

Temperature and Density Measurement

For the measurement of temperature and density, BRAND offers high quality thermometers, individually calibrated BLAUBRAND® density bottles, and fast, reliable hydrometers.



Density Bottles

BLAUBRAND® density bottles are individually adjusted. The nominal capacity is indelibly engraved on each bottle. Each bottle is calibrated with its own stopper or thermometer; hence, stoppers and thermometers are not interchangeable.

Each bottle and its stopper or thermometer is marked with a unique matching identification number.

Certification note:

All BLAUBRAND® density bottles are supplied with one accompanying individual certificate in the original packaging.

On request, they are also available with a DAkkS calibration certificate.



Density bottles, calibrated

BLAUBRAND®

Borosilicate glass 3.3. DIN ISO 3507, Gay-Lussac type. Calibrated to contain (TC, In). Reference temperature 20 °C. Individual certificate included. Stopper NS 10/19 with capillary. Top of stopper ground and polished. The volume in cm³ is specified to a precision of 3 decimal places. Pack of 1.

Nominal capacity cm ³	Cat. No.
5	433 05
10	433 08
25	433 20
50	433 28
100	433 38



Density bottles, calibrated

BLAUBRAND®

With thermometer and side capillary

Borosilicate glass 3.3. DIN ISO 3507. Calibrated to contain (TC, In). Reference temperature 20 °C. Individual certificate included. Side capillary with conical ground cap size NS 7/16. Thermometer with enclosed scale, with standard ground joint NS 10/19, range 10 to 35 °C, divided in 0.2 °C, mercury filled. The volume in cm³ is specified to a precision of 3 decimal places. Pack of 1.

No longer available in EU Member States (EU directive EG 847/2012).

Nominal capacity cm ³	Cat. No.
10	434 08
25	434 20
50	434 28
100	434 38



Inscriptions in high contrast blue enamel

Density bottles, uncalibrated

Borosilicate glass 3.3. DIN ISO 3507, Gay-Lussac type. Stopper NS 10/19 with capillary. Top of stopper ground and polished. Nominal capacity printed on the bottom. Pack of 2.

Nominal capacity cm ³	Cat. No.
5	432 05
10	432 08
25	432 20
50	432 28
100	432 38



Oxygen flasks, Winkler pattern

Soda-lime glass. For the determination of oxygen dissolved in water. The measured volume is indicated to a precision of 2 decimal places. White labelling area. Solid, obliquely cut standard-ground glass stopper can be secured with a fastening clip. Each flask is calibrated with its own stopper; hence, stoppers and flasks are not interchangeable.

Each flask and its stopper is marked with a unique matching identification number. Pack of 2.

Nominal capacity ml	Neck Size	Cat. No.
100 - 150	14/23	3860 38
250 - 300	19/26	3860 48



Accessories:

(please order separately)

Fastening clips for oxygen flasks Winkler pattern

Pack of 1.

For Flask	Cat. No.
3860 38	3861 38
3860 48	3861 48



ASTM Centrifuge Tubes

BLAUBRAND® ASTM centrifuge tubes

Borosilicate glass 3.3. Capacity 100 ml.
Withstands RCF up to 700.

Design, accuracy, etc. to meet ASTM
("American Society for Testing and
Materials") specifications.

Pack of 2.


Relative Centrifugal Force (RCF)

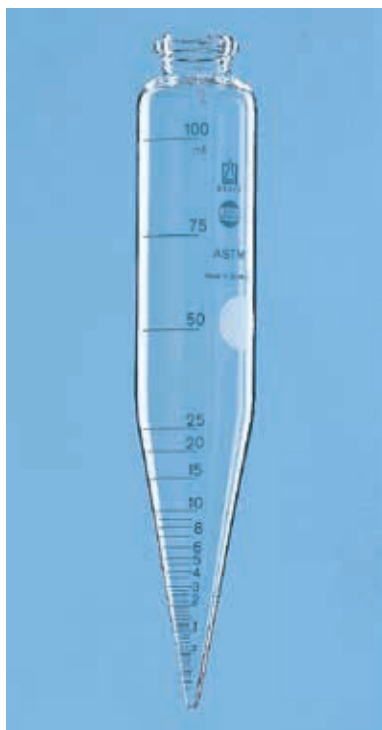
$$RCF = 1.118 \cdot r \cdot \left(\frac{n}{1000}\right)^2$$

(see DIN 58970)

r = Rotation radius in mm

n = Speed

Note!  On request, ASTM centrifuge tubes are also available with individual quality certificate by BRAND.



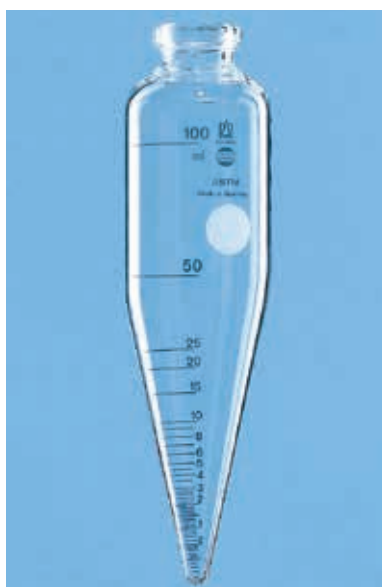
ASTM centrifuge tubes, cylindrical, conical bottom

ASTM D 91.

Length max. 203 mm,
neck inner-Ø approx. 17 mm.

Graduation ml	Subdiv. ml
from 0 to 0.5	0.05
from 0.5 to 2	0.10
from 2 to 3	0.20
from 3 to 5	0.50
from 5 to 10	1
from 10 to 25	5
from 25 to 100	25

Cat. No. **3620 38**



ASTM centrifuge tubes, cylindrical, conical bottom

Former standard ASTM D 96.

Length max. 167 mm,
neck inner-Ø approx. 17 mm.

Graduation ml	Subdiv. ml
from 0 to 0.5	0.05
from 0.5 to 2	0.10
from 2 to 3	0.20
from 3 to 5	0.50
from 5 to 10	1
from 10 to 25	5
from 25 to 100	25

Cat. No. **3623 38**

ASTM centrifuge tubes, pear-shaped, cylindrical bottom

Former standard ASTM D 96.
Length max. 160 mm,
neck inner-Ø approx. 17 mm.

Graduation ml	Subdiv. ml
from 0 to 1.5	0.10
from 1.5 to 3	0.50
from 3 to 5	0.50
from 5 to 10	1
from 10 to 25	5
from 25 to 100	25

Cat. No.	3621 38
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Sedimentation Cones

Imhoff sedimentation cones

**SILBERBRAND. Graduated to
100 ml, ring mark at 1000 ml.**

Borosilicate glass 3.3. DIN 12672.

