

Product information sheet



HYDROMETERS

What is a Hydrometer?

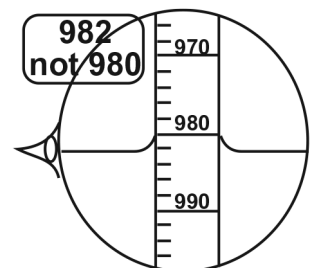
- It's an instrument used to measure the density of a liquid compared to that of water.
- It's made up of a thin glass or plastic tube sealed at both ends with a graduated or printed scale calibrated to a specific gravity. One end of the tube is bulb shaped and weighted with a ballast of steel shot which causes the instrument to float upright in a liquid.
- The lower the density of the liquid, the deeper the hydrometer sinks.
- Depending on the intended use, they can vary in size and will feature different types of scales.

Different kinds of Hydrometer and their applications

- In the standard hydrometer scale, known as the Specific Gravity scale, distilled water equals 1, the initial point of measurement, with two general classes; liquids heavier than water are scaled above 1.000 sg and liquids lighter than water are scaled below 1.000 sg.
- In addition to reading Specific Gravity values, scales on a hydrometer can be calibrated to:
 - o Brix scale – used in the wine, sugar, fruit juice and honey industries.
 - o Baume scale – measure specific gravity on evenly spaced scales, one for liquids heavier than water and one for liquids lighter than water.
 - o Alcohol scale – measure specific gravity before and after a liquid ferments, the difference is referenced to an alcohol scale to determine percent alcohol by weight .
 - o API scale – measure of how light or heavy a petroleum-based liquid is compared to water, designed to allow comparison between densities of petroleum liquids.
 - o Isopropyl Alcohol scale – measures % by volume of isopropyl alcohol.
 - o Sodium Chloride scale – measures saturation and concentration of sodium chloride.
 - o Salt Brine scale – measures either saturation in water or by weight of.
 - o Calcium Chloride scale – indicating % of salt in a solution.
 - o Draft Survey scale – measures density of sea/fresh water.

Using a Hydrometer

- To use a hydrometer, fill the hydrometer jar with the sample liquid. Place the hydrometer in the jar and give it a quick twirl to dislodge any air bubbles.
- Once the hydrometer has settled, take the reading from the appropriate scale.
- For the measurement to be accurate, the sample liquid must be at 60°F (15.5°C). If the liquid is not at 60°F, the measurement should be adjusted.
- When reading transparent liquids, the eye should be placed slightly below the plane of the surface of the liquid and then raised slowly until this surface, seen as an ellipse, appears as a straight line. The point at which the line sits on the hydrometer scale should be recorded as the reading of the hydrometer.



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- When a liquid is not sufficiently clear and a reading cannot be made as described above, it will be necessary to read from above the surface and estimate as accurately as possible, the point to which the liquid rises on the hydrometer.

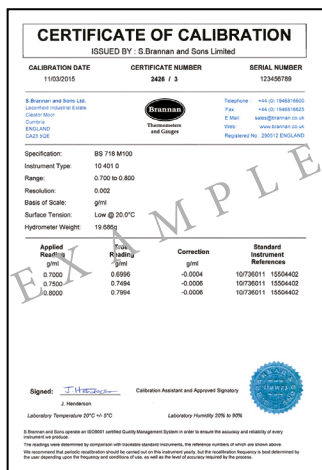
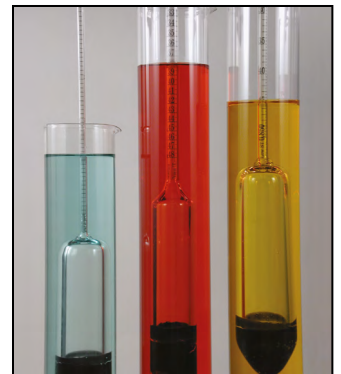
Accuracy

- Depends on 3 main factors –
 - o Cleanliness – hydrometer and hydrometer jar, increase measuring accuracy
 - o Temperature – hydrometer and liquid should be same temperature of the surrounding atmosphere
 - o Proper Immersion – hydrometer jar should have an inside diameter of approximately 1” (25mm) greater than the outside diameter of the hydrometer
- **Question:** How do I select the correct hydrometer for my needs?
- **Answer:** Anyone using a hydrometer needs to have a general idea of the scale they need and the anticipated value on that scale for the process they are doing. Researching the industry norms for the process either online or via industry contacts can help you make the correct selection.

Measuring cylinders

Hydrometer jars are used to assist in the reading of the hydrometer, the size of which depends on the size of the hydrometer but should be at least 1” taller than the hydrometer.

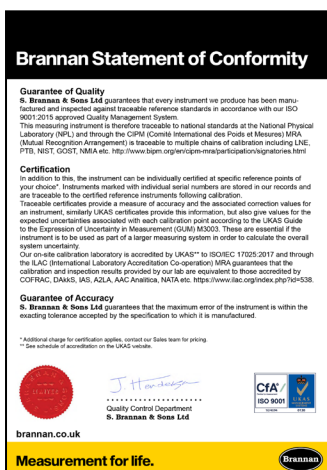
The Brannan range of cylinders are available with a standard internal diameter of 37mm.



Calibration

All hydrometers can be supplied with UKAS certification*, certificate traceable to recognised national standard or statement of conformity, if required.

* UKAS calibration carried out via a third party laboratory.



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Cleanliness and handling

Cleanliness increases the measuring accuracy.

For consistent and accurate readings, the hydrometer should be free of fingerprints from handling the body, and free of test liquids or materials. The jar must be clean and free of all impurities. Clean hydrometers and measuring cylinders with de-ionized or distilled water and dry them with a lint-free cloth.

NOTE: After cleaning, ensure the measuring instrument is only handled at the neck point above the scale reading. Hold the hydrometer carefully between thumb and forefinger, at the top of the stem only, when immersing in the jar for testing.



Packing and storage

Hydrometers are extremely delicate glass instruments. Brannan hydrometers are packed individually to avoid breakages. We recommend placing the instruments back into the packaging after each measurement or place frequently used instruments in a rack. When packing or handling, before and after use, hold the hydrometer by the body to protect the instrument, shielding the stem from shock or impact.

Hydrometers should be stored in clean, dry, safe places. They also should not be subjected to extreme temperatures.