

Brannan



General Purpose and Specification Hydrometers

General Purpose and specification Hydrometers - Introduction



S Brannan and Sons Ltd is a family company manufacturing a wide range of instruments in the UK and Sweden since early in the last century.

Quality in workmanship and materials is of prime importance in the production of hydrometers and S Brannan & Sons Ltd has been ISO 9002 approved since 1991.

This catalogue lists the hydrometers most frequently requested and these are normally available for immediate delivery. Instruments can also be manufactured to specifications not in this catalogue, and to customers' own designs.

The traditional hydrometry scale of Specific Gravity (density, relative to that of water at 60°F) used in the 1960 edition of the British Standard 718 is still much in demand and the General Purpose hydrometers at the beginning of this catalogue use this scale.

On pages 3 to 5, hydrometers with special scales, such as Twaddle and Baumé are described, some of which are used by particular trades or industries.

For the Specification Density Hydrometers to BS 718 : 1991, the internationally accepted basis of scale is grams per millilitre (g/ml) with a reference temperature of 20°C (or, exceptionally 15°C).

For use in tropical countries, ISO 387 proposes that hydrometers be adjusted at a higher reference temperature, 27°C (as opposed to the previously used high adjustment of 84°F). Instruments adjusted at this higher temperature can be supplied to special order.

In addition to being adjusted for use at a specific reference temperature, hydrometers are adjusted with regard to the Surface Tension of the materials whose density is to be determined. Surface tension may be expressed specifically for example 55 mN/m (millinewtons per metre) or described as a band. Low surface tension is less than 35 mN/m and medium surface tension is between 35 and 55 mN/m.

A Calibration Service for hydrometers is also available and is described on page 9 of this catalogue.

A list of other instruments which the Company produces will be found on the inside back cover. These instruments are sold worldwide and local stocks and distributors are frequently available.



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General Purpose Specific Gravity Hydrometers

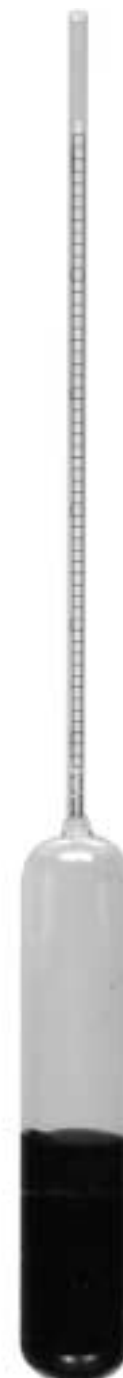
The specific gravity 60/60°F scale compares the relative density of a given liquid with that of water, at 60°F (15.6°C). The instruments listed are similar to hydrometers included in ISO 650 and in the (now superseded) 1960 issue of British Standard 718.

Two of the 'series' of hydrometers are listed below and a further series is on the next page with some wider range types.

Series S50 190mm long, covering a range span of 0.050°, sub-divided in 0.002°

Series M50 270mm long, covering a range span of 0.050°, sub-divided in 0.001°

Range °SG	To suit Surface Tension	Product No	
		Series S50	Series M50
0.60 to 0.65	Low	10/899/0	10/960/0
0.65 to 0.70		10/900/0	10/961/0
0.70 to 0.75		10/901/0	10/962/0
0.75 to 0.80		10/902/0	10/963/0
0.80 to 0.85		10/903/0	10/964/0
0.85 to 0.90		10/904/0	10/921/0
0.90 to 0.95		10/905/0	10/922/0
0.95 to 1.00		10/906/0	10/923/0
1.00 to 1.05	Medium	10/907/0	10/924/0
1.05 to 1.10		10/908/0	10/925/0
1.10 to 1.15		10/909/0	10/926/0
1.15 to 1.20		10/910/0	10/927/0
1.20 to 1.25		10/911/0	10/928/0
1.25 to 1.30		10/912/0	10/929/0
1.30 to 1.35		10/913/0	10/930/0
1.35 to 1.40		10/914/0	10/931/0
1.40 to 1.45		10/915/0	10/932/0
1.45 to 1.50		10/916/0	10/970/0
1.50 to 1.55		10/917/0	10/971/0
1.55 to 1.60		10/918/0	10/972/0
1.60 to 1.65		10/919/0	10/973/0
1.65 to 1.70		10/990/0	10/974/0
1.70 to 1.75		10/991/0	10/975/0
1.75 to 1.80		10/992/0	10/976/0
1.80 to 1.85		10/993/0	10/977/0
1.85 to 1.90		10/994/0	10/978/0
1.90 to 1.95		10/995/0	10/979/0
1.95 to 2.00		10/996/0	10/980/0



