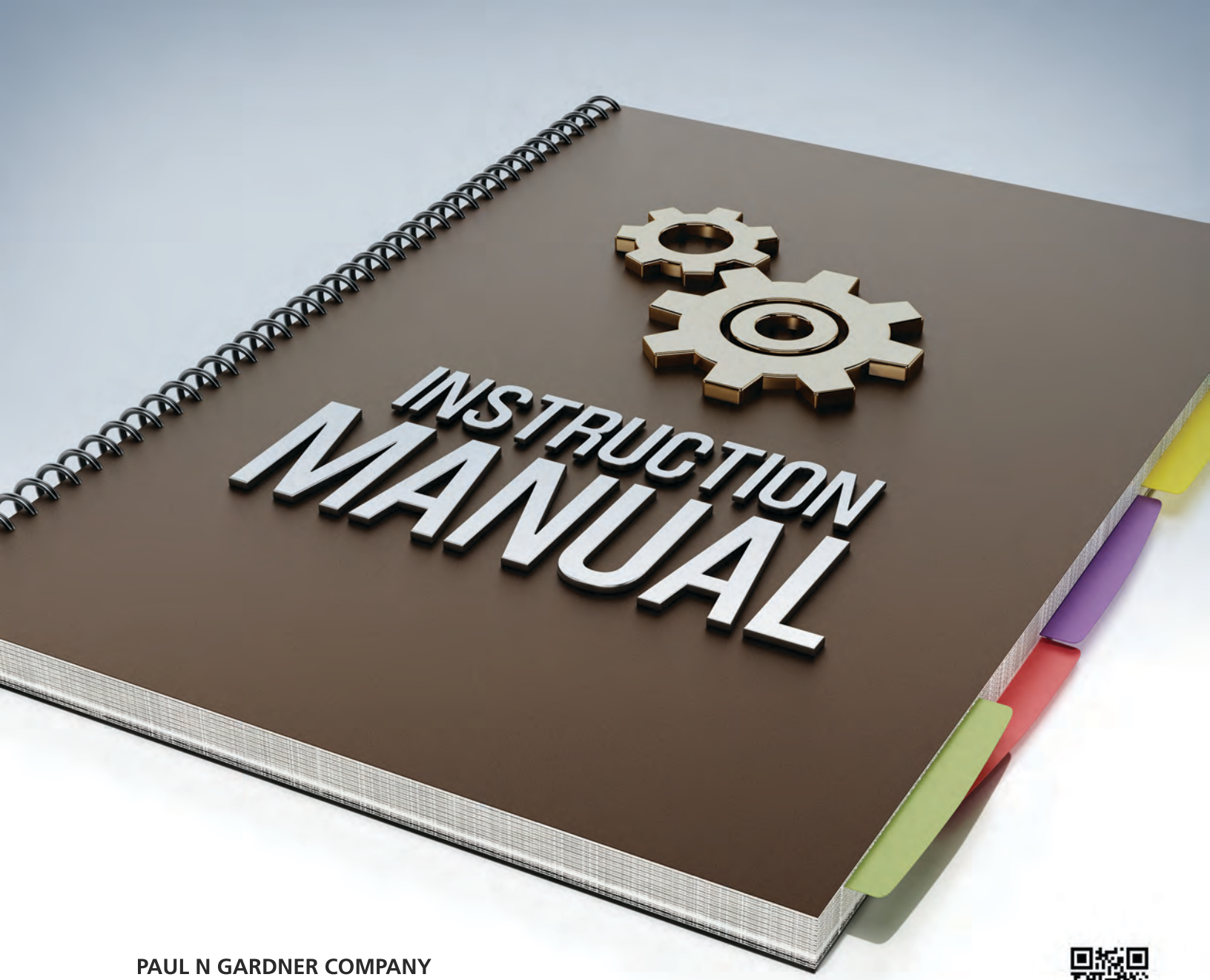


**PAUL N GARDNER COMPANY**
9104 GUILFORD ROAD, SUITE H
COLUMBIA, MD 21046 USA

EMAIL GARDCO@ALTANA.COM
PHONE +1-954-946-9454

# INSTRUCTIONS

## GARDCO DISTRIBUTED PRODUCTS

GARDCO®

**DOWNLOAD**
**Insta Visc Mobile App**
Viscosity and Drain Time Calculator

Available on the App Store

GET IT ON Google Play

# EZ™/Zahn Dip Viscosity Cup #1 Quick Start Manual

Calibrated Viscosity Cups Designed, Produced & Sold by Paul N. Gardner

| SPECIFICATION TABLE | | | | |
|---|---|---|---|---|
| Cup Number | Seconds Range | Centistoke Range | Midrange Sensitivity (**) | Calibration Oil Number/ Centistokes (*) |
| 1 | 40 to 60 | 10 to 36 | 1.3 | G-10/19 |
| 2 | 20 to 60 | 19 to 156 | 3.3 | G-60/117 |
| 3 | 12 to 60 | 64 to 596 | 10.5 | G-200/458 |
| 4 | 10 to 60 | 79 to 784 | 13.9 | G-200/458 |
| 5 | 10 to 60 | 161 to 1401 | 24.2 | G350/878 |

(*) Centistoke values are nominal - Actual values printed on labels
(**) Stated as centistokes per second of efflux time

## INSTRUCTIONS FOR USE

1. Select the proper number cup to be used from the specification table, which is dependent on the expected viscosity range of the material to be measured.
2. Insure that the cup is clean and that there is no residual dried material in or around the orifice. If necessary use a length of nylon fishing line to clean the orifice.
3. Adjust the temperature, if necessary, of the test material.
4. Completely immerse the cup into the material to be measured in a location free from bubbles or foam, holding the cup vertically by means of the stainless steel split key ring.
5. Measure and record the temperature of the material that is encompassed by the cup.
6. Hold cup vertically by inserting index finger into handle ring. In a quick, steady motion, lift the cup out of the sample material, starting the timer when the top edge of the cup breaks the surface. During the flow time, hold the cup no more than 6" above the level of the sample material.
