

Viscosity of Oil

1. SCOPE

This test determines the viscosity of oils using the Cannon - Fenske Routine Viscometer for Transparent Liquids.

2. MATERIALS AND EQUIPMENT

2.1 Calibrated Cannon Fenske Viscometers for use in 100°C and 40°C constant temperature baths. The viscometer size can be chosen using Table 1 and an estimated viscosity. The amount of fluid to be used in each viscometer is listed on the calibration sheet from the manufacturer.

2.2 Two calibrated thermometers capable of reading in 0.5°C increments. One in the range of 100 ± 5°C and one in the range of 40 ± 2°C.

2.3 Constant temperature bath capable of maintaining 100° ± 0.5°C (212° ± 1.0°F).

2.4 Constant temperature bath capable of maintaining 40° ± 0.5°C (104° ± 1.0°F).

2.5 Stop watch or other suitable stop timer capable of reading to 1.0 second.

2.6 Instrument cable of dispensing sample of oil in 0.1 ml increments

2.7 Suction bulb capable of pulling the sample from the reservoir into the capillary past the measurement lines

3. PROCEDURE

3.1 Clean the viscometer using suitable solvents, and by passing clean, dry, filtered air through the instrument to remove the final traces of solvents. Periodically, traces of organic deposits should be removed with chromic acid or non-chromium cleaning solution.

3.2 If there is a possibility of lint, dust, or other solid material in the liquid sample, filter the sample through a sintered glass filter or fine mesh screen.

3.3 To charge the viscometer place the sample fluid into the dispenser, and allow the correct number of ml's to flow into the reservoir (the # of ml's is listed on the certificate of calibration for the viscometer).

3.4 Place the viscometer into a holder, and insert it into the constant temperature bath. The viscometer should be held vertically in the bath to ensure proper flow.

3.5 Allow approximately 10 minutes for the sample to come to the bath temperature at 40°C and 15 minutes at 100°C.

3.6 Apply suction to the tube to draw the sample past the two measurement lines.

3.7 To measure the efflux time, allow the liquid sample to flow freely past the upper of the two measurement lines, measuring the time (seconds) for the meniscus to pass from the upper to the lower measurement line.

					NAME	STD VISCOSITY TEST						
					 NEW HOLLAND				ENGINEERING SPECIFICATION			
ALL	B	BJF	117333	22JAN02					THE INFORMATION HEREON IS THE CONFIDENTIAL AND PROPRIETARY PROPERTY OF NEW HOLLAND N. V. AND/OR ITS SUBSIDIARIES. ANY USE, EXCEPT THAT FOR WHICH IT MAY BE LOANED, IS PROHIBITED.		FRAME 1	OF 2
ALL	A	RE	110576	9/97							PART NUMBER	
FRAME NO.	REV.	BY	ECN NO.	DATE								
APP.	DRAWN		JDF	7/31/97								
KH 9/16/97	CHECKED											

3.8 Steps 3.6 and 3.7 should be repeated until two successive time measurements are within 3 seconds of each other.

Steps 3.1 to 3.8 should be done at both 40°C and 100°C for each sample.

4. REPORT

4.1 Report the average time of the two samples in seconds.

4.2 Calculate the kinematic viscosity in mm^2/s (cSt) of the sample by multiplying the efflux time in seconds (4.1) by the viscometer constant (listed on the certificate of calibration).

5. REFERENCES

ASTM D 445—Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids

ASTM D 446—Standard Specifications and Operating Instructions for Glass Capillary Kinematic Viscometer

Table 1: Recommended Viscosity Ranges for the Cannon-Fenske Routine Viscometers

Size	mm sqrd/s sqrd, (cSt/s)	mm sqrd/s sqrd, (cSt)		
25	0.002	0.5	to	2
50	0.004	0.8	to	4
75	0.008	1.6	to	8
100	0.015	3	to	15
150	0.035	7	to	35
200	0.1	20	to	100
300	0.25	50	to	250
350	0.5	100	to	500
400	1.2	240	to	1200
450	2.5	500	to	2500
500	8	1600	to	8000
600	20	4000	to	20000
650	45	9000	to	45000
700	100	20000	to	100000

 NEW HOLLAND	NAME				PART NUMBER	
	STD VISCOSITY TEST				86555657	
ENGINEERING SPECIFICATION				REV. B	FRAME 2	OF 2