General Purpose Specific Gravity Hydrometers

The hydrometers on this page are all adjusted at 60°F (15.6°C)



Series M100

250mm long, cover a span of 0.100°, sub-divided 0.002°.

Range °SG	To suit Surface Tension	Product No
0.60 to 0.70	Low	10/940/0
0.70 to 0.80		10/941/0
0.80 to 0.90		10/942/0
0.90 to 1.00		10/943/0
1.00 to 1.10	Medium	10/944/0
1.10 to 1.20		10/945/0
1.20 to 1.30		10/946/0
1.30 to 1.40		10/947/0
1.40 to 1.50		10/948/0
1.50 to 1.60		10/949/0
1.60 to 1.70		10/950/0
1.70 to 1.80		10/951/0
1.80 to 1.90		10/952/0
1.90 to 2.00	10/953/0	

200 Series

250mm long, cover a span of 0.200°, sub-divided 0.002°.

Range °SG	To suit Surface Tension	Product No
0.60 to 0.80	Low	10/500/0
0.80 to 1.00		10/501/0
1.00 to 1.20	Medium	10/502/0
1.20 to 1.40		10/503/0
1.40 to 1.60		10/504/0
1.60 to 1.80		10/505/0
1.80 to 2.00		10/506/0

Range Finder Hydrometers

To suit medium surface tension. These instruments are suitable for less accurate readings and are frequently used to help select the appropriate hydrometer for subsequent accurate determinations.

Length mm	Range °SG	Sub Division	Product No
320	0.70 to 1.00	0.005	10/530/0
250	1.00 to 1.50	0.005	10/531/0
250	1.50 to 2.00	0.005	10/532/0
320	0.70 to 2.00	0.010	10/550/0
320	1.00 to 2.00	0.010	10/551/0



Twaddle & Baumé Hydrometers

Twaddle Hydrometers

The Twaddle scale is a simplified scale based on specific gravity where 0° Twaddle equates to SG60/60°F of 1.00 (that of water) and each degree Twaddle equals 0.005°SG.

These hydrometers are available in 2 lengths each with single degree subdivisions and are adjusted for use at 15.6°C (60°F) for medium surface tension liquids.

Twaddle Number	Range	Product No	
		160mm	300mm
1	0 to 24	10/101/0	10/151/0
2	24 to 48	10/102/0	10/152/0
3	48 to 74	10/103/0	10/153/0
4	74 to 102	10/104/0	10/154/0
5	102 to 138	10/105/0	10/155/0
6	138 to 170	10/106/0	10/156/0

Baumé Hydrometers

The Baumé hydrometers listed are for liquids heavier than water.

Zero degrees Baumé equates to an SG 60/60°F of 1.00.

This scale uses the accepted relationship where a degree Baumé

$$= 145 - \frac{145}{\text{SG } 60/60^\circ\text{F}}$$

The instruments are all 250mm long and are adjusted at 15.6°C (60°F) and suitable for medium surface tension liquids.

Range	Sub Division	Product No
0 to 30	0.5	10/200/0
0 to 50	1.0	10/201/0
0 to 70	1.0	10/202/0
0 to 10	0.1	10/203/0
10 to 20	0.1	10/204/0
20 to 30	0.1	10/205/0
30 to 40	0.1	10/206/0
40 to 50	0.1	10/207/0
50 to 60	0.1	10/208/0
60 to 70	0.1	10/209/0



Special Purpose Hydrometers

Milk Hydrometers to BS 734 : Part 1 : 1973

Calibrated in grams/ml and adjusted at 20°C. Designations 1 and 2 are for milk of normal density, 1A and 2A for milk of low density.

Hydrometer cylinders are listed on page 7.

