HIRSCHMANN®

EM Techcolor

High-class in volumetric measuring

EM Techcolor
Clear glass quality, user-oriented innovations

Glass is a very special material. It embodies numerous properties which are ideal for work in the laboratory. It is dense, yet simultaneously transparent, and has a neutral odour and taste. It has a high degree of chemical resistance and is very easy to clean, thanks to its smooth surface.

Glass is also a material with a long history which is still important today and will continue to play a significant role in the future, due to its unsurpassed physical and chemical properties.

Hirschmann glass volumetric measuring devices combine the proven properties of this traditional material with real innovations which continually add new user-oriented quality aspects. These range from perfecting of printing to the introduction of individual labelling.

Precision with system

The prerequisite for precision working results when using Hirschmann laboratory devices is production which is also governed by maximum standards of quality. This applies to the entire production process - from the checking of incoming raw materials right through to adjusting and certification of volumetric measuring devices.

The precision of our volumetric measuring devices meets the highest of requirements. However, Hirschmann customers can rely on more than measuring results. We also support the use of our products in the laboratory through the provision of intelligent services and consulting. For example, the batch quality certificate for an EM Techcolor volumetric measuring device can be printed simply and free of charge via the internet.

High-class in vol. measuring

High-quality
raw materials from selected quality suppliers

The precision of Hirschmann glass laboratory devices begins with the right material. Hirschmann processes exclusively raw materials of the highest quality. This is an important prerequisite for the sustainable precision of volumetric measuring devices.

Two main glass types are used for Hirschmann glass laboratory devices:

- AR glass® (soda-lime glass)** and
- Duran® glass (borosilicate glass)

They differ in terms of their chemical and physical properties and are therefore used for different applications.

Soda-lime glass has a smooth non-porous surface. In contrast to borosilicate glass, it is much more sensitive to temperature fluctuations. It is therefore not employed for applications involving severe changes in temperature. The raw material used by Hirschmann to make soda-lime glass is AR glass® from Schott. It is utilised for measuring and volumetric pipettes.

Borosilicate glass has a higher chemical resistance than soda-lime glass and a higher resistance to heat and temperature changes. Borosilicate glass is mainly used by Hirschmann for measuring flasks, measuring cylinders and burettes, due to its high degree of strength. Borosilicate glass 3.3 DURAN® from Schott is processed as a raw material.

sophisticated
Hirschmann works exclusively together with selected quality suppliers.

consistent
Controlled thermal treatment of raw materials ensures maximum resistance to breakage and a consistent volume up to 180° C.

complete
All quality classes can be supplied and conform to DIN, ISO, USP: AS, A and B standards. Adjustable to IN, Ex and Blow Out, depending on the device type.

reliable
High precision through fully automated adjustment.