Graduation range ml	Subdiv. ml	Error limit ± ml
0 - 2	0.1	0.1
> 2 - 10	0.5	0.5
> 10 - 40	1	1
> 40 - 100	2	2
Ring mark 1000	-	10



With stopcock.
Pack of 1.

Cat. No.	3876 62
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Without stopcock.
Pack of 4.

Cat. No.	3873 62
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Imhoff sedimentation cone

SILBERBRAND.

Graduated to 1000 ml.

Borosilicate glass 3.3. DIN 12672.

Without stopcock. Pack of 4.

Graduation range ml	Subdiv. ml	Error limit ± ml
0 - 2	0.1	0.1
> 2 - 10	0.5	0.5
> 10 - 40	1	1
> 40 - 100	2	2
> 100 - 1000	50	10

Cat. No. **3874 62**



Imhoff sedimentation cone, SAN

Graduated to 1000 ml.

SAN, transparent. DIN 12672.

Screw cap allows drainage. Withstands temperatures up to 85 °C. Pack of 1.

Graduation range ml	Subdiv. ml	Error limit ± ml
0 - 2	0.1	0.1
> 2 - 10	0.5	0.5
> 10 - 40	1	1
> 40 - 100	2	2
> 100 - 1000	50	10

Cat. No. **3880 00**

Rack for sedimentation cones with and without stopcock

PMMA/PP, holds 2 Imhoff sedimentation cones (glass or plastic; with and without stopcock). Compact design and easy to carry, even with cones filled. Pack of 1.

Length mm	Width mm	Height mm	Cat. No.
300	130	400	3880 60



Rack for plastic sedimentation cones

PMMA/PP, holds 2 plastic sedimentation cones. Compact design and easy to carry, even with cones filled. Pack of 1.

Length mm	Width mm	Height mm	Cat. No.
300	130	315	3880 50



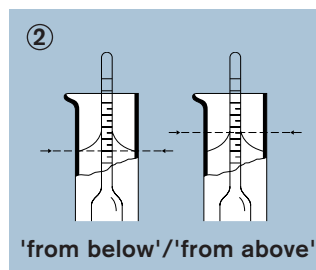
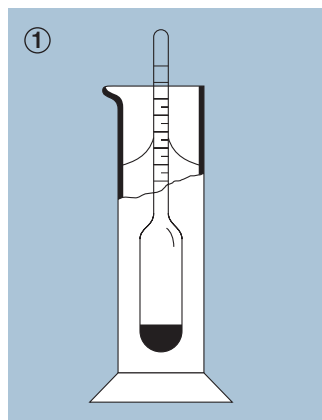


Hydrometers

Measuring Procedures

Hydrometers determine the density of liquids or the concentration of dissolved matter.

Density is frequently indicated in g/cm^3 (g/ml) or in $^{\circ}\text{Baumé}$. Concentration is indicated in percentage by volume (Vol.%) or in percentage by mass (Weight%). Permissible deviations are within ± 2 graduation marks.



Measuring procedure

Pour the sample into a transparent cylinder (see fig. 1) and adjust its temperature to the indicated reference temperature of the hydrometer. Immediately before measuring, mix well with a glass rod to reduce differing sample densities and temperatures.

A clean hydrometer should only be touched above the scale. Liquid should not adhere more than 5 mm above the reading point.

The meniscus should remain even and not change its shape or height when the stem moves up and down. Hydrometer should first be cleaned carefully in Mucasol® (see page 312).

Once the hydrometer has reached its equilibrium, (floating freely without touching the walls of the cylinder) the density is read "from below" for transparent samples,

non-transparent samples are read "from above". (see fig. 2). Check the temperature of the sample immediately after the reading. Maximum hydrometer measuring temperature should not exceed 70 °C.

Temperature correction

1. Measuring instrument

Certain applications may require a correction to account for the thermal expansion of the hydrometer glass, if the measuring temperature deviates from the reference temperature of the hydrometer. This factor corrects the result for the corresponding measuring temperature.

$$K_t = (1 - \gamma (t - t_0)) \rho$$

K_t For the density after correction

γ Volume expansion coefficient of the hydrometer glass (25 ± 2) 10^{-6} K^{-1}


t Measuring temperature $^{\circ}\text{C}$

t_0 Reference temperature $^{\circ}\text{C}$

ρ Density reading g/ml

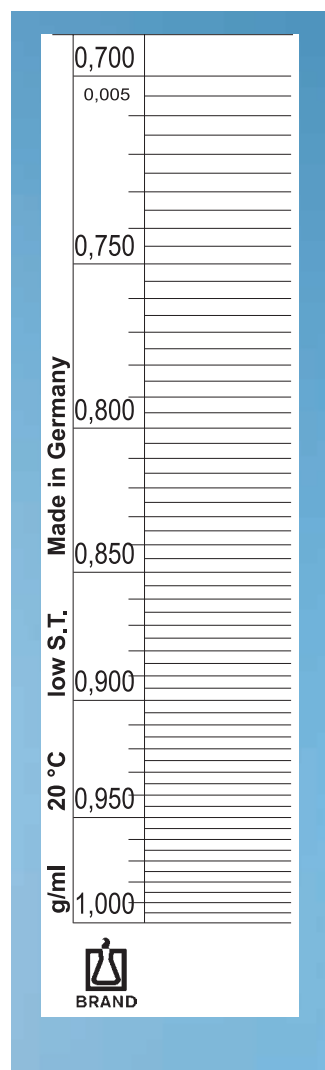
2. Sample

Conversion tables for measured densities to different temperature can be found in many chemical references. These tables can provide expansion coefficients and densities for different sample temperatures and concentrations.

Note!  All scales are shown in original size.

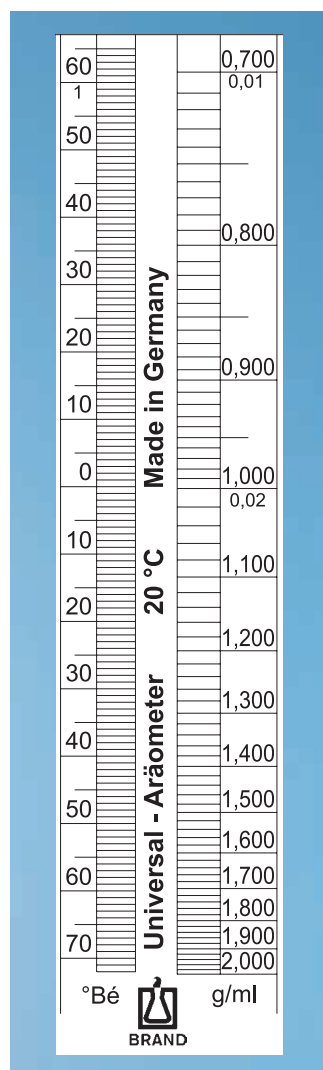
For hydrometers no certificates are provided.

