



Calibration Laboratory accredited by the Swiss Accreditation Service
 Von der Schweizerischen Akkreditierungsstelle akkreditierte Kalibrierstelle
 Laboratoire d'étalonnage accrédité par le Service d'Accréditation Suisse

S Accreditation No. **SCS 112**
 C Akkreditierungs-Nr.
 S No. d'accréditation

The Swiss Accreditation Service (SAS) is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

CERTIFICATE OF CALIBRATION
KALIBRIER - ZERTIFIKAT
CERTIFICAT D'ETALONNAGE

Customer
 Kunde
 Client

Order No. / Date
 Auftrags-Nr. / Datum
 No. de commande / Date

Object
 Gegenstand
 Objet

Piston-operated volumetric apparatus - Single-channel air displacement pipette of type A

Manufacturer
 Hersteller
 Fabricant

SOCOREX ISBA S.A., 1024 Ecublens, Switzerland

Model / Ref.
 Modell / Ref.
 Modèle / Réf.

ACURA 825.0200

Serial No.
 Seriennummer
 No. de série

22031340

Remarks
 Bemerkungen
 Remarques

STATUS TAKING UNCERTAINTIES INTO ACCOUNT.

Date of calibration
 Datum der Kalibrierung
 Date de l'étalonnage

27-Apr-2012

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
 Dieses Kalibrierzertifikat dokumentiert die Rückverfolgbarkeit auf nat. Normale zur Darstellung der physikalischen Einheiten (SI).
 Ce certificat d'étalonnage confirme le raccordement aux étalons nationaux qui matérialisent les grandeurs physiques (SI).

The measurements, the uncertainties with confidence probability and calibration methods are given on the following pages and are part of the certificate.
 Messresultate, Messunsicherheiten mit Vertrauensbereich und Messverfahren sind auf den folgenden Seiten aufgeführt und sind Teil des Zertifikats.
 Les résultats, les incertitudes avec le niveau de confiance et les méthodes de mesure sont donnés aux pages suivantes et font partie du certificat.

Certificate No.
 Zertifikat-Nr.
 No. de certificat

A-09101182

Head of the Calibration Laboratory
 Leiter der Kalibrierstelle
 Responsable du Laboratoire d'Etalonnage

Stamp and date
 Stempel und Datum
 Timbre et date

Pascal Forestier

Pascal Forestier

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CERTIFICATE OF CALIBRATION KALIBRIER - ZERTIFIKAT CERTIFICAT D'ETALONNAGE

CUSTOMER [REDACTED]
CERTIFICATE NO. [REDACTED] **A-09101182**
INSTRUMENT [REDACTED]
MODEL/CAT. NO. [REDACTED] **ACURA 825.0200**
VOLUME RANGE [REDACTED] **20-200 µL**
SERIAL NO. [REDACTED] **22031340**
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%.

CALIBRATION, CONDITIONS AND EQUIPMENT

- Gravimetric method based on ISO 8655
- Forward mode
- Humidity trap

BALANCE ID [REDACTED] **4002N**
AIR TEMP. [REDACTED] **between 20-25°C (+/- 0.5 °C)**
AIR PRESSURE [REDACTED] **967 hPa (+/- 5 hPa)**
WATER TEMP. [REDACTED] **21.5°C (+/- 0.2°C)**
LIQUID DENSITY (calculated) [REDACTED] **0.99788 g/cm³**
CONVERSION FACT. Z (calc.) [REDACTED] **1.003132**
CERTIFIED TIPS [REDACTED] **Qualitip® 327.0200R**

TEST RESULTS
(After Calibration)

VOLUME 1	VAL. / MEAN	VOLUME 2	VAL. / MEAN	VOLUME 3	VAL. / MEAN
20 µL	19.83 µL	100 µL	99.71 µL	200 µL	200.23 µL
	19.84 µL		99.74 µL		200.33 µL
	19.88 µL		99.85 µL		200.43 µL
	19.85 µL		99.83 µL		200.43 µL
	19.86 µL		99.78 µL		200.33 µL
	19.89 µL		99.81 µL		200.33 µL
	19.91 µL		99.86 µL		200.33 µL
	19.90 µL		99.85 µL		200.53 µL
	19.85 µL		99.92 µL		200.53 µL
	19.93 µL		99.95 µL		200.53 µL
Mean >	19.88 µL	Mean >	99.83 µL	Mean >	200.40 µL

INACCURACY

	ACTUAL	SPECIFICATIONS	ACTUAL	SPECIFICATIONS	ACTUAL	SPECIFICATIONS	
E	-0.12 µL	0.30 µL	E	-0.17 µL	1.10 µL	E	0.40 µL
E	-0.62 %		E	-0.17 %		E	0.20 %
U +/-	0.07 µL		U +/-	0.25 µL		U +/-	0.29 µL

Accuracy error (E) of piston-operated volumetric device added to expanded uncertainty (U) of the calibration comply with maximum permissible error (MPE) specified by ISO 8655 or better
 $|E| + |U| < \text{or} = \text{MPE}$

STATUS

Passed	Passed	Passed
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IMPRECISION

	SD	CV	SD	CV	SD	CV
	0.03 µL	0.17 %	0.07 µL	0.07 %	0.11 µL	0.05 %
	0.12 µL		0.40 µL		0.40 µL	

Experimental standard deviation $< \text{or} = \text{max. permissible error}$ specified by ISO 8655 or better

STATUS

Passed	Passed	Passed
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E = Mean error SD = Standard deviation CV = Coefficient of variation

OPERATOR NAME [REDACTED] **J. Vesin**

OPERATOR [REDACTED]

CONTROL DATE [REDACTED] **27-Apr-2012**

SIGNATURE [REDACTED]

This certificate is stored for 5 years.