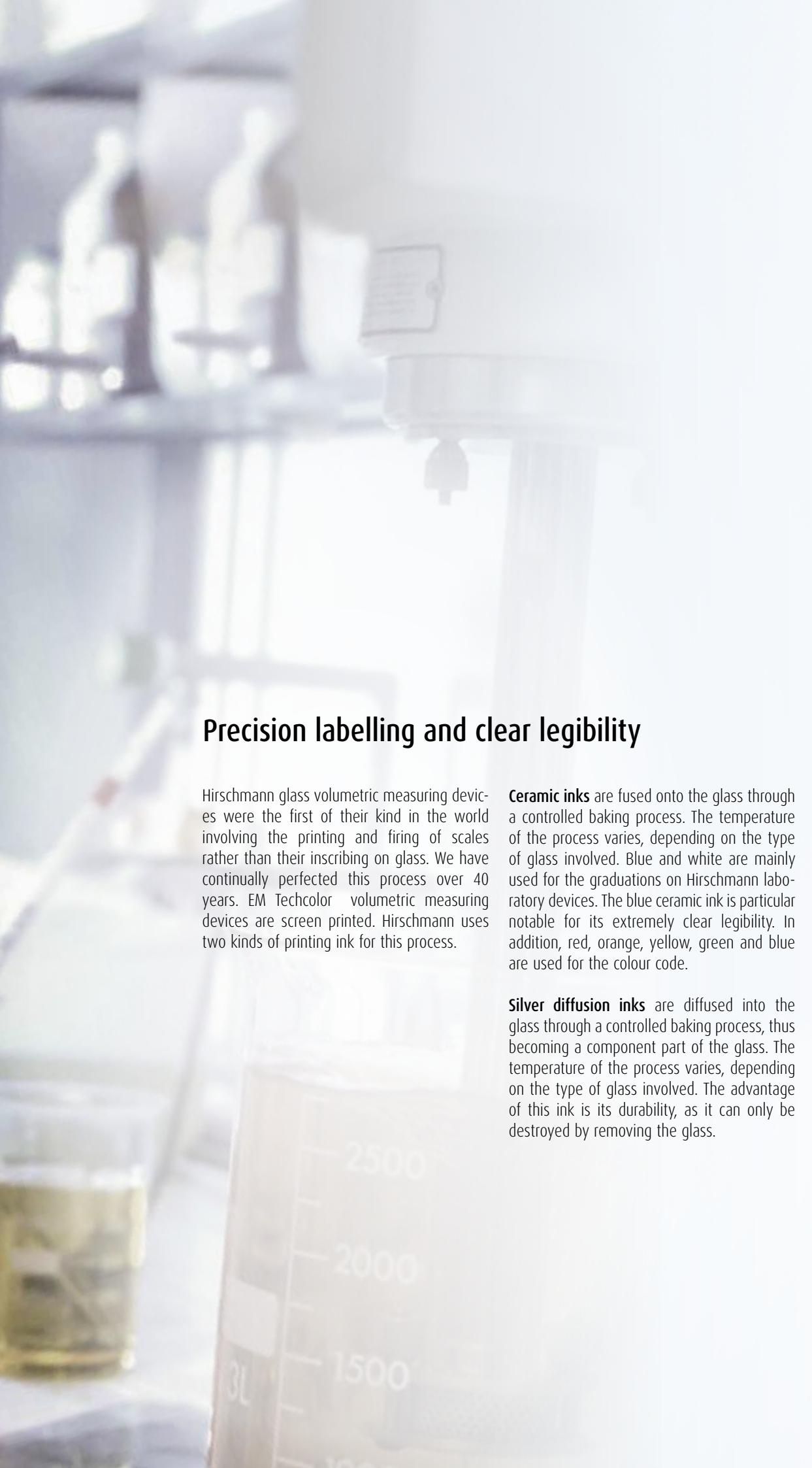
durable
Labelling is fired to ensure durable legibility of the scale.

secure
EM Techcolor is supplied with a serial conformity certificate and dated batch identification.

comfortable
Batch quality certificates can be printed out free of charge via the internet.

high precision
Also available in a USP version

* DURAN® is a registered trademark of the DURAN Group GmbH, Wertheim. **AR glass® is a registered trademark of the SCHOTT AG, Mainz.



Precision in perfection

Precision labelling and clear legibility

Hirschmann glass volumetric measuring devices were the first of their kind in the world involving the printing and firing of scales rather than their inscribing on glass. We have continually perfected this process over 40 years. EM Techcolor volumetric measuring devices are screen printed. Hirschmann uses two kinds of printing ink for this process.

Ceramic inks are fused onto the glass through a controlled baking process. The temperature of the process varies, depending on the type of glass involved. Blue and white are mainly used for the graduations on Hirschmann laboratory devices. The blue ceramic ink is particular notable for its extremely clear legibility. In addition, red, orange, yellow, green and blue are used for the colour code.