Max Length mm	Designation	Range g/ml	Sub Division	Product No
240	No 1	1.025 to 1.035g/ml	0.0002	10/602/0
240	No 1A	1.015 to 1.025g/ml	0.0002	10/603/0
215	No 2	1.025 to 1.035g/ml	0.0005	10/604/0
215	No 2A	1.015 to 1.025g/ml	0.0005	10/605/0

Specific Gravity Milk Hydrometer

160mm long. Scale calibrated in °SG, sub-divided every 0.001 and adjusted at 15.6°C (60°F).

Range °SG	Product No
1.00 to 1.04	10/601/0

Milk Hydrometer in Degrees Quevenne

1°Quevenne equals 0.001°SG. This hydrometer is 250mm long, sub-divided in single degrees and adjusted at 15.6°C (60°F).

Range °Quevenne	Product No
15 to 40	10/660/0

Latexometers

These instruments are calibrated in grams of dry rubber per litre of latex and adjusted at 28.9°C (84°F). 250mm long and sub-divided every 10g/l.

Range g/l	Product No
50 to 450	10/611/0
50 to 250	10/612/0

Brinometers

Measuring the percentage saturated solution of brine in water at 15.6°C (60°F). 230mm long and sub-divided 1%.

Range % Brine	Product No
0 to 100	10/621/0

Urinometers

Measuring the specific gravity of urine at 15.6°C (60°F). 160mm long and sub-divided 0.001.

Range SG	Product No
1.00 to 1.06	10/651/0



Special Purpose Hydrometers

Range	Sub Division	Length mm	Product No
0 to 10	0.1	300	10/250/0
10 to 20	0.1	300	10/251/0
20 to 30	0.1	300	10/252/0
30 to 40	0.1	300	10/253/0
40 to 50	0.1	300	10/254/0
50 to 60	0.1	300	10/255/0
60 to 70	0.1	300	10/256/0
0 to 20	0.2	260	10/257/0
20 to 40	0.2	260	10/258/0
40 to 60	0.2	260	10/259/0
60 to 80	0.2	260	10/260/0

Brix Hydrometers

Measuring the percentage of sugar and commonly used in wine production. The Brix scale is the equivalent to Balling and Plato scales. Adjusted at 15.6°C (60°F) for a surface tension 55mN/m.

Range	Sub Division	Product No
0.99 to 1.04	0.0005	10/750/0

Draft Survey Hydrometer

320mm long and adjusted at 15°C. Supplied complete with certificate. Measuring the apparent density in kg/litres, they are used for ship draft survey calculations.

Range % Alcohol	Sub Division	Product No
0 to 100	1	10/670/0

Gay Lussac (Alcoholometer)

250mm long, measuring alcohol % by volume. Sub-divided 1%, adjusted at 15°C.

Range °SG	Sub Division	Product No
1.100 to 1.300	0.10	10/721/0

Battery Testing Hydrometer Kit

Adjusted for use at 20°C and comprising a glass body with rubber bulb and nozzle, to withdraw a sample of the electrolyte, and a 125mm glass hydrometer with coloured zones. Complete with instructions. Assembled length 310mm.

Range °SG	Sub Division	Product No
0.98 to 1.12	0.002	10/801/0

Wine & Beer Hydrometer

Measuring the specific gravity of wine and beer and designed for home use. This hydrometer will monitor the fermentation process and allows the percentage alcohol to be determined easily with a zoned scale. Adjusted at 20°C.

Range °C & °F	Length mm	Product No
-5 - 105 C & F	205	21/594/3

Wine & Beer Thermometer

Companion to the Hydrometer for home use. Red spirit filled tube with easy to read scale.

BS 718 : 1991 Density Hydrometers

BS 718 : 1991 is generally aligned with ISO 387 and ISO 649. The specification includes five series and three sub-series of Hydrometers, of which the most widely used are listed. They are calibrated using the accepted units of grams per millilitre (g/ml) and are adjusted except for the "SP" sub-series at 20°C.



Series S50 190mm long, sub-divided in 0.002g/ml

Series M50 270mm long, sub-divided in 0.001g/ml

Series L50 330mm long, sub-divided in 0.0005g/ml

All three Series have range spans of 0.050g/ml.

