

### Calibration Certificate

Certificate No.: YEA(C)/ 231223A/1961/002  
ULR No. : CC222123000082834F

Dated : 30.12.2023

Calibrated for : ICTC, Kawrthah CHC  
Dist.: Mamit, Mizoram,  
Pin - 796441.

Calibrated on.	Next Calibration Due On.	Page No.	No. of Pages
25.12.2023	25.12.2024	1	3

**Description of Instrument**

*Name* : Micro Pipette  
*Identification* : ICTC/KRT/MP-01  
*Range* : 100 - 1000 µl  
*Least Count* : 5 µl  
*Make* : Sartorius (Sl. No. : 14578835)

**Service Request No. / Order Reference** : 231223A/1961/001-003

**Receipt of Instrument** : 23.12.2023

**Location where calibration performed** : At permanent laboratory

**Applicable Specification of Instrument to be Calibrated** : Not Specified

**Condition of Instrument to be Calibrated** : Satisfactory

**Basis of Calibration** : Comparison method with reference to YEA/WI/M-47

**Environmental Condition during Calibration** : *Temp.* : (23±4)°C *RH* : (50±10)%

**Equipment used for Calibration** : Standard Electronic Balance & Distilled Water

**Traceability** : To National Standard vide Certificate No:  
YEA(C)/230925/Y001/001 valid till 24.09.2024  
YEA(C)/231216/Y001/001 valid till 15.12.2024

**Measurement Uncertainty** : The figures are stated in the result at coverage factor  
 $k = 2$  corresponding to confidence probability of  
95% for normal distribution.

**Laboratory Identification** : Sticker is affixed for authentication of calibration.

The above Instrument/Equipment/Machine has been calibrated  
The results are given in the page 2 to ..... 3 ... of the certificate.



Cont...2





# YEA

☎ : 033 2677 1411/1412, 2667 1909

**YOUNG ENGG. & CALIBRATION SERVICES PVT. LTD.**

Admn. Office & Lab : Kamardanga Road (Opp. Tarama Ashram), Ichapur, Howrah - 711 104

E-mail : calibration@yeagroup.org ★ Visit us at : www.yeagroup.org

CIN : U74140WB2005PTC106389 ★ Toll Free Help Desk : 1800 345 9001

Certificate No.: YEA(C)/ 231223A/I961/002

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Calibrated By : S. Das

Date: 30.12.2023

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### Calibration Results

#### Mechanical Calibration

##### A) Calibration Result of Micro Pipette :

Sl. No.	DUC Value	Standard Value	Mean Value	Systematic Error (es)	Random Error (cv)	Measurement Uncertainty
	( $\mu$ l)	( $\mu$ l)	( $\mu$ l)	( $\mu$ l)	( $\mu$ l)	( $\pm \mu$ l)
1	100	99.917	99.894	0.106	0.027	0.020
2		99.888				
3		99.865				
4		99.879				
5		99.929		Standard Limit Value as Per ISO 8655 - 2 : 2002 ( $\pm \mu$ l)		
6		99.907				
7		99.879				
8		99.863				
9		99.879		0.800	0.300	
10		99.939				

Sl. No.	DUC Value	Standard Value	Mean Value	Systematic Error (es)	Random Error (cv)	Measurement Uncertainty
	( $\mu$ l)	( $\mu$ l)	( $\mu$ l)	( $\mu$ l)	( $\mu$ l)	( $\pm \mu$ l)
1	500	499.851	499.796	0.204	0.030	0.024
2		499.789				
3		499.766				
4		499.792				
5		499.798		Standard Limit Value as Per ISO 8655 - 2 : 2002 ( $\pm \mu$ l)		
6		499.757				
7		499.823				
8		499.757				
9		499.809		4.000	1.500	
10		499.818				

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Sl. No.	DUC Value	Standard Value	Mean Value	Systematic Error (es)	Random Error (cv)	Measurement Uncertainty
	( $\mu$ l)	( $\mu$ l)	( $\mu$ l)	( $\mu$ l)	( $\mu$ l)	( $\pm \mu$ l)
1	1000	999.794	999.754	0.246	0.033	0.026
2		999.747				
3		999.734				
4		999.722		Standard Limit Value as Per ISO 8655 - 2 : 2002 ( $\pm \mu$ l)		
5		999.795				
6		999.777		8.000	3.000	
7		999.741				
8		999.791				
9		999.743				
10		999.698				

DUC : Device Under Calibration

**REMARKS :** The above Micro Pipette has been calibrated and the readings are tabulated above.

**NOTES :** This certificate refers to the results tabulated at the time of calibration only for the above mentioned item submitted for calibration and this should not be reproduced, other than in full except with prior written approval from the head of calibration laboratory.

