

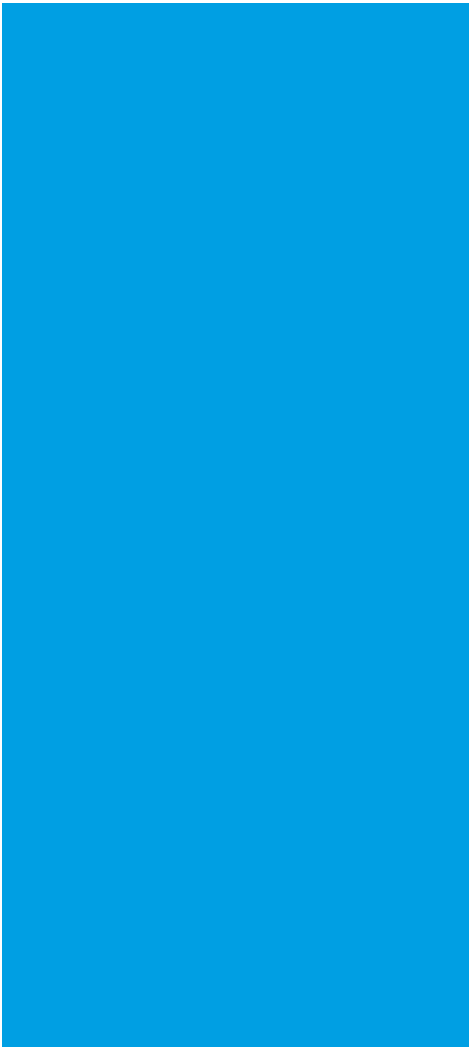


DURAN®
VOLUMETRIC FLASKS
MEASURING AND
MIXING CYLINDERS

Extensive range.
Proven design.

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3 DURAN® VOLUMETRIC GLASSWARE:
ACHIEVING PRECISION THROUGH QUALITY

Measuring volumes is a routine task for a laboratory. It is therefore all the more important to ensure the long term quality of the instruments required for this, from volumetric flasks through to stoppers. Day in day out, for every analysis.

Like all DURAN® laboratory glassware, DURAN® volumetric glassware exhibits excellent thermal durability, it is practically inert and is characterised by its extremely high thermal shock resistance. It is also highly cost effective thanks to its distinctive anti-corrosion properties.

In short, DURAN® volumetric glassware ensures that undesirable influences are minimised as much as possible, therefore ensuring constantly high precision with every measurement.



Typical curvature of the liquid surface (meniscus)

4 **DURAN® LABORATORY GLASSWARE:
END TO END PRODUCTION FROM A SINGLE
SOURCE**

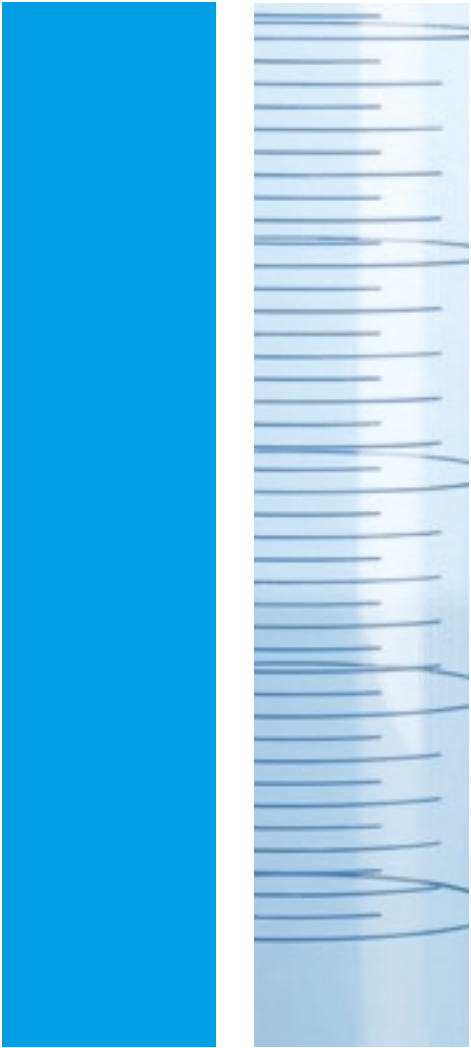
Strict guidelines are followed in the selection of raw materials and batch preparation for borosilicate glass 3.3. Moreover, the excellent quality of DURAN® laboratory glassware is guaranteed by concentrating production fully at the company's own locations. This is the case with every phase of production – from glass melting through to calibration.

The result: the highest possible precision when it comes to measuring volumes.