Range finder hydrometers



Subdivisions 0.005 g/cm³,
reference temperature 20 °C.
Without thermometer,
approx. 260 - 300 mm long.
Pack of 1.

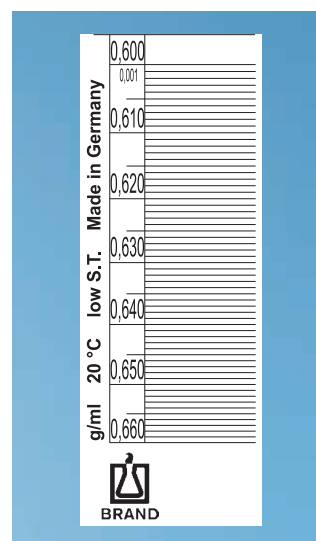
Range g/cm ³	Cat. No.
0.700 - 1.000	9700 10
1.000 - 1.500	9700 12
1.500 - 2.000	9700 14



Subdivisions 0.01 g/cm³,
reference temperature 20 °C.
Without thermometer,
approx. 360 mm long.
Pack of 1.

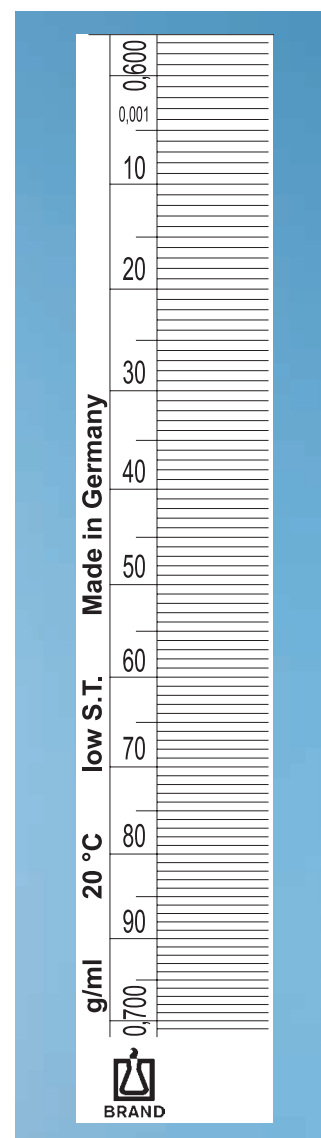
Range g/cm ³	Cat. No.
0.700 - 2.000	9705 10

General purpose hydrometers



Subdivisions 0.001 g/cm³,
reference temperature 20 °C.
Without thermometer,
approx. 160 mm long.
Pack of 1.

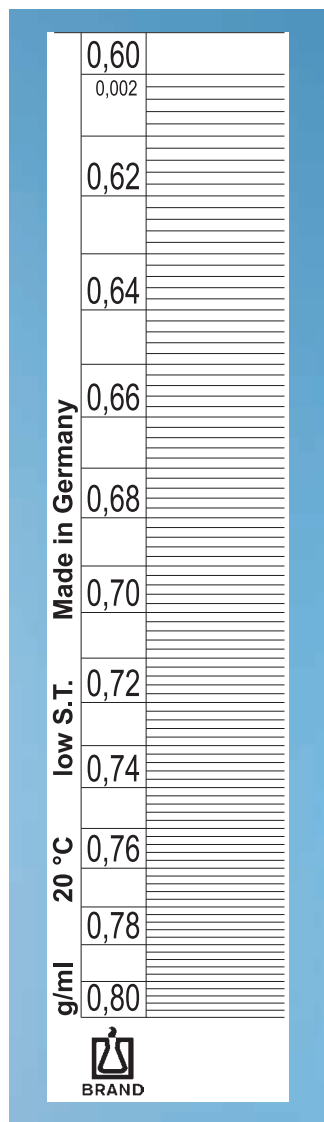
Range g/cm ³	Cat. No.
0.600 - 0.660	9660 30
0.650 - 0.710	9660 31
0.700 - 0.760	9660 32
0.760 - 0.820	9660 33
0.820 - 0.880	9660 34
0.880 - 0.940	9660 35
0.940 - 1.000	9660 36
1.000 - 1.060	9660 37
1.060 - 1.120	9660 38
1.120 - 1.180	9660 39
1.180 - 1.240	9660 40
1.240 - 1.300	9660 41
1.300 - 1.360	9660 42
1.360 - 1.420	9660 43
1.420 - 1.480	9660 44
1.480 - 1.540	9660 45
1.540 - 1.600	9660 46
1.600 - 1.660	9660 47
1.660 - 1.720	9660 48
1.720 - 1.780	9660 49
1.780 - 1.840	9660 50
1.840 - 1.900	9660 51
1.900 - 1.960	9660 52
1.960 - 2.020	9660 53



Subdivisions 0.001 g/cm³,
reference temperature 20 °C.
Without thermometer,
approx. 300 mm long.
Pack of 1.

Range g/cm ³	Cat. No.
0.600 - 0.700	9685 10
0.700 - 0.800	9685 11
0.800 - 0.900	9685 12
0.900 - 1.000	9685 13
1.000 - 1.100	9685 14
1.100 - 1.200	9685 15
1.200 - 1.300	9685 16
1.300 - 1.400	9685 17
1.400 - 1.500	9685 18
1.500 - 1.600	9685 19
1.600 - 1.700	9685 20
1.700 - 1.800	9685 21
1.800 - 1.900	9685 22
1.900 - 2.000	9685 23

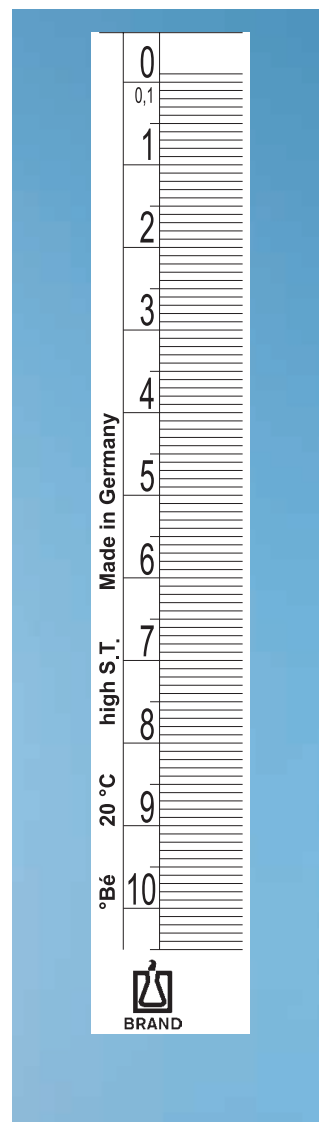
General purpose hydrometers



Without thermometer:
Subdivision 0.002 g/cm³, reference temperature 20 °C.
Approx. 280 mm long.
Pack of 1.

