



# CALIBRATION CERTIFICATE

Number VG 240029

Page 1 of 2

**Mettler-Toledo S.A.E.**  
Laboratorio de Calibración

Carrer Segrià 7 - 9  
08940 Cornellà de Llobregat (Barcelona)  
Tel. 93 223 76 00  
[Laboratorio.Calibracion@mt.com](mailto:Laboratorio.Calibracion@mt.com)

## METTLER TOLEDO



ITEM Piston operated burette

MANUFACTURER Mettler Toledo

MODEL DV 1020

NOMINAL VOLUME

20 ml

IDENTIFICATION C221094711

APPLICANT Mettler-Toledo Pac Rim AG, Taiwan  
2F, No. 17, Lane 171, Jiu Zong Rd., Sec. 2,  
Neihu District, Taipei City 11494,

Calibration date 23 January 2024

Authorized Signatory

*This certificate in digital format is the original one.  
Any printing will be considered as a copy.*

Este certificado se expide de acuerdo con las condiciones de la acreditación concedida por ENAC, que ha comprobado las capacidades de medida del laboratorio y su trazabilidad a patrones nacionales o internacionales.

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*This certificate is issued in accordance with the conditions of accreditation granted by ENAC which has assessed the measurement capability of the laboratory and its traceability to national or international standards.*

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**Instrument information**

Burette DV 1020  
 Serial number C221094711  
 Nominal volume 20 ml

**Calibration procedure**

Procedure PEC/MTE/22 based to the ISO 8655 norm and the METTLER TOLEDO manuals.  
 The measured volume corresponds with delivered volume (Ex) at the reference temperature of 20 °C.

**Calibration conditions**

Ambient temperature Min. 20,4 °C Max. 20,4 °C  
 Relative humidity 62,2 % Hr  
 Pressure 1022,2 mbar

Maintenance: Before calibration, seals (references 101003 and 25737) and piston have been replaced, and burette glass has been cleaned.

**Traceability**

Standard equipment used

Balance	BAL01	AT201 - 5 decimal places balance
Burette drive	VAL-T50	T50
Water temperature	TER89	0,1 °C resolution
Ambient conditions	REG05	(air Temp, rH)
Class III water	2324709812	

The measured volume has been calculated conform to ISO/TR 20461:2023.

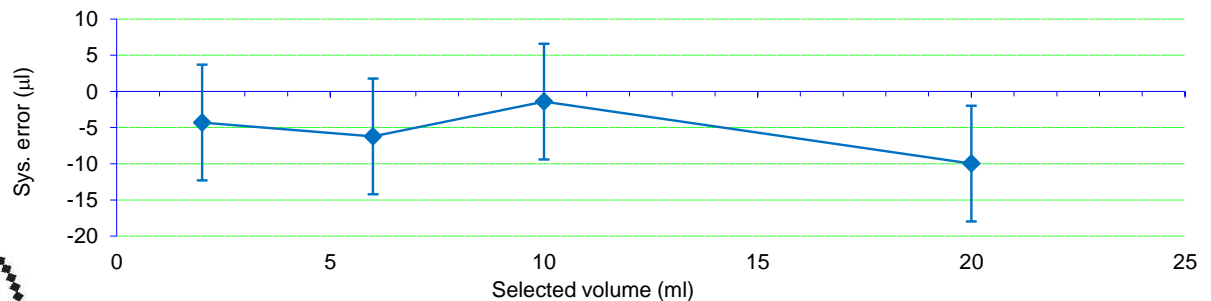
The traceability of measurements are referred to laboratories accredited by ILAC signatories accreditation bodies or national laboratories EURAMET signatories.

**Uncertainty**

The reported expanded uncertainty of measurement is stated as the Standard uncertainty of measurement multiplied by the coverage factor  $k = 2$ , which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with document EA-4/02 M: 2022.

**Calibration results (after maintenance)**

Burette stroke	10%	30%	50%	100%	
<b>Selected volume</b>	<b>2</b>	<b>6</b>	<b>10</b>	<b>20</b>	<b>ml</b>
Water temperature	20,5	20,5	20,5	20,5	°C
Measured volume	1995,7	5993,8	9998,6	19990,0	µl
<b>Systematic error</b>	<b>-4,3</b>	<b>-6,2</b>	<b>-1,4</b>	<b>-10,0</b>	<b>µl</b>
Measurement uncertainty	8,0	8,0	8,0	8,0	µl
Random error	0,56	0,84	0,61	0,77	µl
Max. Permissible Sys. Error	40	40	40	40	µl
Max. Permissible Random Error	14	14	14	14	µl
<b>Evaluation*</b>	<b>Pass</b>	<b>Pass</b>	<b>Pass</b>	<b>Pass</b>	



\* Evaluation and permissible errors from ISO 8655-3:2022. According with this norm, uncertainty is not taken into account.

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Technician: D. Gallardo

Remarks: ---