5 **FOR THE HIGHEST DEMANDS: QUALITY RIGHT DOWN THE LINE**

Whether measuring liquid amounts, diluting solutions or mixing several components – DURAN® volumetric products, such as volumetric flasks, measuring and mixing cylinders to cover all applications. Top quality process stability for all aspects of volume measurement can therefore be guaranteed in the laboratory. High levels can be expected for all other laboratory activities that use DURAN® laboratory glassware.



"I AM ALWAYS ABLE TO BALANCE
ROUTINE AND PRECISION ...
THANKS TO **PERFECT GLASSWARE**"



7 GUARANTEED: ALL OPTIONS COVERED

The DURAN® range of volumetric measurement products is characterised by an impressive array of advantages in addition to the products being manufactured from the chemically highly resistant borosilicate glass 3.3 that offers chemical, thermal and mechanical stability. For example:

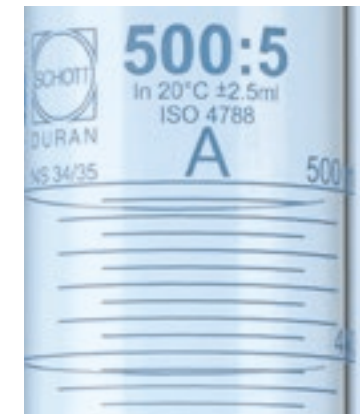
Unrestricted choice – The range of products on offer covers all accuracy classes including the associated certificates and glass specifications

Excellent print image – Emphasises the most important information, such as volume specification, accuracy class and standard ground joint details

Clear labelling – Batch numbers are imprinted clearly on the glass, while individual numbers are laser-etched onto the base of the volumetric flask



In addition, the range also includes new ergonomically shaped stoppers for simple and secure opening and closing (see page 23).

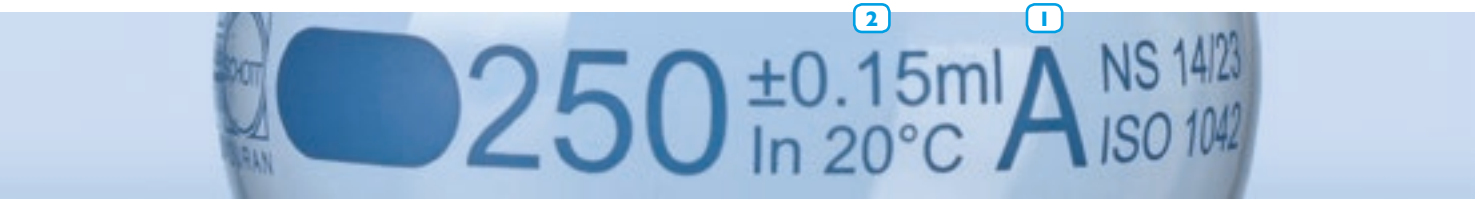


8 PRECISE DIFFERENTIATION:THE TWO ACCURACY CLASSES

Two accuracy classes "A" and "B" are essentially available for classifying the DURAN® volumetric flasks, measuring and mixing cylinders.

Accuracy class "A": 1

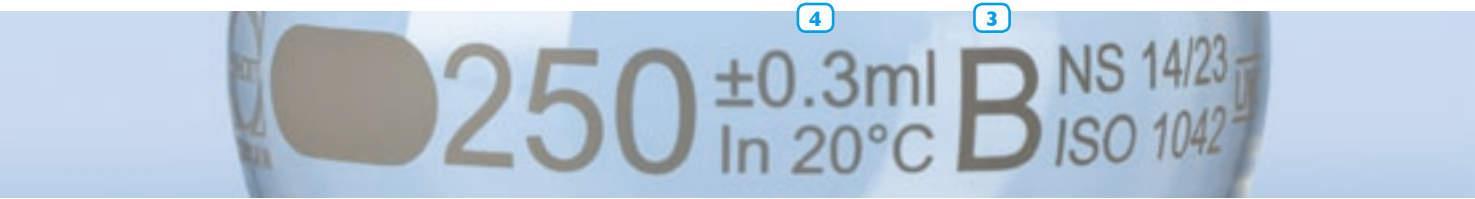
Indicates the accuracy limit in accordance with DIN and ISO and is therefore the highest accuracy class. "A" apparatus bears the conformity symbol "H", which indicates that the requirements of the German weights and measures regulations as well as the relevant standards are fulfilled.



Tolerance for a volumetric flask in accuracy class "A" 2

Accuracy class "B" 3

Indicates an accuracy limit that is double that of class "A".



Tolerance for a volumetric flask in accuracy class "B" 4

9 QUALITY: EXPRESSED IN COLOUR

In order to ensure better differentiation, the accuracy classes are indicated by a high contrast colour code:



Accuracy class "A",
Clear glass:
Printed in blue.