With thermometer:
Thermometer range: 0-30/40 °C (subdivision 1 °C).
Petroleum filled, blue colored.
Approx. 330 mm long.
Pack of 1.

Hydrometers Baumé pattern



For aqueous solutions and liquids with similar surface tensions.

The advantage of this pattern is that the distances between graduation marks remain constant throughout the entire range.

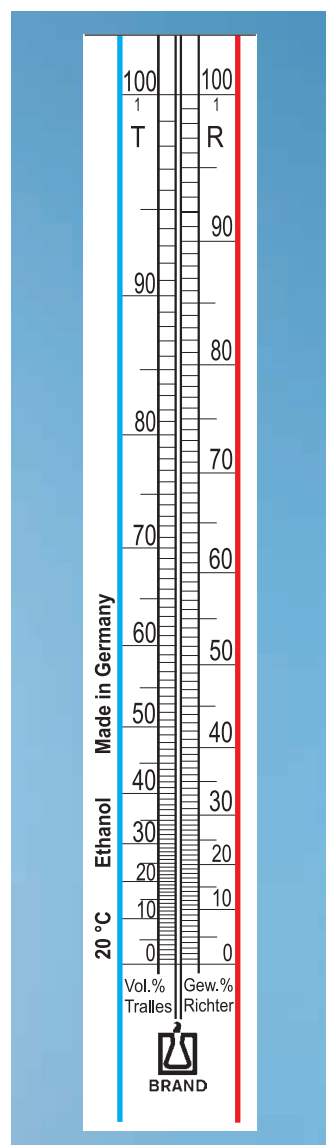
Without thermometer.
Reference temperature 20 °C.
Pack of 1.

Range g/cm ³	without thermometer Cat. No.	with thermometer Cat. No.
0.600 - 0.800	9695 10	9696 10
0.800 - 1.000	9695 11	9696 11
1.000 - 1.200	9695 12	9696 12
1.200 - 1.400	9695 13	9696 13
1.400 - 1.600	9695 14	9696 14
1.600 - 1.800	9695 15	9696 15
1.800 - 2.000	9695 16	9696 16

Range °Bé	Subdivisions °Bé	Length approx. mm	Cat. No.
0 - 35	1	250	9715 28
0 - 50	1	250	9715 34
0 - 70	1	250	9715 35
0 - 10	0.1	285	9715 36
10 - 20	0.1	285	9715 37
20 - 30	0.1	285	9715 38
30 - 40	0.1	285	9715 39
40 - 50	0.1	285	9715 40
50 - 60	0.1	285	9715 41
60 - 70	0.1	285	9715 42

The range 0-70 °C Bé corresponds to the range 1-1.94 g/cm³.

General purpose alcoholometers

**Richter + Tralles pattern**

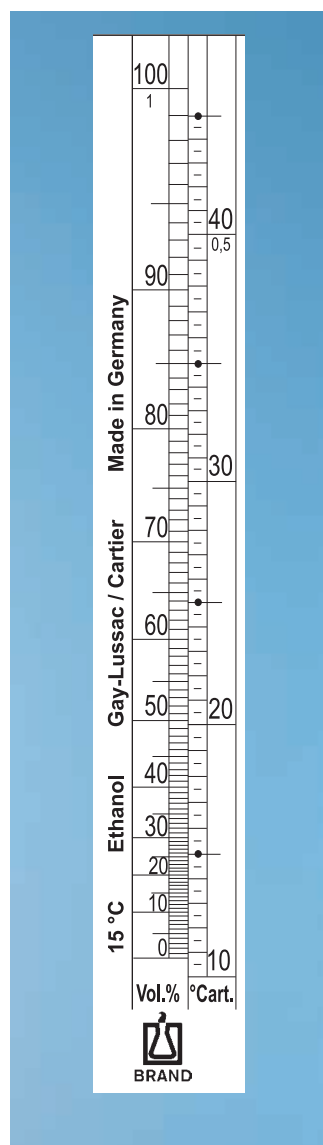
Subdivisions:
1 weight % / 1 vol.%,
reference temperature 20 °C,
range 0-100% (weight/vol.).
Pack of 1.

Without thermometer:
approx. 260 mm long

Cat. No.	9805 10
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With thermometer:
approx. 330 mm long,
thermometer range: 0-30/
40 °C (subdivisions 1 °C),
petroleum filled, blue colored.

Cat. No.	9805 60
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**Gay-Lussac + Cartier pattern**

Subdivisions:
1 vol.% / 0.5 °Cartier, refer-
ence temperature 15 °C,
range 0-100 vol.% /
10-45 °Cartier. Pack of 1.

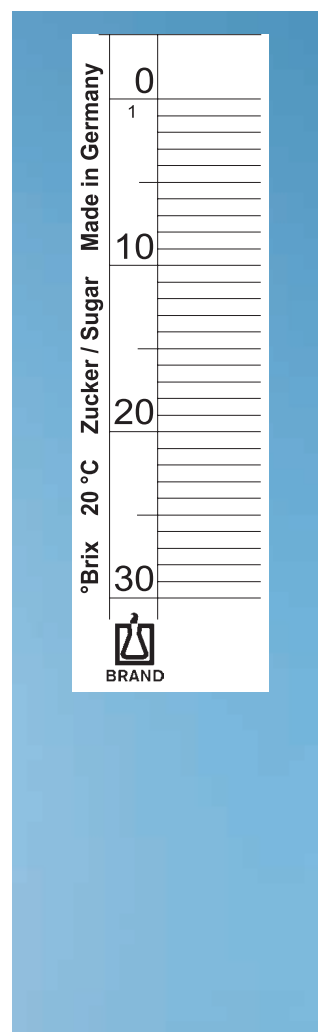
Without thermometer:
approx. 260 mm long

Cat. No.	9803 10
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With thermometer:
approx. 330 mm long,
thermometer range: 0-30/
40 °C (subdivisions 1 °C),
petroleum filled, blue colored.

Cat. No.	9803 60
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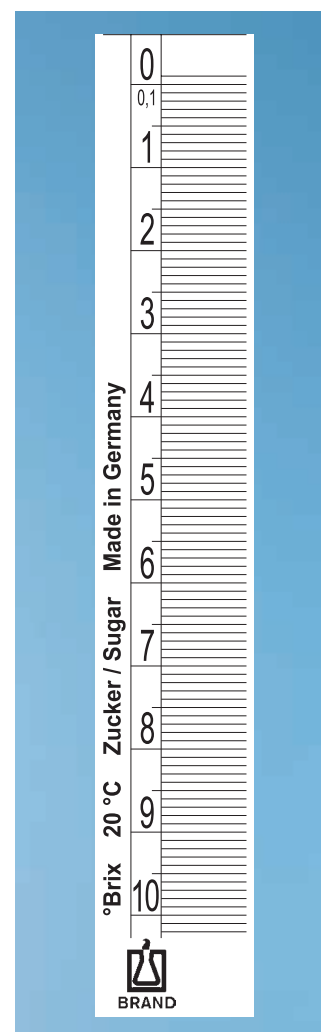
Sugar hydrometers

**Saccharimeters, Brix pattern (Sugar hydrometers)**
(1 °Brix = 1% sugar solution)

Subdivisions: 1 °Brix.
Reference temperature 20 °C.