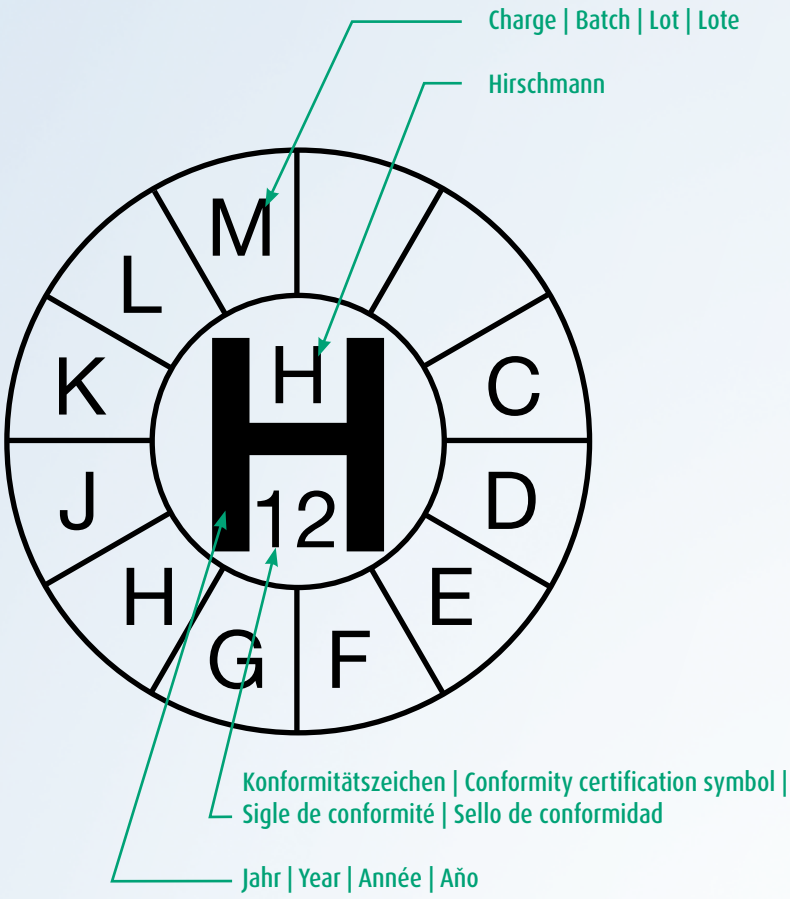
Silver diffusion inks are diffused into the glass through a controlled baking process, thus becoming a component part of the glass. The temperature of the process varies, depending on the type of glass involved. The advantage of this ink is its durability, as it can only be destroyed by removing the glass.

Quality – unambiguous traceability

More than the legal requirement: the batch certificate

EM Techcolor Class A/AS volumetric measuring devices are subjected to sample checking during final inspection and delivered with a certificate of conformity. In addition, these devices are supplied with additional standard dated batch identification on which the exact production batch and year are recorded.

This identification symbol enables the compilation of a batch quality certificate, a document that quality assurance measures increasingly demand (e.g. B. DIN EN ISO 9001:2000). Reliable high precision and dated batch identification means that EM Techcolor facilitates management of the test equipment list and makes a valuable contribution to traceability and certification.




HIRSCHMANN

Chargen-Kalibrierzertifikat / Batch Calibration Report
Certificate de Calibration par lot / Certificado de Calibración de Lote

10 ML,KB	
10 ML,AS, CONFORMITY CERTIFIED	
10 ML,CONFORMITE CERTIFIEE	
10 ML,CONF. CERT.	
No. 1340160	Chargen Nr./Batch no. / Nº de lot/Número de lote A-12
10 ml	Justierung/Calibration / Ajustage/Ajuste EX 20 °C
10.000 ml O.K.	Toleranz/Tolerance / Tolérance/Tolerancia ± 0.02 ml
0.008 ml	AQL Prüfung /AQL examination / Exam AQL/ AQL examen O.K.