Range °SG	To suit Surface Tension	Product No		
		Series S50	Series M50	Series L50
0.60 to 0.65	Low	10/300/0	10/330/0	10/360/0
0.65 to 0.70		10/301/0	10/331/0	10/361/0
0.70 to 0.75		10/302/0	10/332/0	10/362/0
0.75 to 0.80		10/303/0	10/333/0	10/363/0
0.80 to 0.85		10/304/0	10/334/0	10/364/0
0.85 to 0.90		10/305/0	10/335/0	10/365/0
0.90 to 0.95		10/306/0	10/336/0	10/366/0
0.95 to 1.00		10/307/0	10/337/0	10/367/0
1.00 to 1.05	Medium	10/308/0	10/338/0	10/368/0
1.05 to 1.10		10/309/0	10/339/0	10/369/0
1.10 to 1.15		10/310/0	10/340/0	10/370/0
1.15 to 1.20		10/311/0	10/341/0	10/371/0
1.20 to 1.25		10/312/0	10/342/0	10/372/0
1.25 to 1.30		10/313/0	10/343/0	10/373/0
1.30 to 1.35		10/314/0	10/344/0	10/374/0
1.35 to 1.40		10/315/0	10/345/0	10/375/0
1.40 to 1.45		10/316/0	10/346/0	10/376/0
1.45 to 1.50		10/317/0	10/347/0	10/377/0
1.50 to 1.55		10/318/0	10/348/0	10/378/0
1.55 to 1.60		10/319/0	10/349/0	10/379/0
1.60 to 1.65		10/320/0	10/350/0	10/380/0
1.65 to 1.70		10/321/0	10/351/0	10/381/0
1.70 to 1.75		10/322/0	10/352/0	10/382/0
1.75 to 1.80		10/323/0	10/353/0	10/383/0
1.80 to 1.85		10/324/0	10/354/0	10/384/0
1.85 to 1.90		10/325/0	10/355/0	10/385/0
1.90 to 1.95	10/326/0	10/356/0	10/386/0	
1.95 to 2.00	10/327/0	10/357/0	10/387/0	



BS 718 : 1991 Density Hydrometers

Range °SG	To suit Surface Tension	Product No
0.60 to 0.70	Low	10/400/0
0.70 to 0.80		10/401/0
0.80 to 0.90		10/402/0
0.90 to 1.00		10/403/0
1.00 to 1.10	Medium	10/404/0
1.10 to 1.20		10/405/0
1.20 to 1.30		10/406/0
1.30 to 1.40		10/407/0
1.40 to 1.50		10/408/0
1.50 to 1.60		10/409/0
1.60 to 1.70		10/410/0
1.70 to 1.80		10/411/0
1.80 to 1.90		10/412/0
1.90 to 2.00	10/413/0	

Series M100

Adjusted at 20°C, these hydrometers have a range span of 0.100g/ml with a length of 250mm and are sub-divided every 0.002g/ml.



Range g/ml	Product No
0.60 to 0.65	10/450/0
0.65 to 0.70	10/451/0
0.70 to 0.75	10/452/0
0.75 to 0.80	10/453/0
0.80 to 0.85	10/454/0
0.85 to 0.90	10/455/0
0.90 to 0.95	10/456/0
0.95 to 1.00	10/457/0
1.00 to 1.05	10/458/0
1.05 to 1.10	10/459/0

Sub-series M50 SP

This sub-series has a greater accuracy than the standard M50 Series, and is only available over a limited range of density. The length is 270mm and the range span covers 0.050g/ml with subdivisions to 0.001g/ml. They are adjusted at 15°C and suitable for low surface tension. This **Sub-series** is commonly used in the Petroleum industry and corresponds to **IP 160**.

Internal Depth mm	Suitable for Hydrometer Series	Product No
200	S50	10/000/0
300	M50 M100	10/000/1
330	L50	10/000/2

Hydrometers Cylinders

These three cylinders are available with a standard internal diameter of 37mm.