Accuracy class "A",
Amber glass:
Printed in white

Accuracy class "B",
Clear glass only:
Printed in white

All glassware is heated in an oven following printing and the colour is fired on to the glass.This procedure guarantees the high chemical and thermal resistance of the enamel print used, and therefore their long life and economic efficiency. Important information, such as volume, accuracy class and the SCHOTT DURAN® logo, should therefore remain clearly visible as quality features in the long term.

		Volumetric flask, accuracy class A
		Volumetric flask, accuracy class A, conforms with USP <31>
		Volumetric flask, accuracy class B

	Batch number, e.g. 14.01
	"H" conformity symbol – confirms that the requirements of the German Federal Weights and Measures Regulations as well as the relevant standards are fulfilled.
UK	Country of origin
250	Nominal volume in ml
±0.12ml	Accuracy limit – the nominal volume can deviate at most by this value as specified in the standards
In	Calibrated to contain.The quantity of liquid contained corresponds to the volume indication printed on the item.
20°C	Reference temperature – the temperature at which volumetric glassware must contain its specified nominal volume (20°C).
A	Accuracy class – indicates the accuracy limit (see page 8)
NS 14/23	Standard ground joint size
ISO 1042	Standardised designation
USP	United States Pharmacopeia – the product fulfils the requirements specified in USP<31>
AAA-0001	Individual number (lasered onto base)
DD.MM.YY	Production date (lasered onto base)

10 CERTIFICATES:TEST RESULTS CLEARLY DEMONSTRATED

Conformity symbol H – The conformity symbol confirms that the apparatus fulfils the requirements of the German weights and measures regulations as well as the relevant standards.This conformity with DIN 12 600 is printed directly on the glass.

Batch certificate – Volumetric flasks as well as measuring and mixing cylinders that are assigned to accuracy class "A" and have a batch number come with a batch certificate.This certificate documents the mean value derived from measuring the specified batch as well as the standard deviation and the date of issue.The batch certificates are also available online.
The batch number comprises four digits, for example: 0114
The first two digits indicate the batch and the second two digits indicate the year of production.

Individual certificate – Volumetric flasks that bear an individual number in addition to the batch number come with an individual certificate.The individual number is lasered permanently onto the base of the volumetric flask and entered on the associated certificate. Each volumetric flask is measured and test- ed individually.This certificate documents the volume measured for the respective volumetric flask, the uncertainty measurement and the date of issue.A batch certificate is also available as an option online. The individual number is a consecutive number and comprises three letters and a four digit number, for example:AAA-0001

USP individual certificate – The volumetric flasks are assigned an individual number.This number is lasered permanently onto the base of the volumetric flask and entered on the associated certificate. The accuracy limits for volumetric flasks that conform to USP <31> are stricter than for volumetric flasks that conform to ISO 1042 and therefore fulfil the requirements contained in the United States Pharmacopeia (USP). Each volumetric flask is measured and tested individually.This certificate documents the volume measured for the respective volumetric flask, the measuring inaccuracy and the date of issue.



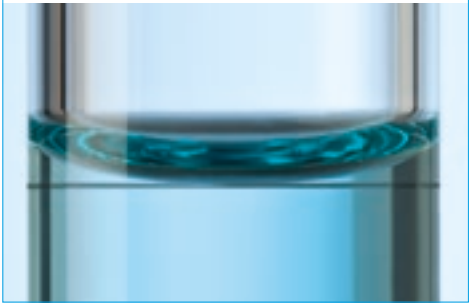
Batch certificate



Individual certificate

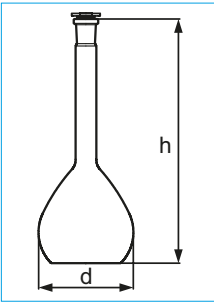
Precise reading made simple

The liquid at the edge of the vessel is generally higher and therefore forms what is known as the meniscus.The difficulty this creates with reading can be avoided by reading off at the lowest point of the liquid surface.This means that the lowest point of the meniscus should touch the top edge of the measurement mark precisely.



11 DURAN® VOLUMETRIC FLASKS: ASSISTING IN MEASUREMENT ANALYSIS

DURAN® volumetric flasks are used to precisely measure specified amounts of liquid in conjunction with the preparation and storage of solutions. An individual or batch certificate for the volumetric flask is enclosed with the product.The batch certificates are also available online.