Without thermometer:
approx. 210 mm long.
Pack of 1.

Range °Brix	Cat. No.
0 - 30	9844 17
30 - 60	9844 18
60 - 90	9844 16



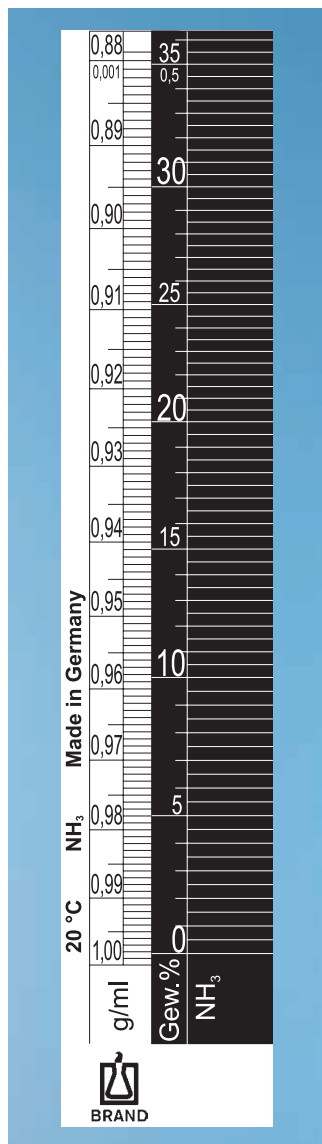
Subdivisions: 0.1 °Brix.
Reference temperature 20 °C.

With thermometer:
approx. 330 mm long.
Thermometer range: 0-40/
50 °C (subdivisions 1 °C).
petroleum filled, blue colored.
Pack of 1.

Range °Brix	Cat. No.
0 - 10	9847 10
10 - 20	9847 11
20 - 30	9847 12
30 - 40	9847 13
40 - 50	9847 14
50 - 60	9847 15

Special-purpose hydrometers

Reference temperature 20 °C.
 Without thermometer, approx. 290-320 mm long.
 All instruments listed below are supplied with double scales (weight % and density), eliminating the need for cross reference documentation.
 Pack of 1.



for	Range Weight %	Subdivision Weight %	Cat. No.
Ammonium hydroxide, NH ₄ OH	0 - 35	0.5	9875 10
Sodium chloride, NaCl	0 - 27	0.5	9926 10
Hydrochloric acid, HCl	0 - 40	0.5	9929 10

Hydrometer cylinders



Borosilicate glass 3.3.
 Ungraduated, with hexagonal base and spout.
 Pack of 1.

Capac. ml	i. H. mm	i. Ø mm	Cat. No.
250	310	35	9874 02
500	340	50	9874 04

Hydrometer cylinders




PP. With spout and overflow vessel. Hydrometers can be read while the cylinder is completely filled. The elasticity of the jar reduces the risk of hydrometer breakage.
 Pack of 1.

Capac. ml	i. H. mm	i. Ø mm	Cat. No.
500	350	50	500 00

Thermometer

BRAND thermometers – premium instruments for measuring temperature.

These high quality thermometers are manufactured in a single casting for a long service life. The dark amber stain is integrated with the glass surface, and is particularly resistant to chemical and physical corrosion.

Note!  At temperatures above 150 °C, the thermometer must be carefully preheated approximately to the temperature to be measured before immersion in the fluid.



GOLDBRAND

Precision thermometers, suitable for official certification or officially certified (the official certificate is valid for 15 years).

The accuracy is within the PTB* approved error limits.

SILBERBRAND

General-purpose thermometers for routine applications.

The accuracy remains within twice the PTB* approved error limits.

* PTB (Physikalisch-Technische Bundesanstalt): German Federal Institute of Physics and Metrology

Solid-stem thermometer, yellow coated

The vivid yellow coating on the back of these thermometers clearly contrasts the mercury column and graduations.

Enclosed-scale thermometer

BRAND also carries thermometers with opal glass scales.

Error limits for thermometers

The following error limits are according to "Eichordnung EO 14-1", the German Federal Weights and Measures Regulations.

For thermometers calibrated for total immersion containing **non-wetting** thermometric liquid (e.g., mercury and mercury-thallium alloy) and for thermometers containing **wetting** thermometric liquid (e.g., toluene, pentane and petroleum).

Official error limits for thermometers containing non-wetting thermometric liquids, for the subdivisions:

Temperature range from °C/to °C	0.05 °C	0.1 °C	0.2 °C	0,5 °C	1 °C	2 °C	5 °C
-58 / -10	–	± 0.3	± 0.4	± 0.5	± 1	± 2	± 5
-10 / 110	± 0.1	± 0.2	± 0.3	± 0.5	± 1	± 2	± 5
110 / 210	–	–	± 0.4	± 0.5	± 1	± 2	± 5
210 / 410	–	–	–	± 1	± 2	± 2	± 5
410 / 610	–	–	–	–	± 3	± 4	± 5

Official error limits for thermometers containing wetting thermometric liquids, for the subdivisions:

Temperature range from °C/to °C	0.5 °C	1 °C	2 °C	5 °C
-200 / -110	–	± 3	± 4	± 5
-110 / -10	± 1	± 2	± 4	± 5
-10 / 110	± 1	± 2	± 3	± 5
110 / 210	–	± 3	± 4	± 5

Calibration / Temperature correction (approximation)

Unless marked otherwise, thermometers are calibrated "for total immersion".

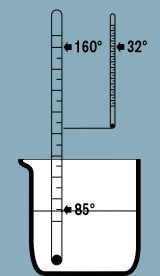
This means that the meniscus of the mercury column is level with the surface of the liquid being measured.

If part of the mercury column

is visible above the liquid surface, a correction may be necessary.

