

# GARDCO Standard Ford Viscosity Cups

## Important Features

- $\pm 2\%$  Production Tolerance.
- Close production tolerance permits replacement and interchange of orifices without loss of acceptable accuracy.
- Save a considerable sum. Purchase only one cup with all six orifices instead of six complete cups.
- New precision "Snap-In" "Snap-Out" orifices make it easy to change cup orifice size.
- Six orifice sizes: No. 0,1,2,3,4,5.
- Series range extends from 2 to 1413 centistokes.
- New seconds to centistokes conversion table furnished with every cup.
- Calibration traceable to the U.S. National Institute of Standards and Technology.
- Qualifies under MIL STD 45662A. Conforms to ISO 9000 when ordered with calibration certification.
- Cup No.5 compatible to requirements of Federal specification MMM-A-121 for adhesives.
- Viscosity wall chart available describing our full line of 45 Gardco viscometers (referencing item VI-VCC-4).



## Additional Features

- The flow formula for each cup in the series has been selected to provide results which are close as possible to an average of other similar Ford Cups.
- The flow formula as applied to the physical dimensions of each cup in the series has been confirmed with the use of standard oils traceable to the National Institute of Standards and Technology and other liquids from essentially zero viscosity to a viscosity proportional to 150 seconds flow time.
- Cup dimensions influencing flow time conformed to those specified in ASTM D 1200 except for very minor adjustment of orifice diameter.
- Weight of the cup has been reduced 20% to minimize influence of cup temperature on the temperature of the material being measured.
- The top interior of the orifice has been shaped to provide a sharper break in the stream as the cup empties. The design also provides for a better definable orifice length with respect to theory.
- The taper fit of the orifice eliminates hard to clean areas.
- The orifice is readily removable with furnished wood dowel and inserted without the use of tools.
- The design of the bottom of the cup gives increased protection to the orifice.
- The drip ring has been deepened to accommodate a greater amount of material.
- A specially designed tripod support is available to enhance the use of the cup.

## Procedure for Use

It is helpful and results will be more consistent if all viscosity determinations are made in a room that is free from drafts or quick temperature change and is within  $\pm 3^{\circ}\text{C}$  ( $\pm 5^{\circ}\text{F}$ ) of the viscosity measuring temperature of  $25^{\circ}\text{C}$ .

1. Adjust the sample to measuring temperature, usually  $25^{\circ}\text{C}$  ( $77^{\circ}\text{F}$ )
2. Select the cup that will provide readings which are well within the cup range.
3. Make sure that the cup is clean and place it into its support.
4. Make sure that the cup is level.
5. Place a finger under the cup orifice and fill the cup with bubble free test material. The cup is full when the meniscus disappears where the liquid joins the sidewall of the cup. If the cup is overfilled, scrape the excess into the cup well with a spatula or by passing the cover plate across the top of the cup. Note that the finger can be removed from the orifice when the cover plate is in place.



Top view of cup showing dripwell

Bottom view of cup

6. Start a timer as the cover plate is removed from the cup.
7. Determine the temperature of the efflux stream. If there is a significant change during the test it should be repeated.
8. Stop the timer at the first break of the efflux stream, one or two inches below the orifice.
9. Record the cup type and number, measured temperature, and efflux time. For best accuracy, average three or more readings.
10. Promptly clean the cup giving special care to the orifice.