DURAN® VOLUMETRIC FLASK, CLASS A, CONFORMS WITH USP <31>

Blue graduation, with one graduation mark and new ergonomic polyethylene stopper
Certificate of conformity "H"

With USP individual certificate

Cat. No.:	Capacity ml	Accuracy limit ± ml	Overall height h mm	Outer diameter d mm	Stopper size NS	Inner neck diameter mm	Packaging unit
24 671 09 58	5W ¹	0.02	70	22	10/19	9 ± 1	2
24 671 10 54	10W ¹	0.02	90	27	10/19	9 ± 1	2
24 671 14 57	25	0.03	110	40	10/19	9 ± 1	2
24 671 17 57	50	0.05	140	50	12/21	11 ± 1	2
24 671 25 56	100	0.08	170	60	14/23	13 ± 1	2
24 671 32 52	200	0.1	210	75	14/23	15.5 ± 1.5	2
24 671 36 55	250	0.12	220	80	14/23	15.5 ± 1.5	2
24 671 44 54	500	0.2	260	100	19/26	19 ± 2	2
24 671 54 59	1000	0.3	300	125	24/29	23 ± 2	2
24 671 63 52	2000	0.5	370	160	29/32	27.5 ± 2.5	2

W¹ – wide neck



12 DURAN® VOLUMETRIC FLASK, CLASS A

Blue graduation, with one graduation mark and new ergonomic polyethylene stopper

Certificate of conformity "H"

With individual certificate

Cat. No.:	Capacity ml	Accuracy limit ± ml	Overall height h mm	Outer diameter d mm	Stopper size NS	Inner neck diameter mm	Packaging unit
24 679 01 51	1	0.025	65	13	7/16	7 ± 1	2
24 679 02 54	2	0.025	70	17	7/16	7 ± 1	2
24 679 09 57	5W¹	0.04	70	22	10/19	9 ± 1	2
24 679 10 53	10W¹	0.04	90	27	10/19	9 ± 1	2
24 679 12 59	20	0.04	110	39	10/19	9 ± 1	2
24 679 14 56	25	0.04	110	40	10/19	9 ± 1	2
24 679 17 56	50	0.06	140	50	12/21	11 ± 1	2
24 679 24 52	100	0.1	170	60	12/21	13 ± 1	2
24 679 25 55	100	0.1	170	60	14/23	13 ± 1	2
24 679 32 51	200	0.15	210	75	14/23	15.5 ± 1.5	2
24 679 36 54	250	0.15	220	80	14/23	15.5 ± 1.5	2
24 679 44 53	500	0.25	260	100	19/26	19 ± 2	2
24 679 54 58	1000	0.4	300	125	24/29	23 ± 2	2
24 679 55 52	1000W¹	0.6	300	125	29/32	27.5 ± 2.5	2
24 679 63 51	2000	0.6	370	160	29/32	27.5 ± 2.5	2
24 679 73 56	5000	1.2	475	215	34/35	38 ± 3	1

W¹ – wide neck



13 DURAN® VOLUMETRIC FLASK, CLASS A

Blue graduation, with one graduation mark and new ergonomic polyethylene stopper

Certificate of conformity "H"

With batch certificate

Cat. No.:	Capacity ml	Accuracy limit ± ml	Overall height h mm	Outer diameter d mm	Stopper size NS	Inner neck diameter mm	Packaging unit
24 678 01 59	1	0.025	65	13	7/16	7 ± 1	2
24 678 02 53	2	0.025	70	17	7/16	7 ± 1	2
24 678 09 56	5W¹	0.04	70	22	10/19	9 ± 1	2
24 678 10 52	10W¹	0.04	90	27	10/19	9 ± 1	2
24 678 12 58	20	0.04	110	39	10/19	9 ± 1	2
24 678 14 55	25	0.04	110	40	10/19	9 ± 1	2
24 678 17 55	50	0.06	140	50	12/21	11 ± 1	2
24 678 24 51	100	0.1	170	60	12/21	13 ± 1	2
24 678 25 54	100	0.1	170	60	14/23	13 ± 1	2
24 678 32 59	200	0.15	210	75	14/23	15.5 ± 1.5	2
24 678 36 53	250	0.15	220	80	14/23	15.5 ± 1.5	2
24 678 44 52	500	0.25	260	100	19/26	19 ± 2	2
24 678 54 57	1000	0.4	300	125	24/29	23 ± 2	2
24 678 55 51	1000W¹	0.6	300	125	29/32	27.5 ± 2.5	2
24 678 63 59	2000	0.6	370	160	29/32	27.5 ± 2.5	2
24 678 73 55	5000	1.2	475	215	34/35	38 ± 3	1

W¹ – wide neck



14 DURAN® VOLUMETRIC FLASK, CLASS A

White graduation, with one graduation mark and polyethylene octagonal stopper
[With batch certificate](#)