Designation	Range	Sub Div	Product No
A40C/Total	-0.5 +40.5°C	0.1°C	51/061/0
B60C/Total	-21 +61°C	0.2°C	51/066/0

Thermometers for use with Hydrometers

BS 718 : 1991 recommends these thermometers for precision work. They can be supplied with a **UKAS Calibration Certificate** which should be specified at the time of ordering.

ASTM E 100 Hydrometers

The American Society for Testing and Materials (ASTM) Specification E 100 describes hydrometers using the API (American Petroleum Institute) scale and others in degrees Specific Gravity.

330mm Long Plain Hydrometers adjusted at 60°F for Petroleum Products and other liquids of low surface tension.

ASTM No	API Range	Sub Div	Product No
1H	-1 to 11	0.1°	09/001/0
2H	9 to 21	0.1°	09/002/0
3H	19 to 21	0.1°	09/003/0
4H	29 to 41	0.1°	09/004/0
5H	39 to 51	0.1°	09/005/0
6H	49 to 61	0.1°	09/006/0
7H	59 to 71	0.1°	09/007/0
8H	69 to 81	0.1°	09/008/0
9H	79 to 91	0.1°	09/009/0
10H	89 to 101	0.1°	09/010/0

ASTM No	°SG Range	Sub Div	Product No
82H	0.650 to 0.700	0.0005°	09/082/0
83H	0.700 to 0.750	0.0005°	09/083/0
84H	0.750 to 0.800	0.0005°	09/084/0
85H	0.800 to 0.850	0.0005°	09/085/0
86H	0.850 to 0.900	0.0005°	09/086/0
87H	0.900 to 0.950	0.0005°	09/087/0
88H	0.950 to 1.000	0.0005°	09/088/0
89H	1.000 to 1.050	0.0005°	09/089/0
90H	1.050 to 1.100	0.0005°	09/090/0

330mm Long Hydrometers adjusted at 60°F for heavier liquids of medium surface tension.

ASTM No	°SG Range	Sub Div	Product No
98H	0.950 to 1.000	0.0005°	09/098/0
111H	1.000 to 1.050	0.0005°	09/111/0
112H	1.050 to 1.100	0.0005°	09/112/0
113H	1.100 to 1.150	0.0005°	09/113/0
114H	1.150 to 1.200	0.0005°	09/114/0
115H	1.200 to 1.250	0.0005°	09/115/0
116H	1.250 to 1.300	0.0005°	09/116/0
117H	1.300 to 1.350	0.0005°	09/117/0
118H	1.350 to 1.400	0.0005°	09/118/0
119H	1.400 to 1.450	0.0005°	09/119/0
120H	1.450 to 1.500	0.0005°	09/120/0

Soil Hydrometers 280mm long for use in Soil Analysis. Adjusted at 68°F.

ASTM No	°Specific Gravity Range	Sub Div	Product No
151H	0.995 to 1.038	0.001°	09/151/0
ASTM No	Grams/Litre Range	Sub Div	Product No
152H	-5 to 60	1.0°	09/152/0



Calibration Services

S Brannan and Sons Ltd provide a comprehensive calibration service to cover the complete range of products supplied. In addition to density measurement, calibration certificates can be provided for pressure and temperature measuring instruments. The company operate a UKAS accredited laboratory for temperature measurement and full details are provided in catalogue LAB.1.

For Hydrometers a fully traceable Works Certificate is available or, if required, a UKAS certificate can be supplied. Customers may wish to submit hydrometers for certification, or, to purchase new instruments complete with certificate. It is recommended that hydrometers for testing should be selected as conforming to a recognised standard such as BS 718 : 1991. Prior to calibration each instrument is carefully examined to ensure compliance with any relevant specification



Other Catalogues available on Request

The Company produces a wide range of instruments with many applications. Catalogues are available on request covering one or more of the following product groups.

- Laboratory and Specification Thermometers
- Educational and Scientific Thermometers
- Environmental and Meteorological Instruments
- Healthcare Products
- Thermometers and other Instruments for the Home and Garden
- Promotional Products
- Industrial Glass Pipe Thermometers
- Dial Thermometers and Pressure Gauges for Heating and Ventilation,
Process and Refrigeration
- Dial Instruments for Shipping and Exhaust Gas Temperatures

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