

# Standard Method for CALCULATING VISCOSITY INDEX<sup>1</sup>



ASTM Designation: D 567 - 53

ADOPTED 1941; REVISED, 1953.<sup>2</sup>

This Standard of the American Society for Testing Materials is issued under the fixed designation D 567; the final number indicates the year of original adoption as standard or, in the case of revision, the year of last revision.

## Scope

1. (a) The tables and equations included in this method provide a means for calculating the viscosity index of a petroleum product or lubricant from its viscosity at 100 and 210 F. This method provides tables for oils with viscosities at 210 F between the values of 2.0 and 75.0 centistokes (cs). Equations are provided for calculating basic values for oils having viscosities at 210 F below 2.0 cs or above 350 sec Saybolt Universal at 210 F.

(b) The kinematic viscosity values are based on the standard value for distilled water being 1.0038 cs at 68 F.

## Definition

2. *Viscosity Index*.—The viscosity index is an empirical number indicating the effect of change of temperature on the viscosity of an oil. A low viscosity index signifies relatively large change of viscosity with temperature.

<sup>1</sup> Under the standardization procedure of the Society, this method is under the jurisdiction of the ASTM Committee D-2 on Petroleum Products and Lubricants.

<sup>2</sup> Prior to adoption as standard, this method was published as tentative from 1940 to 1941.

In 1953, this method was revised to bring it in line with the new National Bureau of Standards value for the viscosity of water.

## Formulas and Tables

3. (a) Viscosity index is calculated from the following equations:

$$V.I. = \frac{L - U}{L - H} \times 100 \dots \dots (1)$$

$$V.I. = \frac{L - U}{D} \times 100 \dots \dots (2)$$

where:

$U$  = viscosity at 100 F of the oil whose viscosity index is to be calculated,  
 $L$  = viscosity at 100 F of an oil of 0 viscosity index having the same viscosity at 210 F as the oil whose viscosity index is to be calculated, and

$H$  = viscosity at 100 F of an oil of 100 viscosity index having the same viscosity at 210 F as the oil whose viscosity index is to be calculated. This value is not shown in the tables because its use is not necessary when  $D$  is known. If it is desirable to know  $H$ , it can be determined as follows  $H = L - D$ .

$$D = L - H$$