Cat. No.:	Capacity ml	Accuracy limit ± ml	Overall height h mm	Outer diameter d mm	Stopper size NS	Inner neck diameter mm	Packaging unit
21 678 07 04	5	0.025	70	22	7/16	7 ± 1	2
21 678 08 07	10	0.025	90	27	7/16	7 ± 1	2
21 678 12 03	20	0.04	110	39	10/19	9 ± 1	2
21 678 14 09	25	0.04	110	40	10/19	9 ± 1	2
21 678 17 09	50	0.06	140	50	12/21	11 ± 1	2
21 678 24 05	100	0.1	170	60	12/21	13 ± 1	2
21 678 25 08	100	0.1	170	60	14/23	13 ± 1	2
21 678 32 04	200	0.15	210	75	14/23	15.5 ± 1.5	2
21 678 36 07	250	0.15	220	80	14/23	15.5 ± 1.5	2
21 678 44 06	500	0.25	260	100	19/26	19 ± 2	2
21 678 54 02	1000	0.4	300	125	24/29	23 ± 2	2
21 678 63 04	2000	0.6	370	160	29/32	27.5 ± 2.5	2
21 678 73 09	5000	1.2	475	215	34/35	38 ± 3	1



15 DURAN® VOLUMETRIC FLASK, AMBER, CLASS A

White graduation, with one graduation mark and new ergonomic polyethylene stopper
Certificate of conformity "H"
[With individual certificate](#)

Cat. No.:	Capacity ml	Accuracy limit ± ml	Overall height h mm	Outer diameter d mm	Stopper size NS	Inner neck diameter mm	Packaging unit
24 677 09 55	5W ¹	0.04	70	22	10/19	9 ± 1	2
24 677 10 51	10W ¹	0.04	90	27	10/19	9 ± 1	2
24 677 12 57	20	0.04	110	39	10/19	9 ± 1	2
24 677 14 54	25	0.04	110	40	10/19	9 ± 1	2
24 677 17 54	50	0.06	140	50	12/21	11 ± 1	2
24 677 24 59	100	0.1	170	60	12/21	13 ± 1	2
24 677 25 53	100	0.1	170	60	14/23	13 ± 1	2
24 677 32 58	200	0.15	210	75	14/23	15.5 ± 1.5	2
24 677 36 52	250	0.15	220	80	14/23	19 ± 2	2
24 677 44 51	500	0.25	260	100	19/26	23 ± 2	2
24 677 54 56	1000	0.4	300	125	24/29	27.5 ± 2.5	2
24 677 63 58	2000	0.6	370	160	29/32	38 ± 3	2

W¹ – wide neck



16 DURAN® VOLUMETRIC FLASK, AMBER, CLASS A

White graduation, with one graduation mark and new ergonomic polyethylene stopper

Certificate of conformity "H"

With batch certificate

Cat. No.:	Capacity ml	Accuracy limit ± ml	Overall height h mm	Outer diameter d mm	Stopper size NS	Inner neck diameter mm	Packaging unit
24 676 09 54	5W ^I	0.04	70	22	10/19	9 ± 1	2
24 676 10 59	10W ^I	0.04	90	27	10/19	9 ± 1	2
24 676 12 56	20	0.04	110	39	10/19	9 ± 1	2
24 676 14 53	25	0.04	110	40	10/19	9 ± 1	2
24 676 17 53	50	0.06	140	50	12/21	11 ± 1	2
24 676 24 58	100	0.1	170	60	12/21	13 ± 1	2
24 676 25 52	100	0.1	170	60	14/23	13 ± 1	2
24 676 32 57	200	0.15	210	75	14/23	15.5 ± 1.5	2
24 676 36 51	250	0.15	220	80	14/23	19 ± 2	2
24 676 44 59	500	0.25	260	100	19/26	23 ± 2	2
24 676 54 55	1000	0.4	300	125	24/29	27.5 ± 2.5	2
24 676 63 57	2000	0.6	370	160	29/32	38 ± 3	2

W^I – wide neck



17 DURAN® VOLUMETRIC FLASK, CLASS B

White graduation, with one graduation mark and new ergonomic polyethylene stopper

Cat. No.:	Capacity ml	Accuracy limit ± ml	Overall height h mm	Outer diameter d mm	Stopper size NS	Inner neck diameter mm	Packaging unit
24 670 09 57	5W ^I	0.08	70	22	10/19	9 ± 1	2
24 670 10 53	10W ^I	0.08	90	27	10/19	9 ± 1	2
24 670 12 59	20	0.08	110	39	10/19	9 ± 1	2
24 670 14 56	25	0.08	110	40	10/19	9 ± 1	2
24 670 17 56	50	0.12	140	50	12/21	11 ± 1	2
24 670 25 55	100	0.2	170	60	14/23	13 ± 1	2
24 670 32 51	200	0.3	210	75	14/23	15.5 ± 1.5	2
24 670 36 54	250	0.3	220	80	14/23	15.5 ± 1.5	2
24 670 44 53	500	0.5	260	100	19/26	19 ± 2	2
24 670 54 58	1000	0.8	300	125	24/29	23 ± 2	2
24 670 63 51	2000	1.2	370	160	29/32	27.5 ± 2.5	2
24 670 73 56	5000	2.4	475	215	34/35	38 ± 3	1