7. Stop the timer when the first definite break in the stream at the base of the cup is observed.
8. Record the number of seconds of efflux time, temperature and the cup number. (Example: No. 2, EZ™ Dip Cup, 35.0 seconds at 25.1°C.) As an option to the preceding step, refer to the conversion table furnished with the cup and as indicated on the following page, determine the centistoke viscosity for the measured efflux time in seconds and record this value and the measured temperature. (Example: 25.3 centistokes at 25.1°C.) Download the Insta-Visc Mobil App to quickly and easily calculate viscosity or draintime.
9. Promptly clean the cup unless it will be used immediately for a rerun of the same material.

## CARE of CUP

EZ™ viscosity cups are ruggedly constructed with all parts made of stainless steel, except the nameplate, and will give many years of satisfactory service requiring only thorough cleaning after each use. It is recommended, however, that calibration of the cup be confirmed periodically, or if dropped or otherwise subjected to damage, use the appropriate standard oil selected from the specification table. The listed viscosity value of these oils as shown on the container label is traceable to the National Institute of Standards and Technology.

## CONVERSION FORMULAS - EZ #1 ONLY

Use this formula derived by Paul N. Gardner company research to find viscosity (V) in centistokes when cup efflux time in seconds (T) is known:

$$V = 0.875T - 993 \div T$$

Use this formula to find cup efflux time in seconds (T) when viscosity (V) in centistokes is known:

$$T = (V + \sqrt{V^2 + 3476}) \div 1.75$$

Results from the above formulas, solved for each tenth of a second within the cup range, are shown on the reverse side of this page. To find centistoke viscosity for a given cup efflux time in seconds, read down the column on the left to find the nearest second. Then, read to the right to the nearest tenth of a second column to find centistoke value. The chart may be read in reverse to find efflux time seconds when viscosity is known.