Prüfmittel/Testing devices/Instruments de contrôle/Instrumentos de medición:
R160P
0.01g/162g
Omega INF-B-EI INF-B-EI
Omega iBTX-M/N


hirschmannlab.de
PRODUKT-SCHNELLNAVIGATION
SUCHE NACH STICHWORT
HIRSCHMANN
STARTSEITE · SUPPORT & SERVICE · TECHNISCHER SUPPORT
KALIBRIERZERTIFIKATE
Kalibrierzertifikate
Damit Sie ganz sicher sein können
Für alle Volumenmessgeräte von Hirschmann Laborgeräte - aktuell geliefert - Sie jederzeit das zugehörige Qualitätszertifikat kostenlos ausdrucken.


DAkkS
Deutsche Akkreditierungsstelle GmbH
Akkreditierung

Dated batch identification ensures traceability. Dated batch identification enables the compilation of a batch quality certificate. It indicates the mean value of the production batch, the standard deviation and the legally permitted deviation. In addition, an individual quality certificate can be issued through individual inspection, with an identical device serial number and certificate.

Online quality certificate
Comfortable, free and easy: Batch quality certificates for EM Techcolor KB volumetric measuring devices can be printed out at any time over the internet.

DAkkS calibration certificate
For all volumetric measuring devices: as an accredited DAkkS calibration laboratory (German Calibration Service), Hirschmann is entitled to issue internationally recognised DAkkS calibration certificates (previously DKD).

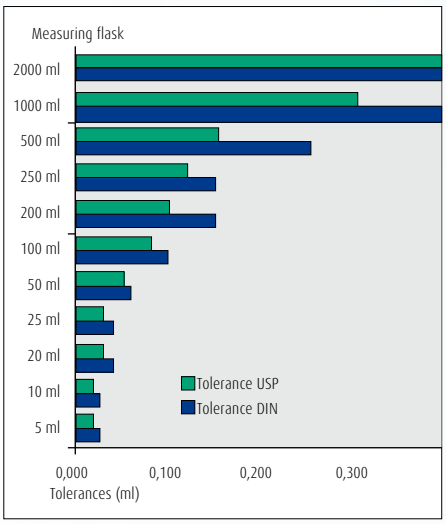
EM Techcolor USP

For all quality laboratories working to USP standard requirements

Greater precision just is not possible. The USP version of EM Techcolor volumetric measuring devices has all the qualities that distinguishes EM Techcolor. And something else as well: the United States Pharmacopeia (USP) sets considerable stricter tolerance criteria than the already stringent DIN standard. The high standard of Hirschmann production processes enables the meeting of these special requirements for USP design volumetric measuring devices without any difficulty.

Overview of details

- Finest quality glass
- Thermal treatment for maximum breakage resistance
- With dated batch identification
- Labelling is fired to ensure durable legibility of the scale
- Individual adjustment and labelling
- Numbering and individual testing of devices and supply of individual quality certificate if desired



Meeting the highest demands

EM Techcolor meets United States Pharmacopeia criteria which demand considerably stricter tolerances and dispersion of individual values and can therefore be used in applications and countries where work is governed by these standards. And each instrument can be individually calibrated and tested.

Meeting the highest demands

As unique as a fingerprint

Individual labelling makes a volumetric measuring device unique.

Data matrix code, barcode, numbers and letters: innovative Hirschmann coding enables individual labelling of glass measuring flasks. Each device is thus labelled with a unique, unequivocal signature. This enables unambiguous identification of the device throughout the entire period of use.

Prevention of media carryover, direct importing of data

Do you need a measuring flask series with consecutive numbering? Do you want to scan the complete data for a measuring flask directly into the PC and combine it with measuring results? Do you wish to prevent contamination of samples? No problem for EM Techcolor measuring flasks with individual labelling. The new process developed by Hirschmann enables the unique labelling of measuring flasks with a data matrix code, barcode, numbers and letters - in many different combinations.