W^I – wide neck



18 **DEFINITIVE LASER MARKING FROM DURAN®:
RULING OUT MIX-UPS**

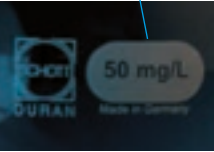
Volumetric flasks can be marked permanently in the description field without damaging the glass. This allows errors to be avoided when performing routine tasks. In addition, the vessels can be integrated automatically into the complete workflow using a scanner, saving time and money.

The font size is predefined and the contents can be selected freely; markings can include barcodes, serial numbers, texts, digits or logos. This is even possible regardless of the order quantity. The service therefore applies equally to small and large batches.

For more information, please visit www.duran-group.com/lasermarking



Description field without laser marking



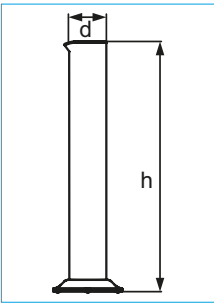
Description field with laser marking



Sample layout of a laser marked description field

19 **DURAN® MEASURING CYLINDERS:
TWO APPLICATIONS IN ONE**

DURAN® measuring cylinders are used for holding and simultaneously measuring different amounts of liquid. The tolerances of the measuring and mixing cylinders in relation to the capacity correspond to the accuracy limits under DIN and ISO. The batch certificates for the measuring cylinders are enclosed with the product and are also available online.

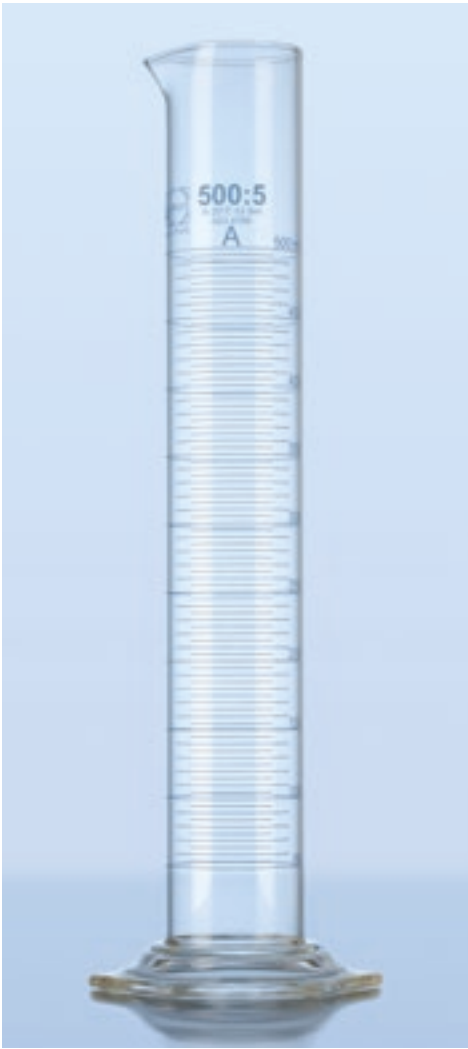


DURAN® MEASURING CYLINDER, CLASS A

Blue graduation, with main points ring graduation, hexagonal base
Certificate of conformity "H"