Equation for correction:

$$t_k = t + \frac{(t-t') n}{6250}$$



Example:

Temp. reading: $t = 160\text{ °C}$

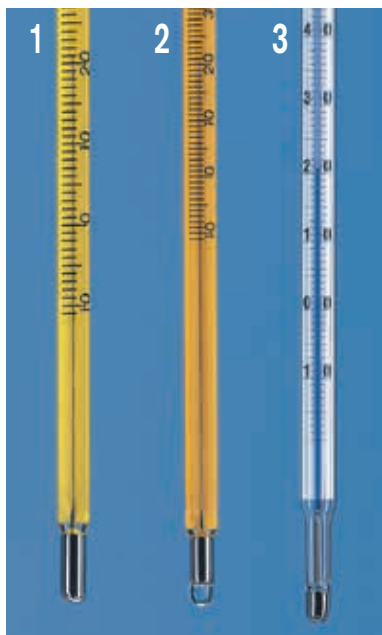
Immersion point: $t' = 85\text{ °C}$

Emerging mercury column:

Mean temperature: $t' = 32\text{ °C}$

Length in °C (on scale): $n = 160 - 85 = 75$

Corrected temp.: $t_k = 161.5\text{ °C}$



No longer available in EU Member States (EU directive EG 847/2012).

1 Solid-stem thermometers

DIN 12770, for general purpose, SILBERBRAND

Calibrated for total immersion. Stem Ø 6-7 mm, yellow coated, upper end round. Graduation and inscriptions in dark amber stain. Measuring capillary of oval cross section improves readability. Pack of 1.

Range from / to °C	Subdivision °C	Overall length mm	Filling	Cat. No.
-35 / 50	1	260	Mercury	8000 01
-10 / 50	1	250	Mercury	8000 02
-10 / 110	1	280	Mercury	8000 03
-10 / 150	1	280	Mercury	8000 04
-10 / 200	1	300	Mercury	8000 05
-10 / 250	2	320	Mercury	8000 96
-10 / 300	2	320	Mercury	8000 97
-10 / 360	2	320	Mercury	8000 98
-10 / 410	2	350	Mercury	8000 99
-35 / 50	1	260	Petroleum, red colored	8001 01
-10 / 100	1	260	Petroleum, red colored	8001 03
-10 / 150	1	260	Petroleum, red colored	8001 04

2 Stirring thermometers, solid-stem

DIN 12770, for general purpose, SILBERBRAND

Calibrated for total immersion. With reinforced bottom end for stirring in beakers, etc. Stem Ø 6-7 mm, yellow coated, upper end round. Graduation and inscriptions in dark amber stain. Measuring capillary of oval cross section for better readability. Mercury filled. Pack of 1.

Range from / to °C	Subdivision °C	Overall length mm	Cat. No.
-10 / 50	1	300	8005 02
-10 / 110	1	300	8005 03
-10 / 150	1	300	8005 04
-10 / 220	1	300	8005 06
0 / 360	2	300	8005 48
0 / 50	1	150	8006 02
-10 / 110	1	150	8006 03
0 / 150	1	150	8006 04
0 / 220	2	150	8006 46
0 / 360	2	150	8006 48

3 Enclosed-scale thermometers

DIN 12770, for general purpose, SILBERBRAND

Calibrated for total immersion. Tube Ø 7-8 mm, upper end with ring. Opal glass scale with black graduation and inscriptions. Prismatic measuring capillary, in brilliant blue. Mercury filled. Pack of 1.

Range from / to °C	Subdivision °C	Overall length mm	Cat. No.
-35 / 50	1	260	8004 01
-10 / 50	1	200	8004 02
-10 / 100	1	260	8004 03
-10 / 150	1	260	8004 04
-10 / 200	1	300	8004 05
-10 / 250	1	300	8004 06
-10 / 300	1	340	8004 07
-10 / 360	1	340	8004 08
-10 / 420	1	340	8004 09

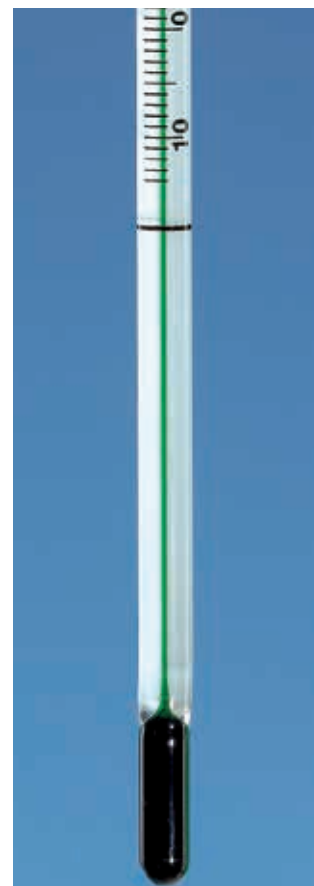
Solid-stem thermometers, without mercury

for general purpose, SILBERBRAND

Calibrated for partial immersion. Immersion depth 76 mm. Stem \varnothing 6-7 mm, white coated, upper end with ring. Graduation and inscriptions in dark amber stain. Indicator fluid is a green, wetting, thermometric liquid that is also biodegradable. Measuring capillary with large cross section for improved readability. Pack of 1.

Range from / to °C	Subdivision °C	Overall length mm	Cat. No.
-10 / 110	1	300	8002 00
-10 / 110	0.5	300	8002 02
-10 / 150	1	300	8002 04
-10 / 250*	2	300	8002 06
-10 / 360*	2	300	8002 08

* The color may fade due to thermal effects over time



No longer available in EU Member States (EU directive EG 847/2012).

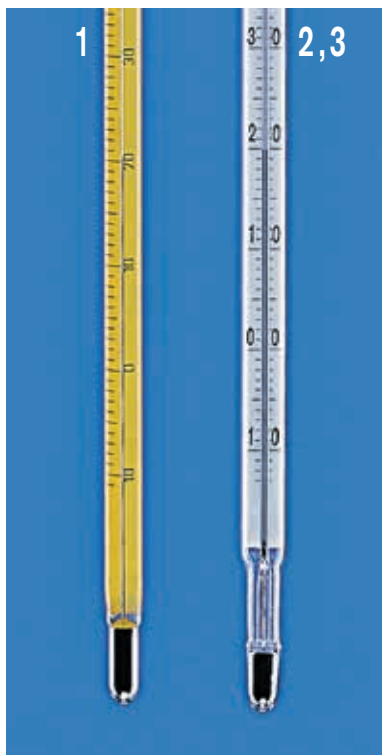
Pocket thermometers, solid-stem

DIN 12770, for general purpose, SILBERBRAND

In nickel-plated metal case with bayonet catch and clip. Case \varnothing 12 mm, overall length 140 mm. Calibrated for total immersion. Stem \varnothing 6-7 mm, yellow coated. Graduation and inscriptions in dark amber stain. Measuring capillary with oval cross section for improved readability. Mercury filled. Pack of 1.

Range from / to °C	Subdivision °C	Cat. No.
-30 / 50	1	8385 01
0 / 100	1	8385 03





1 Precision solid-stem thermometers

DIN 12770, GOLDBRAND

Calibrated for total immersion. Stem Ø 6-7 mm, yellow coated, top end round. Black graduation and inscriptions. Measuring capillary with oval cross section for improved readability. Mercury filled. Pack of 1.