Durably protected, always legible

Labelling is durably protected against aggressive media and cleaning agents. The individually labelled measuring flask remains unique forever – as unique as a fingerprint

EM Techcolor measuring flasks with individual labelling

Label versions	Numbers and letters	Barcode	Data matrix code (DIN EN ISO, USP)	Data matrix code (ASTM)
Standards	DIN EN ISO, USP, ASTM	DIN EN ISO, USP, ASTM	DIN EN ISO, USP	ASTM
Fonts	Similar to Arial	Code 128	ECC 200	ECC 200
Volume	10–5000 ml	50–5000 ml	10–5000 ml	10–5000 ml
Specific customer details	Numbers from 0-9 Capital letters from A-Z No special characters No vowel mutation (e.g. ä. ü) Spaces possible	Numbers from 0-9	Numbers from 0-9 Capital letters from A-Z No special characters No vowel mutation (e.g. ä. ü) Spaces possible	Numbers from 0-9 Capital letters from A-Z No special characters No vowel mutation (e.g. ä. ü) Spaces possible
Number of digits	4 characters	4 characters	8 characters	8 characters
Specific Hirschmann characters	-	-	Batch number (M 10) Nominal volume (0100) in ml Tolerance (0080) in µl Article number (282008108)	Batch number (M 10) Nominal volume (0100) in ml Tolerance (0080) in µl Article number (2820100S)
Character height for 10–25 ml	2 mm	-	4 mm	4 mm
Character height for 5–5000 ml	4 mm	Barcode 4 mm Letters 2 mm	8 mm	8 mm
Label examples	LA81	4381		
Plain text (not lasered)	-	-	**LAB 0815** M10 0100 0100 282008108	**LAB 0815** M10 0100 0100 2820100S
Supply of customer data as Excel table	Letters/Number seq. 4 characters	Number seq. 4 characters	Letters/Number seq. 8 characters	Letters/Number seq. 8 characters

Important information for calibration and production processes

- Printed with matt white label.
- Customer provides letters and number sequence as Excel table (each position should be occupied (e.g. 00A3) with 4 or 8 filled positions).
- Customer receives a filled-out Excel table with the order confirmation for approval.
- Samples available with stock examples at the price of a measuring flask without individual labelling.
- A differentiation is made between the DIN EN ISO/USP and ASTM variants during individual labelling with the data matrix code, as the article number is compiled differently here.
- Delivery 6 weeks after receipt of order.
- The 5th position of the article number (type of plug) is always occupied by "0", as the plug can be changed. This is the 4th position in the case of ASTM goods (American market).

DIN EN ISO/USP example:
Article number: 282018108 with poly plug
-> lasered number: 282008108

ASTM example:
Article number: 282Gl000S with glass plug
-> lasered number: 2820100050

Data matrix code
Distinctly more data can be saved on a small surface than in a barcode: production batch and year, conformity symbol, unit type, test values and much more.

4381

Barcode
Data can be imported to a PC with a barcode scanner and appropriately linked.

LA81

Numbers and letters
Numbering enables the clear identification of volumetric measuring devices during trials or test intervals, thus also preventing the carryover of media.

Unmistakeably reliable

High-class pursuant to DIN EN ISO 648 – precision in the µl range

Every action counts. Numerous repetitions are a daily occurrence, particularly during pipetting.

In addition to the ergonomic aspects of handling, Hirschmann pipettes are also optimised when it comes to the working speed. DIN EN ISO 648 also saw the introduction of a new standard for volumetric pipettes which considerably reduces the waiting time.

DIN EN ISO 648 replaces the previous ISO 648 and the DIN 12 690 and 12 691 standards. Like with measuring pipettes, class AS volumetric pipettes are supplied with certified conformity and dated batch identification.

Main features of the DIN EN ISO 648 standard

- The waiting time for class AS is reduced from 15 sec. to 5 sec.
- The volumetric pipettes with two ring marks have been newly added, and different versions (class B, A and AS) are now collected in a single standard

EM Techcolor measuring pipette

EM Techcolor volumetric pipette

High-class
pursuant to EN ISO 835:2007 – rapidity included

Hirschmann wins you times - at least 10 sec. for each pipetting operation. This is achieved without difficulty with class AS EM Techcolor measuring pipettes, thanks to the changed standard. The previously prescribed waiting period is reduced from 15 to 5 sec., and this is achieved while maintaining the usual precision.