With batch certificate

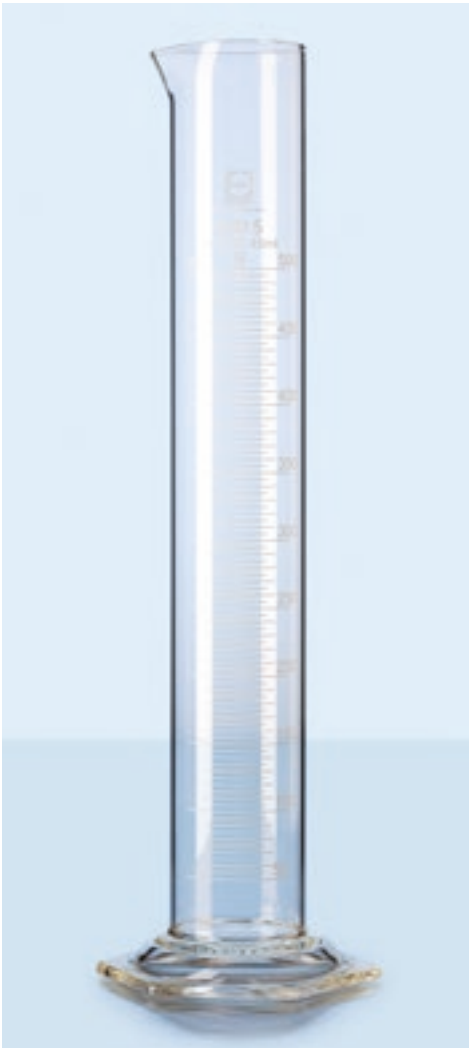
Cat. No.:	Capacity ml	Accuracy limit ± ml	Graduation divisions ml	Overall height h mm	Outer diameter d mm	Packaging unit
21 390 07 01	5	0.05	0.1	112	12	2
21 390 08 04	10	0.10	0.2	137	14	2
21 390 14 06	25	0.25	0.5	167	21	2
21 390 17 06	50	0.5	1	196	25	2
21 390 24 02	100	0.5	1	256	29	2
21 390 36 04	250	1	2	331	39	2
21 390 44 03	500	2.5	5	360	53	2
21 390 54 08	1000	5	10	460	65	1
21 390 63 01	2000	10	20	500	85	1



20 DURAN® MEASURING CYLINDER, CLASS B

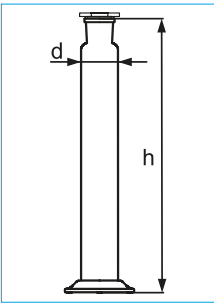
White line graduation, hexagonal base

Cat. No.:	Capacity ml	Accuracy limit ± ml	Graduation divisions ml	Overall height h mm	Outer diameter d mm	Packaging unit
21 396 07 07	5	0.1	0.1	112	12	2
21 396 08 01	10	0.2	0.2	137	14	2
21 396 14 03	25	0.5	0.5	167	21	2
21 396 17 03	50	1	1	196	25	2
21 396 24 08	100	1	1	256	29	2
21 396 36 01	250	2	2	331	39	2
21 396 44 09	500	5	5	360	53	2
21 396 54 05	1000	10	10	460	65	1
21 396 63 07	2000	20	20	500	85	1



21 DURAN® MIXING CYLINDER:
CREATING COMPOUNDS

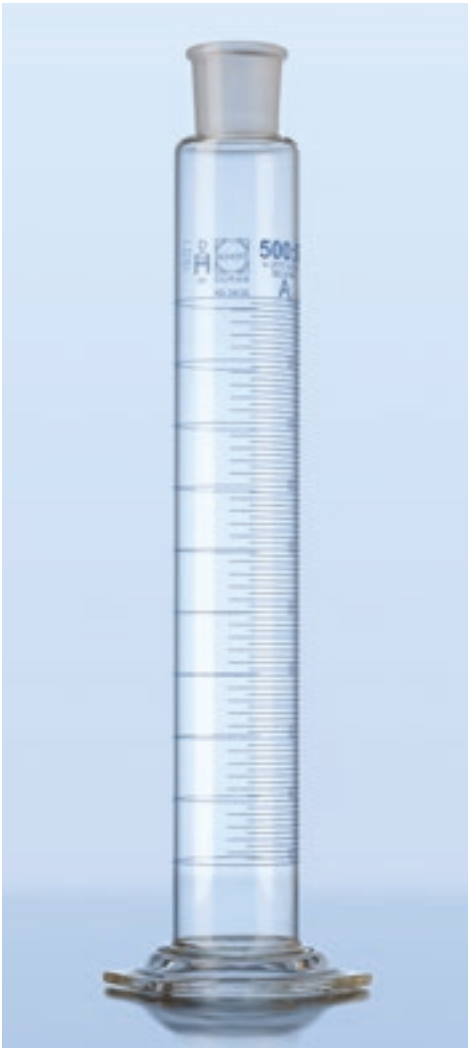
DURAN® mixing cylinders are used for diluting solutions and mixing several components in a given quantity ratio. The tolerances of the measuring and mixing cylinders in relation to the capacity correspond to the accuracy limits under DIN and ISO. The batch certificates for the mixing cylinders are enclosed with the product and are also available online.



