



D4040

DRAFT SURVEY HYDROMETER

0.990/1.040 kg/litre in air at 15°C

FOR DETERMINING THE DENSITY OF SEA/FRESH WATER

CERTIFICATE OF CONFORMITY AND INSTRUCTION LEAFLET

Batch Number: 829/12 Draft Survey Hydrometer Numbers: 15/622201 to 15/622250

Range 0.990 to 1.040 kg/litre in air at 15°C calibrated for use in seawater, a liquid of medium surface tension.

This instrument has been tested against UKAS Calibrated equipment, and has been found to be accurate within ± 0.0005 kg/litre in air at 15°C.

Date: 03/09/2015

Group Quality Manager

When carrying out a Draft Survey on bulk carrying cargo vessels, it is important that the weight to volume relationship of the supporting water is clearly understood and accurately reported.

Many hydrometers at present in use for Draft Surveys are not really suitable for the purpose, but **ZEAL** have designed, in conjunction with S.G.S. Van Bree N.V., Antwerp, member of the Société Générale de Surveillance S.A., Geneva, this special Draft Survey Hydrometer of the required accuracy, incorporating the following features.

- A range of 0.990 to 1.040 kg/l, suitable for use in sea and fresh water and thus covering the range of densities normally required for Draft Surveys.
- A scale graduated in *density* kg/l in *air* (density in air is sometimes termed *apparent density*). This permits the weight to be obtained by multiplying the scale reading by the volume in m³ of water displaced.
- Calibration of the hydrometer for use in sea water, a liquid of medium surface tension.
- Manufactured from glass, thus permitting certification by U.K.A.S approved density laboratories if required. Alternatively, a **ZEAL** 3 point Works Certificate of Calibration can be supplied. .

INSTRUCTIONS FOR USE

1. A clean, representative sample of the supporting water should be obtained by means of a sampling can or other suitably designed sampling apparatus. A sample of at least 1 litre will help to ensure that the temperature and density do not change unduly between collection of the sample and taking the readings. The depth of water in the container must be sufficient to allow at least 25mm clearance between the bottom of the hydrometer and the bottom of the container. The internal diameter of the container or jar should be at least 50mm.
2. The number of samples to be taken, also at which depths and at which positions outside the vessel they should be taken, may be important according to the circumstances.
3. Readings may be taken by lowering the hydrometer into a suitably shaped sampling apparatus or by transferring the water to a suitable glass test jar. If a metal or other non-transparent container is used for taking readings, ensure that it is full to the brim. If a glass test jar is used, it should preferably be rinsed first, so as to avoid undue temperature changes. The container or test jar should be shielded from draughts, which may affect the readings.
4. The reading must be taken in the sampling apparatus or glass test jar as rapidly as possible. Undue delay in taking the reading could result in temperature changes leading to inaccurate results. In case of doubt, a repeat sample should be taken in order to verify the first observation.
5. Ensure that the *stem* of the hydrometer and the *surface* of the water sample are free from grease and oil since the accuracy of the readings could be adversely affected.
6. Hold the hydrometer vertically by the *top* of the stem and gently lower it into the water sample until it floats freely.
7. Take the hydrometer reading where the *level* liquid surface meets the graduated scale (see illustration overleaf).