Authorised By

  
A. Das

Manager Calibration

\*\*\* End of the Calibration Certificate \*\*\*



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25.12.2023	25.12.2024	1	3

**Description of Instrument**

*Name* : Micro Pipette  
*Identification* : ICTC/KRT/MP-02  
*Range* : 5 - 50  $\mu$ l  
*Least Count* : 0.5  $\mu$ l  
*Make* : Sartorius (Sl. No. : 14631107)

**Service Request No. / Order Reference** : 231223A/1961/001-003

**Receipt of Instrument** : 23.12.2023

**Location where calibration performed** : At permanent laboratory

**Applicable Specification of Instrument to be Calibrated** : Not Specified

**Condition of Instrument to be Calibrated** : Satisfactory

**Basis of Calibration** : Comparison method with reference to YEA/WI/M-47

**Environmental Condition during Calibration** : *Temp.* : (23 $\pm$ 4) $^{\circ}$ C *RH* : (50 $\pm$ 10)%

**Equipment used for Calibration** : Standard Electronic Balance & Distilled Water

**Traceability** : To National Standard vide Certificate No: YEA(C)/230925/Y001/001 valid till 24.09.2024

**Measurement Uncertainty** : The figures are stated in the result at coverage factor  $k = 2$  corresponding to confidence probability of 95% for normal distribution.

**Laboratory Identification** : Sticker is affixed for authentication of calibration.

The above Instrument/Equipment/Machine has been calibrated & The results are given in the page 2 to ..... 3 ...of the certificate.



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### Calibration Results

#### Mechanical Calibration

##### A) Calibration Result of Micro Pipette :

Sl. No.	DUC Value	Standard Value	Mean Value	Systematic Error (es)	Random Error (cv)	Measurement Uncertainty
	( $\mu$ l)	( $\mu$ l)	( $\mu$ l)	( $\mu$ l)	( $\mu$ l)	( $\pm \mu$ l)
1	5.0	5.002	4.967	0.033	0.023	0.017
2		4.955				
3		4.976				
4		4.986		Standard Limit Value as Per ISO 8655 - 2 : 2002 ( $\pm \mu$ l)		
5		4.989				
6		4.951				
7		4.982				
8		4.946		0.125	0.075	
9		4.931				
10		4.955				

Sl. No.	DUC Value	Standard Value	Mean Value	Systematic Error (es)	Random Error (cv)	Measurement Uncertainty
	( $\mu$ l)	( $\mu$ l)	( $\mu$ l)	( $\mu$ l)	( $\mu$ l)	( $\pm \mu$ l)
1	25.0	24.952	24.921	0.079	0.028	0.021
2		24.907				
3		24.925				
4		24.913		Standard Limit Value as Per ISO 8655 - 2 : 2002 ( $\pm \mu$ l)		
5		24.903				
6		24.967				
7		24.910				
8		24.955		0.500	0.200	
9		24.890				
10		24.888				

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Sl. No.	DUC Value	Standard Value	Mean Value	Systematic Error (es)	Random Error (cv)	Measurement Uncertainty
	( $\mu$ l)	( $\mu$ l)	( $\mu$ l)	( $\mu$ l)	( $\mu$ l)	( $\pm \mu$ l)
1	50.0	49.941	49.923	0.077	0.031	0.023
2		49.904				
3		49.944				
4		49.964		Standard Limit Value as Per ISO 8655 - 2 : 2002 ( $\pm \mu$ l)		
5		49.967				
6		49.938				
7		49.901				
8		49.888		0.500	0.200	
9		49.909				
10		49.881				

**DUC** : Device Under Calibration

**REMARKS** : The above Micro Pipette has been calibrated and the readings are tabulated above.

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