The DIN EN ISO 835:2007 standard, in the development of which Hirschmann was involved, replaces the previously valid DIN 12 695, 12 696, 12 697 and ISO 835:1981 and defines the following measuring pipettes types:

Type 1: not graduated to the tip (partial delivery), zero point at top

Type 2: graduated to the tip (total delivery), zero point at bottom

Type 3: graduated to the tip (total delivery), zero point at top

Type 4: Blow Out, zero point at top

Type 3 is the version usual used in practice and, naturally enough, is still available. However, correct pipetting of partial volumes takes more time as a result and is complicated by comparison.

Working is considerably easier and more cost effective with the Type 2 conforming to DIN EN ISO 835:2007. The meniscus of a partial volume is only adjusted one more time. Efficiency is considerably increased as a result.

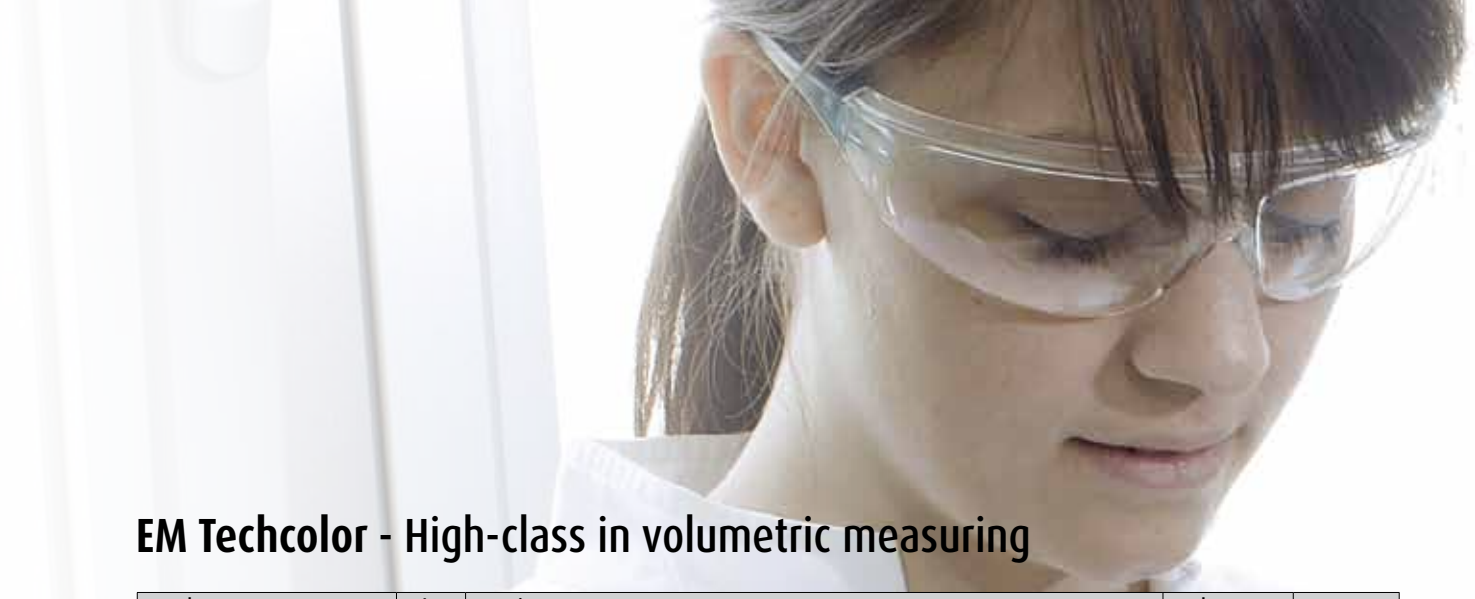
EM Techcolor measuring pipettes

Cl. AS graduated pipettes	Type	DIN EN ISO 835:2007 version	Volume	EM code
Measuring pipettes, brown graduation, total delivery	3	Certified conformity, with dated batch identification, main point ring graduation, graduated to tip, brown graduation	0.5 - 50 ml	110 01 ..
Measuring pipettes, brown graduation, partial delivery	1	Certified conformity, with dated batch identification, main point ring graduation, not graduated to tip, brown graduation	0.5 - 25 ml	110 02 ..
Measuring pipettes, zero at bottom, brown graduation, total delivery	2	Certified conformity, with dated batch identification, main point ring graduation, zero point at bottom, graduated to tip, brown graduation	0.5 - 25 ml	110 03 ..
Measuring pipettes, blue graduation, total delivery	3	Certified conformity, with dated batch identification, main point ring graduation, graduated to tip, blue graduation	0.5 - 50 ml	110 11 ..