**For Full Instruction Manual & Calibration Procedure please go to : https://www.gardco.com/pages/viscosity/vi/EZ_Manual.pdf**

# EZ™ VISCOSITY CUP #1
# EFFLUX TIME - CENTISTOKES CONVERSION TABLE©

| | Viscosity in Centistokes | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Seconds** | **0.0** | **0.1** | **0.2** | **0.3** | **0.4** | **0.5** | **0.6** | **0.7** | **0.8** | **0.9** |
| **40** | 10.2 | 10.3 | 10.5 | 10.6 | 10.8 | 10.9 | 11.1 | 11.2 | 11.4 | 11.5 |
| **41** | 11.7 | 11.8 | 11.9 | 12.1 | 12.2 | 12.4 | 12.5 | 12.7 | 12.8 | 13 |
| **42** | 13.1 | 13.3 | 13.4 | 13.5 | 13.7 | 13.8 | 14 | 14.1 | 14.2 | 14.4 |
| | | | | | | | | | | |
| **43** | 14.5 | 14.7 | 14.8 | 15 | 15.1 | 15.2 | 15.4 | 15.5 | 15.7 | 15.8 |
| **44** | 15.9 | 16.1 | 16.2 | 16.3 | 16.5 | 16.6 | 16.8 | 16.9 | 17 | 17.2 |
| **45** | 17.3 | 17.4 | 17.6 | 17.7 | 17.9 | 18 | 18.1 | 18.3 | 18.4 | 18.5 |
| | | | | | | | | | | |
| **46** | 18.7 | 18.8 | 18.9 | 19.1 | 19.2 | 19.3 | 19.5 | 19.6 | 19.7 | 19.9 |
| **47** | 20 | 20.1 | 20.3 | 20.4 | 20.5 | 20.7 | 20.8 | 20.9 | 21.1 | 21.2 |
| **48** | 21.3 | 21.4 | 21.5 | 21.7 | 21.8 | 22 | 22.1 | 22.2 | 22.4 | 22.5 |
| | | | | | | | | | | |
| **49** | 22.6 | 22.7 | 22.9 | 23 | 23.1 | 23.3 | 23.4 | 23.5 | 23.6 | 23.8 |
| **50** | 23.9 | 24 | 24.1 | 24.3 | 24.4 | 24.5 | 24.7 | 24.8 | 24.9 | 25 |
| **51** | 25.2 | 25.3 | 25.4 | 25.5 | 25.7 | 25.8 | 25.9 | 26 | 26.2 | 26.3 |
| | | | | | | | | | | |
| **52** | 26.4 | 26.5 | 26.7 | 26.8 | 26.9 | 27 | 27.1 | 27.3 | 27.4 | 27.5 |
| **53** | 27.6 | 27.8 | 27.9 | 28 | 28.1 | 28.3 | 28.4 | 28.5 | 28.6 | 28.7 |
| **54** | 28.9 | 29 | 29.1 | 29.2 | 29.3 | 29.5 | 29.6 | 29.7 | 29.8 | 30 |
| | | | | | | | | | | |
| **55** | 30.1 | 30.2 | 30.3 | 30.4 | 30.6 | 30.7 | 30.8 | 30.9 | 31 | 31.1 |
| **56** | 31.3 | 31.4 | 31.5 | 31.6 | 31.7 | 31.9 | 32 | 32.1 | 32.2 | 32.3 |
| **57** | 32.5 | 32.6 | 32.7 | 32.8 | 32.9 | 33 | 33.2 | 33.3 | 33.4 | 33.5 |
| | | | | | | | | | | |
| **58** | 33.6 | 33.7 | 33.9 | 34 | 34.1 | 34.2 | 34.3 | 34.4 | 34.6 | 34.7 |
| **59** | 34.8 | 34.9 | 35 | 35.1 | 35.3 | 35.4 | 35.5 | 35.6 | 35.7 | 35.8 |
| **60** | 36 | 36.1 | 36.2 | 36.3 | 36.4 | 36.5 | 36.6 | 36.8 | 36.9 | 37 |

Example: 50.4 Seconds = 24.4 Centistokes.