

Density Cups

Density is defined as weight per unit volume at a specified temperature. Density cups are used for quality control because errors in paint composition will result in different density readings. Density cups have also been described as liquid pycnometers.

BYK-Gardner Density cups use a cylindrical shape which has a large opening for easy filling, emptying, and cleaning. The tightly fitted stainless steel covers have an upward slope to a small hole in the center to allow excess sample material to be expelled without entrapping air bubbles, which increases accuracy.



Four Cups Available

Regular US Cup with a volume of 83.2 ml

- Mini cup with a volume of 8.32 ml. The Mini cup offers a direct conversion to lbs/gal, eliminating the need for dividing the full cup weight by 10.
- British Imperial Standard size with a volume of 100 ml.
- ISO standard size with a volume of 100 ml and 50 ml.

All the BYK-Gardner Density Cups come uncertified except for the ISO Cups with part numbers 1130 and 1140. Certification is available for a fee. The certification is provided by BYK-Gardner's ISO 17025 accredited service departments. Please contact your BYK-Gardner representative for pricing.



ASTM Cup & ISO Cup

In North America the term "weight per gallon" (wpg) is used in the coating industry. The volume of the weight per gallon cup is such that, at a specified temperature, the numerical value in grams of water that it can hold is equal to, or ten times greater than, the numerical value in pounds of water that a gallon container can hold. A US gallon of water weighs 8.32 pounds, thus a Regular US weight per gallon cup holds ten times this amount in volume, 83.2 ml. When taking a measurement, the cup and the sample must be brought to the same equilibrium temperature (usually 25 °C or 77 °F). Regular and Imperial Cup tolerance are 0.5%; the Mini Cup tolerance is 1.2% measured at 25 °C with distilled water.

ISO Cups are machined from stainless steel, and use the metric system. The cups hold a defined volume of liquid of 50 or 100 ml. A tolerance of 0.1% is guaranteed. Testing is carried out in accordance with ISO at 23 °C ± 2 °C



Operating Procedure

Weigh cleaned density cup empty and record weight

- Temper density cup and test liquid (Refer to appropriate test standard for proper temperature)
- Fill density cup
- Put cover on without tilting
- Avoid air bubbles
- Remove overflowing liquid carefully with absorbent cloth
- Weigh filled density cup
- Calculate density



Standards

ASTM D333
ASTM D1475
ISO 2811
DIN 53217
BS 3900-A19

Catalog Number	Short Description	Volume	Volume Description	Dimensions	Dimensions
1130	ISO Density Cup L certified	100 ml	ISO-Volume certified	Ø 5.2 x 6.2 cm	Ø 2.05 x 2.44 in
1132	ISO Density Cup L		ISO-Volume		
1140	ISO Density Cup S certified	50 ml	ISO-Volume certified	Ø 5.2 x 3.4 cm	Ø 2.05 x 1.34 in
1142	ISO Density Cup S		ISO-Volume		
9654	US Density Cup	83.2 ml	US-Volume	Ø 3.8 x 7.6 cm	Ø 1.5 x 3 in
9655	US Density Cup w/tare weight		US-Volume w/weight		
9658	BSI Density Cup	100 ml	BSI-Volume	Ø 3.8 x 8.9 cm	Ø 1.5 x 3.5 in
9659	BSI Density Cup w/tare weight		BSI-Volume w/weight		
9664	US Mini Cup w/tare weight	8.32 ml	US-Volume w/weight	Ø 2.5 x 3.2 cm	Ø 1 x 1.25 in
9665	US Mini Cup		US-Volume		