesciences

NORTH AMERICA
t 800.492.1110
t 978.442.2200

ASIA/PACIFIC
Australia/New Zealand
t 61 427286832
Chinese Mainland
t 86 21 3338 4338
India
t 91 124 4604000
Japan
t 81 3-3586 1996
Korea
t 82 2-796-9500
Singapore
t 65 6572-9740
Taiwan
t 886 2-2716-0338

EUROPE
CSEurope@corning.com
France
t 0800 916 882
Germany
t 0800 101 1153
The Netherlands
t 020 655 79 28
United Kingdom
t 0800 376 8660
All Other European Countries
t +31 (0) 206 59 60 51

LATIN AMERICA
grupoLA@corning.com
Brazil
t 55 (11) 3089-7400
Mexico
t (52-81) 8158-8400

For a listing of trademarks, visit www.corning.com/clstrademarks. All other trademarks are the property of their respective owners.
© 2012-2023 Corning Incorporated. All rights reserved. 6/23 CLS-AN-209 REV3