Measuring pipettes, zero at bottom, blue graduation, total delivery	2	Certified conformity, with dated batch identification, main point ring graduation, zero point at bottom, graduated to tip, blue graduation	0.5 - 25 ml	110 13 ..
Measuring pipettes, Schellbach, total delivery	3	Certified conformity, with dated batch identification, Schellbach, mainpoint ring graduation, graduated to tip, blue graduation	0.5 - 25 ml	111 01 ..
Measuring pipettes, cotton plugged, total delivery	3	Certified conformity, with dated batch identification, cotton plugged, main point ring graduation, graduated to tip, brown graduation	1 - 2 ml	113 01 ..

Cl. AS graduated pipettes	Type	DIN EN ISO 835:2007 version	Volume	EM code
Measuring pipettes,brown graduation, total delivery	3	Clear glass, graduation marks, graduated to tip, brown graduation	0.5 - 50 ml	100 01 ..
Measuring pipettes, brown graduation, total delivery	3	Clear glass, cotton plugged, graduation marks, graduated to tip, brown graduation	1 - 2 ml	103 01 ..
Measuring pipettes, brown graduation, Blow Out	4	Clear glass, main point ring graduation, graduated to tip, brown graduation	0.5 - 25 ml	118 01 ..

EM Techcolor volumetric pipettes

Product	DIN EN ISO 648 version	Capacity ml	Tolerance ml	Max. length	Code no.
Volumetric pipette, class AS, brown graduation	certified conformity, with dated batch identification, AR glass®, with volume mark	0.5 - 100	0.005 – 0.08	300 - 600	134 01 ..
Volumetric pipette, class AS, blue graduation	certified conformity, with dated batch identification, AR glass®, with volume mark	0.5 - 100	0.005 – 0.08	325 - 600	134 11 ..
Volumetric pipette, class AS, brown graduation	AR glass®, with volume mark	0.5 - 100	0.008 – 0.12	300 - 600	130 01 ..
Volumetric pipette, class AS, brown graduation,with two ring marks	certified conformity, with dated batch identification, AR glass®, volume between two ring marks	0.5 - 100	0.005 – 0.08	300 - 600	134 02 ..