Range from / to °C	Subdivision °C	Overall length mm	Suitable for official certification* Cat. No.
-10 / 50	1	250	8040 02
0 / 50	0.5	250	8040 12
0 / 50	0.2	320	8040 22
0 / 50	0.1	420	8040 32
-10 / 110	1	300	8040 03
0 / 100	0.5	300	8040 13
0 / 100	0.2	400	8040 23
0 / 100	0.1	550	8040 33
-10 / 150	1	300	8040 04
0 / 150	0.5	320	8040 14
0 / 150	0.2	450	8040 24
-10 / 250	1	350	8040 06
0 / 250	0.5	350	8040 16
-10 / 360	1	380	8040 08
0 / 360	0.5	450	8040 18
-10 / 410	1	400	8040 09

* upon request, officially calibrated with calibration certificate and/or DAkkS calibration certificate

No longer available in EU Member States (EU directive EG 847/2012).

2 Precision thermometers, enclosed-scale pattern

DIN 12775, GOLDBRAND

Calibrated for total immersion. Tube Ø 7.5-8.5 mm, upper end with Richter-pattern top and knob. Opal glass scale with black graduation and inscriptions. Prismatic measuring capillary, in brilliant blue. Mercury filled. Pack of 1.

Range from / to °C	Subdivision °C	Overall length mm	Suitable for official certification* Cat. No.
0 / 50	0.5	220	8045 12
0 / 50	0.1	420	8045 32
0 / 100**	1	305	8045 03
0 / 100	0.5	270	8045 13
0 / 100***	0.1	550	8045 33
0 / 150**	1	305	8045 04
0 / 150	0.5	350	8045 14
0 / 250**	1	350	8045 06
0 / 250	0.5	420	8045 16
0 / 360**	1	380	8045 08

* upon request, officially calibrated with calibration certificate and/or DAkkS calibration certificate

** to DIN 12778, *** to DIN 12770

3 Maximum-precision thermometers, enclosed-scale p.

DIN 12770, GOLDBRAND

For measurements in the autoclave. Reading is carried out at 23 °C. No temperature correction is required. Withstands vacuum and pressure to 5 bar. Calibrated for total immersion. Tube Ø 7-8 mm, upper end with Richter-pattern top and knob. Opal glass scale with black graduation and inscriptions. Prismatic measuring capillary. Mercury filled. Pack of 1.

Range from / to °C	Subdivision °C	Overall length mm	Suitable for official certification* Cat. No.
-10 / 150	1	260	8206 00

* upon request, officially calibrated with calibration certificate and/or DAkkS calibration certificate

1 Precision Anschutz thermometer

Precision solid-stem thermometers, DIN 12770, GOLDBRAND

Calibrated for total immersion. Stem \varnothing 5-6 mm, yellow coated, upper end with knob. Black graduation and inscriptions. Measuring capillary with oval cross section for improved readability. Mercury filled. Pack of 1.

Range from / to °C	Subdivision °C	Overall length mm	Suitable for official certification/calibratable Cat. No.
0 / 50	0.1	340	8080 32*
50 / 100	0.1	340	8080 33*
100 / 150	0.1	340	8080 34**
150 / 200	0.1	340	8080 35**
200 / 250	0.1	340	8080 36**
250 / 300	0.1	340	8080 37**
300 / 360	0.1	340	8080 38**

* upon request, officially calibrated with calibration certificate and/or DAkkS calibration certificate

** upon request, available officially tested with calibration certificate and/or DKD calibration certificate



2 Precision high-temperature thermometer

solid-stem thermometer, DIN 12778, GOLDBRAND

Calibrated for total immersion. Stem \varnothing 5-7 mm, frosted reverse side, upper end drawn out and sealed. Black graduation and inscriptions. Measuring capillary with large cross section for improved readability. Mercury filled. Pack of 1.

Range from / to °C	Subdivision °C	Overall length mm	Suitable for official certification* Cat. No.
0 / 610	2	450	8120 10

* upon request, officially calibrated with calibration certificate and/or DAkkS calibration certificate

No longer available in EU Member States (EU directive EG 847/2012).

3 Precision low-temperature thermometer

solid-stem thermometer, GOLDBRAND

Calibrated for total immersion. Stem \varnothing 6-8 mm, upper end round. Black graduation and inscriptions. Measuring capillary with large cross section for improved readability. Pack of 1.

Range from / to °C	Subdivision °C	Overall length mm	Filling	Suitable for official certification* Cat. No.
-38 / 50 ***	1	260	Hg	8050 01
-38 / 50 ***	0.5	280	Hg	8050 11
-50 / 30	1	280	Toluene, dyed red	8052 02
-50 / 30	0.5	280	Toluene, dyed red	8052 12
-100 / 30 **	1	305	Toluene, dyed red	8052 03
-100 / 30	0.5	320	Toluene, dyed red	8052 13

* upon request, officially calibrated with calibration certificate and/or DAkkS calibration certificate

** to DIN 12778, *** to DIN 12770



No longer available in EU Member States (EU directive EG 847/2012).

1 Dropping point thermometer, Ubbelohde pattern

Precision enclosed-scale thermometer with very small, rapid response mercury bulb, to DIN 12785, GOLDBRAND

Calibrated for total immersion. Top tube \varnothing 9.0-9.6 mm, bottom 3.3-3.7 mm. Upper end round. Opal glass scale with black graduation and inscriptions. Prismatic measuring capillary. Mercury filled. Mounted with metal fitting. Pack of 1.

Range from / to °C	Subdivision °C	Overall length mm	Suitable for official certification* Cat. No.
0 / 110	1	240	8711 01

* upon request, officially calibrated with calibration certificate and/or DAkkS calibration certificate

2 Cloud point and setting point thermometers

Precision enclosed-scale thermometer to DIN 12785, GOLDBRAND

Calibrated for 180 mm immersion. Top tube \varnothing 9-11 mm, bottom 4.5-5.5 mm. Upper end round. Opal glass scale with black graduation and inscriptions. Prismatic measuring capillary. Toluene filled, dyed red. Pack of 1.

Range from / to °C	Subdivision °C	Overall length mm	Suitable for official certification* Cat. No.
-70 / 50	1	360	8705 03

* upon request, officially calibrated with calibration certificate and/or DAkkS calibration certificate

3 Congealing point thermometer

Precision solid-stem thermometer, prismatic, to DIN 12785, GOLDBRAND

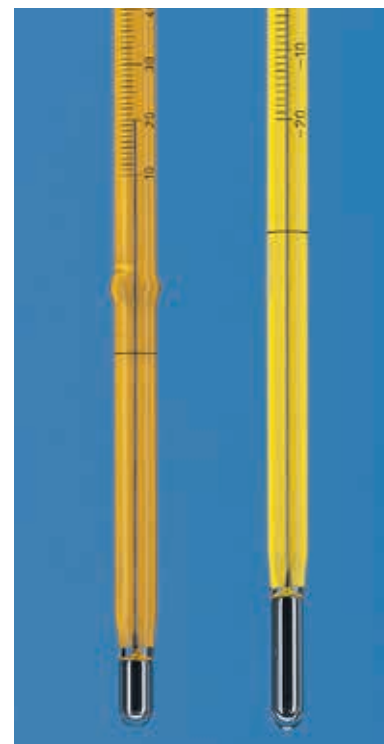
Calibrated for total immersion. Stem \varnothing 6-7 mm, yellow coated, upper end with ring. Black graduation and inscriptions. Measuring capillary of oval cross section for improved readability. Mercury filled. Pack of 1.