DURAN® MIXING CYLINDER CLASS A

Blue graduation, with main points ring graduation, new ergonomic polyethylene stopper and hexagonal base
Certificate of conformity "H"
With batch certificate

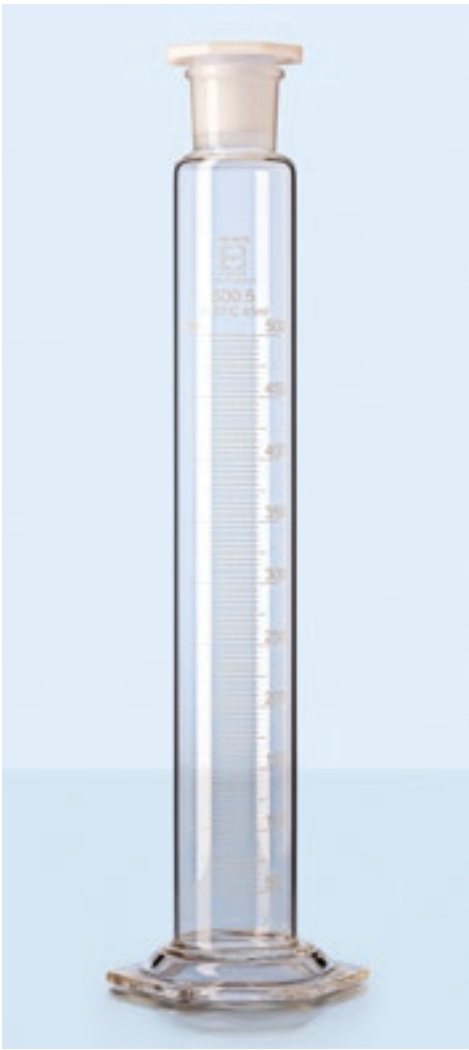
Cat. No.:	Capacity ml	Accuracy limit ± ml	Graduation divisions ml	Overall height h mm	Outer diameter d mm	Stopper size NS	Packaging unit
24 618 08 56	10	0.10	0.2	156	14	10/19	2
24 618 14 58	25	0.25	0.5	190	21	14/23	2
24 618 17 58	50	0.5	1	222	25	19/26	2
24 618 24 54	100	0.5	1	287	29	24/29	2
24 618 36 56	250	1	2	363	39	29/32	2
24 618 44 55	500	2.5	5	395	53	34/35	2
24 618 54 51	1000	5	10	500	65	45/40	1
24 618 63 53	2000	10	20	540	85	45/40	1



22 DURAN® MIXING CYLINDER CLASS B

White line graduation, polyethylene octagonal stopper and hexagonal base

Cat. No.:	Capacity ml	Accuracy limit ± ml	Graduation divisions ml	Overall height h mm	Outer diameter d mm	Stopper size NS	Packaging unit
21 618 08 01	10	0.2	0.2	156	14	10/19	2
21 618 14 03	25	0.5	0.5	190	21	14/23	2
21 618 17 03	50	1	1	222	25	19/26	2
21 618 24 08	100	1	1	287	29	24/29	2
21 618 36 01	250	2	2	363	39	29/32	2
21 618 44 09	500	5	5	395	53	34/35	2
21 618 54 05	1000	10	10	500	65	45/40	1
21 618 63 07	2000	20	20	540	85	45/40	1



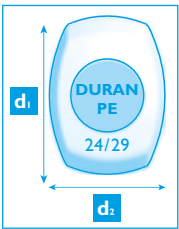
23 DURAN® POLYETHYLENE STOPPER: EXTREMELY PRACTICAL SOLUTION

DURAN® polyethylene stoppers are ergonomically shaped, therefore guaranteeing simple and secure opening and closing of volumetric flasks, mixing cylinders and reagent bottles. In addition, a cone with several ring grooved flanges ensures optimal leak tightness. Differently coloured stopper inserts ensure simple and fast assignment of the NS size. The colour code is identical to that of the removable Keck™ clips. Batch certificates for the DURAN® polyethylene stoppers are available at www.duran-group.com.

Batch time: [production details at a glance](#)

The batch time located underneath every stopper comprises two concentric circles. The inner circle indicates the year of production and also has an arrow pointing to one of the digits in the outer circle, which indicates the month of production, for example a 1 for the month of January. The text "PE04" can also be found on the underside of each stopper, which is the material designation for polyethylene.

Cat. No.:	NS size	Insert colour	Overall height h mm	Outer diameter d ₁ mm	Outer diameter d ₂ mm	Packaging unit
29 205 02 01	7/16	blue	28	29.5	17.5	10
29 205 03 04	10/19	green	32	32.5	20	10
29 205 04 07	12/21	violet	35	36.5	22	10
29 205 06 04	14/23	yellow	38	40	25	10
29 205 07 07	19/26	blue	42	44.5	31	10
29 205 08 01	24/29	green	46	51.5	38	10
29 205 09 04	29/32	red	50	61	45.5	10
29 205 11 03	34/45	orange	54	71	54.5	1
29 205 12 06	45/40	brown	60	81.5	65.5	1



Dimensions



View from below





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