EM Techcolor - High-class in volumetric measuring

Product	Class	Version	Volume	EM code
Measuring pipette	AS	graduated to tip, brown graduation	0.5–50 ml	110 01..
Measuring pipette	AS	graduated to tip, blue graduation	0.5–50 ml	110 11..
Measuring pipette	AS	not graduated to tip, brown graduation	0.5–25 ml	110 02..
Measuring pipette	AS	graduated to tip, Schellbach stripes, blue graduation	0.5–25 ml	111 01..
Volumetric pipette	AS	1 mark, brown graduation	0.5–100 ml	134 01..
Volumetric pipette	AS	1 mark, blue graduation	0.5–100 ml	134 11..
Volumetric pipette	AS	2 marks, brown graduation	0.5–100 ml	134 02..
Measuring cylinders	A	brown graduation	5–2000 ml	221 01..
Measuring cylinders	A	blue graduation	5–2000 ml	222 01..
Measuring cylinders	A	Schellbach stripes, blue graduation	5–2000 ml	224 01..
Measuring cylinders	A	plastic base, blue graduation	10–1000 ml	227 01..
Mixing cylinder	A	poly plug, blue graduation	10–2000 ml	234 01..
Mixing cylinder	A	hollow glass plug, blue graduation	10–2000 ml	234 02..
Measuring flask	A	brown glass, standard ground finish, poly plug	5–2000 ml	264 01..
Measuring flask	A	brown glass, standard ground finish, hollow glass plug	5–2000 ml	264 02..
Measuring flask	A	rimmed, blue graduation	5–10000 ml	280 01..
Measuring flask	A	standard ground finish, poly plug, blue graduation	5–10000 ml	282 01..
Measuring flask	A	standard ground finish, hollow glass plug, blue graduation	5–10000 ml	282 02..
Measuring flask	A	standard ground finish, poly plug, brown graduation	5–10000 ml	282 21..
Measuring flask	A	in acc. with packaging ordinance (scale), non-ground. blue graduation	20–1000 ml	295 01..
Measuring flask	A	trapezoidal, standard ground finish, poly plug, blue graduation	1–50 ml	296 01..
Measuring flask	A	trapezoidal, standard ground finish, hollow glass plug, blue graduation	1–50 ml	296 02..
Burette	AS	straight glass stopcock, black graduation	10–50 ml	313 01..
Burette	AS	straight glass stopcock, Schellbach stripes, blue graduation	10–50 ml	314 01..
Burette	AS	straight PTFE aerating stopcock, Schellbach stripes, blue graduation	10–50 ml	314 02..
Burette	AS	straight glass stopcock with PTFE key, Schellbach stripes, blue graduation	10–50 ml	314 03..
Burette	AS	brown glass, straight glass stopcock	10–50 ml	315 01..
Burette	AS	brown glass, straight PTFE aerating stopcock	10–50 ml	315 02..
Burette	AS	lateral glass stopcock, Schellbach stripes, blue graduation	10–50 ml	324 01..
Burette	AS	lateral PTFE aerating stopcock, Schellbach stripes, blue graduation	10–50 ml	324 03..
Micro burette, Bang	AS	straight glass stopcock, Schellbach stripes	2–10 ml	330 01..
Micro burette, Bang	AS	straight stopcock with PTFE key, Schellbach stripes	2–10 ml	330 02..
Micro burette, Bang	AS	lateral glass stopcock, Schellbach stripes	2–10 ml	331 01..
Micro burette, Bang	AS	lateral PTFE spindle stopcock, Schellbach stripes	2–10 ml	331 03..
Titration apparatus, Pellet	AS	lateral PTFE spindle stopcock, no intermediate valve, Schellbach stripes, blue graduation	10–50 ml	344 03..
Titration apparatus, Pellet	AS	lateral glass stopcock, intermediate valve, Schellbach stripes, blue graduation	10–50 ml	354 01..
Titration apparatus, Pellet	AS	lateral PTFE spindle stopcock, intermediate valve, Schellbach stripes, blue graduation	10–50 ml	354 03..
Titration apparatus, Pellet	AS	brown glass, lateral PTFE spindle stopcock, intermediate valve	10–50 ml	355 03..

EM Techcolor USP

Product	Version	Volume	
Measuring pipettes	Cl. A, USP, with dated batch identification, main point ring graduation, graduated to tip, brown graduation, additional individual USP certificate	1-25 ml	110 01 ..27
Volumetric pipettes	Cl. A, USP, with dated batch identification, AR glass, with volume mark, brown graduation, additional individual USP certificate	1-100 ml	134 01 ..27
Measuring cylinder DURAN®	Cl. A, USP, with dated batch identification, main point ring graduation, blue graduation, additional individual USP certificate	5-2000 ml	224 01 ..27
Measuring flask DURAN®	Cl. A, brown glass, USP, with dated batch identification, standard ground finish and poly plug, additional individual USP certificate	5-2000 ml	264 01 ..27
Measuring flask DURAN®	Cl. A, USP, with dated batch identification, standard ground finish and poly plug blue graduation, additional individual USP certificate	5-2000 ml	282 01 ..27

HIRSCHMANN®

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