Range from / to °C	Subdivision °C	Overall length mm	Suitable for official certification* Cat. No.
0 / 100	0.5	300	8668 01

* upon request, officially calibrated with calibration certificate and/or DAkkS calibration certificate

ASTM thermometers

ASTM No.	Range from / to °C	Sub-division °C	Overall length mm	Immersion depth mm	Suitable for official certification*/calibratable Cat. No.
1 C	-20 / 150	1	322	76	8800 01
2 C	-5 / 300	1	390	76	8800 02
3 C	-5 / 400	1	415	76	8800 03
5 C	-38 / 50	1	230	108	8800 04
6 C	-80 / 20	1	230	76	8800 05
7 C	-2 / 300	1	385	total immers.	8800 06
8 C	-2 / 400	1	385	total immers.	8800 07
9 C ^w	-5 / 110	0.5	290	57	8800 08
10 C ^w	90 / 370	2	290	57	8800 09
11 C	-6 / 400	2	310	25	8800 10
12 C	-20 / 102	0.2	420	total immers.	8800 11
14 C	38 / 82	0.1	375	79	8800 13
15 C	-2 / 80	0.2	395	total immers.	8800 14
16 C	30 / 200	0.5	395	total immers.	8800 15
17 C ^w	19 / 27	0.1	275	total immers.	8800 16
18 C ^w	34 / 42	0.1	275	total immers.	8800 17
20 C ^w	57 / 65	0.1	275	total immers.	8800 19
22 C ^w	95 / 103	0.1	275	total immers.	8800 21
23 C	18 / 28	0.2	212	90	8800 22
24 C	39 / 54	0.2	237	90	8800 23
33 C	-38 / 42	0.2	420	50	8800 27
34 C	25 / 105	0.2	420	50	8800 28
35 C	90 / 170	0.2	420	50	8800 29
36 C	-2 / 68	0.2	405	45	8800 30
37 C	-2 / 52	0.2	395	100	8800 31
39 C	48 / 102	0.2	395	100	8800 33
40 C	72 / 126	0.2	395	100	8800 34
41 C	98 / 152	0.2	395	100	8800 35
42 C	95 / 255	0.5	395	100	8800 36
44 C ^T	18.6 / 21.4	0.05	305	total immers.	8800 86
45 C ^T	23.6 / 26.4	0.05	305	total immers.	8800 87
46 C ^T	48.6 / 51.4	0.05	305	total immers.	8800 88
49 C	20 / 70	0.2	305	65	8800 37
54 C	20 / 100.6	0.2	310	total immers.	8800 90
56 C	19 / 35	0.02	585	total immers.	8800 40
57 C ^w	-20 / 50	0.5	287	57	8800 41
61 C	32 / 127	0.2	380	79	8800 42
62 C	-38 / 2	0.1	379	total immers.	8800 43
63 C	-8 / 32	0.1	379	total immers.	8800 44
64 C ^T	25 / 55	0.1	379	total immers.	8800 45
66 C ^T	75 / 105	0.1	379	total immers.	8800 47
67 C ^T	95 / 155	0.2	379	total immers.	8800 48
82 C ^w	-15 / 105	1	162	30	8800 52
83 C ^w	15 / 70	1	171	40	8800 53
86 C ^w	95 / 175	1	167	35	8800 56
88 C ^w	10 / 200	1	287	57	8800 58
89 C	-20 / 10	0.1	370	76	8800 59
90 C	0 / 30	0.1	370	76	8800 60
91 C	20 / 50	0.1	370	76	8800 61
92 C	40 / 70	0.1	370	76	8800 62
93 C	60 / 90	0.1	370	76	8800 63
94 C	80 / 110	0.1	370	76	8800 64
95 C	100 / 130	0.1	370	76	8800 65**
102 C	123 / 177	0.2	395	100	8800 69
103 C	148 / 202	0.2	395	100	8800 70
104 C	173 / 227	0.2	395	100	8800 71**
105 C	198 / 252	0.2	395	100	8800 72**
106 C	223 / 277	0.2	395	100	8800 73**
107 C	248 / 302	0.2	395	100	8800 74**
110 C ^T	133.6 / 136.4	0.05	305	total immers.	8800 79**
114 C	-80 / 20	0.5	300	total immers.	8800 78
120 C ^T	38.6 / 41.4	0.05	305	total immers.	8800 84
121 C ^T	98.6 / 101.4	0.05	305	total immers.	8800 85



ASTM thermometers

precision solid-stem thermometers, GOLDBRAND

Design, accuracy, etc. to meet ASTM ("American Society for Testing and Materials") specifications. Clear contrast through yellow coating. Black graduation and inscriptions. Mercury filled, under nitrogen (except 6 C and 114 C which are toluene filled). All thermometers without metal fittings. Pack of 1.

No longer available in EU Member States (EU directive EG 847/2012).

* upon request, officially calibrated with calibration certificate and/or DAkkS calibration certificate,

** upon request, available officially tested with calibration certificate and/or DAkkS calibration certificate.

^w Beaded type, ^T Thermometer with auxiliary scale at 0 °C



a: Immersion depth
b: Fitting length

Precision thermometers with standard ground-glass joint

enclosed-scale thermometer, DIN 12770, NS 14/23, GOLDBRAND

Calibrated for partial immersion, with indication of the mean mercury column temperature. Top tube Ø 10.5-11.5 mm, bottom 7-8 mm. Upper end with round finished seal. Opal glass scale with black graduation and inscriptions. Prismatic measuring capillary, in brilliant blue. Mercury filled. Pack of 1.

Range from / to °C	Subdivision °C	Fitting length approx. mm	Immersion depth approx. mm	Suitable for official certification* Cat. No.
-10 / 150	0.5	50	27	8130 49
-10 / 150	0.5	60	37	8130 50
-10 / 150**	0.5	75	52	8130 51
-10 / 250	1	50	27	8130 59
-10 / 250	1	60	37	8130 60
-10 / 250**	1	75	52	8130 61

* upon request, officially calibrated with calibration certificate and/or DAkkS calibration certificate
** to DIN 12784

No longer available in EU Member States (EU directive EG 847/2012).

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