

# Recommendation of appropriate operating conditions for conical TubeSpin® Bioreactors 15 / 50 mL

	Mammalian Cell culture		Insect Cells	Plant Cell culture  N. tabacum BY-2	
TubeSpin® bioreactor 15	CHO HEK-293		SF-9		
Shaking speed rpm	200 – 300	200 – 300	200 – 300	200 – 300	
Throw mm	50	50	50	50	
Working volume mL	1.5 – 6	1.5 – 6	1.5 – 6	1.5 – 6	

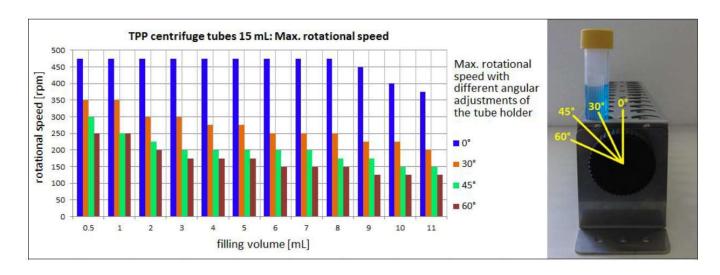
	Mammalian Cell culture		Insect Cells	Plant Cell culture	
TubeSpin® bioreactor 50	СНО	HEK-293	SF-9	N. tabacum BY-2	
Shaking speed rpm	180 - 250	180 – 250	180 – 250	180 – 250	
Throw mm	50	50	50	50	
Working volume mL	15 – 30	15 – 30	5 – 10	5 – 10	

## Max. rotational speed (50 mm shaking diameter) of different volumes of water in 15 mL TPP tubes

Timothy Bürgin [1], Dr. Tibor Anderlei [1]

#### Parameters:

- Different filling volumes of water (0.5 mL 11 mL)
- Different setting angles of the tube holder (0°, 30°, 45° and 60°)
- 50 mm shaking diameter
- Measured by filming the shaking motion with high speed camera (in 25 rpm steps)



Note: TPP products are for research use only and are not intended for use in clinical, diagnostic or therapeutic procedures. TPP assumes no responsibility for damages or defects resulting from unapproved or improper use.



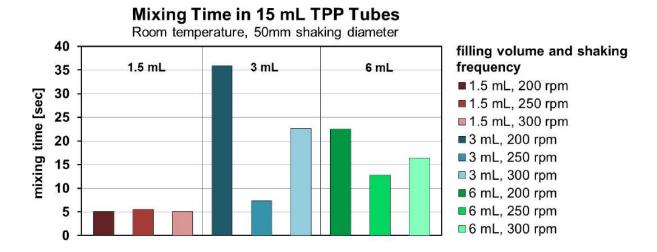
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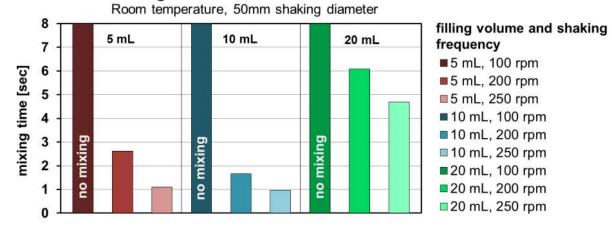
# Mixing time of different volumes of water and different shaking frequencies in 15 mL and 50 mL TPP tubes

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Method: Discoloration (with sodium thiosulfate) of amylum solution colored with Lugol's iodine.



# Mixing Time in 50 mL TPP Tubes



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Source: TPP **2/3** Version 09\_2023

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## **Methods from the Literature**

Reference	Working Volume mL	Throw/Orbit mm	Shaking Speed rpm	TubeSpin® Bioreactor	Cells
Strnad (2010),					
Biotechnol. Prog.:	14 – 34	50	180 – 300	50	CHO
Vol. 26 (3);pp 653-663					
Xie (2011),					
Cytotechnology:	10 – 35	n.s	160 – 200	50	CHO
Vol. 63 (4); pp 345-350					
Stettler (2007),					
Biotechnol. Prog.:	5 – 10	50	140	50	СНО
Vol. 23 (6); pp 1340-					
1346					
De Jesus (2004),					
Biochem. Eng. Journal:	5	25	200	50	CHO
Vol 17, No. 3; pp 217- 223					
Shen (2011), BMC					
Proc.: 5 (Suppl 8); P37	10 – 35	n.s	160 – 200	50	Sf-9
Xie (2011)					
Biotechnol. Letters	10	n.s	75 – 90	50	Sf-9
Vol 33, pages897–902			70 00		
Hacker (2018)					
Methods Mol Biol;	10	50	180	50	CHO/HEK293
1850:123-131					
Blessing (2019)					
Mol Ther Methods Clin	5 – 10	50	180	50	HEK293
Dev. 13:14-26.					