



Filling Volumes in TPP Tissue Culture Vessels

For monolayer cultures, TPP recommends a medium-volume-to-growth-area ratio of 0.2–0.5 mL/cm², which corresponds to a medium height of 2–5 mm covering the cells. The upper limit is determined by the gas exchange efficiency through the liquid layer [1]. The medium height—and thus the volume in the culture vessel—is a critical factor for oxygen supply to the cells, as it directly influences the oxygen transfer rate (OTR) (Gstraunthaler et al., 1999). For adherent cultures, TPP recommends adjusting the medium volume individually for each cell line and cultivation duration.

For suspension cultures, the provided volumes serve as general guidelines. TPP recommends adjusting the medium volume based on the specific cell line, cultivation duration, and key parameters such as orbital shaking and speed (RPM). Critical factors to consider include the oxygen transfer rate and shear stress.

Tissue Culture Flask

Product No.	Version	Growth Area cm ²	Recommended Calculated Volume [1] mL	Volume Graduation mL
90025	VENT	25	5 – 12.5	40
90026	Filter			
90075	VENT	75	15 – 37.5	180
90076	Filter			
90150	VENT	150	30 – 75	450
90151	Filter			
90300	VENT	300	60 – 150	800
90301	Filter			

Tissue Culture Flask with peel-off foil

Product No.	Version	Growth Area cm ²	Recommended Calculated Volume [1] mL	Volume Graduation mL
90028	Filter	25	5 – 12.5	15
90078	Filter	75	15 – 37.5	60
90153	Filter	150	30 – 75	100
90653	Filter, barrier	115	23 – 57.5	100
90303	Filter	300	60 – 150	200



Tissue Culture Flask with re-closable Lid

Product No.	Version	Growth Area cm ²	Recommended Calculated Volume [1] mL	Volume Graduation mL
90552	Filter	150	30 – 75	100
90652	Filter, barrier	115	23 – 57.5	100

Clipmax

Product No.	Version	Growth Area cm ²	Recommended Calculated Volume [1] mL
70010	Filter	10	2.0 – 5

Slidemax

Product No.	Version	Growth Area cm ²	Recommended Calculated Volume [1] mL
71011	1 Well	10.2 one	2 – 5.1
71012	2 Wells	4.85 each	1.0 – 2.4
71014	4 Wells	2.22 each	0.4 – 1.1
71016	6 Wells	1.31 each	0.3 – 0.7
71018	8 Wells	0.94 each	0.19 – 0.47

Tissue Culture Tube

Product No.	Version	Growth Area cm ²	Recommended Volume mL	Volume Graduation mL
91243	Filter	10	2	5
91106	VENT	20	1-3	10



Tissue Culture Test Plate

Product No.	Version	No. of Wells	Growth Area cm ²	Recommended Calculated Volume [1] mL
92006 62106 92406	□	6	9.026	1.8 – 4.5
92012 92112 92412	□	12	3.464	0.7 – 1.7
92024 92124 92424	□	24	1.863	0.4 – 0.9
92048 92148 92448	□	48	0.882	0.2 – 0.4
92096 92196 92696	□	96	0.342	0.07 – 0.17
92097 92197 92697	U	96	0.965	0.07 – 0.17

Tissue Culture Dish

Product No.	Inner-Ø mm ²	Growth Area cm ²	Recommended Calculated Volume [1] mL
93040	34	9.2	1.8 – 4.6
93060	53	22.1	4.5 – 6.6
93100	87	60.1	12 – 18
93150	137	147.8	29 – 44



Cryo Tubes

Product No.	Volume Graduation	Maximum Filling Volume	Recommended Volume [2]
	mL	mL	mL
89012	0.9	1.05	0.9
98020	1.5	1.85	1.6
89040	3.5	3.55	3.2
89050	4.0	4.5	4.0

TubeSpin® Bioreactor (Suspension Cells)

Product No.	Volume Graduation	Shaker Ø mm / Speed rpm	Recommend Volume
	mL		mL
86050	50	50 / 250	5-35
87015	15	50 / 250	1-10
87017	15	50 / 180	1-10
87050	50	50 / 150	5-35
87056	50	50 / 150	5-35
87450	450	50 / 150	< 250
87600	600	50 / 150	< 400

Literature

[1] Amanda Capes-Davis, R. Ian Freshney (2010) Freshney's Culture of Animal Cells: A Manual of Basic Technique and Specialized Applications (8th Ed.) - Wiley (p.180)

[2] Negative thermal expansion of water ~ 10%

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