



Standard Test Method for High Temperature Foaming Characteristics of Lubricating Oils¹

This standard is issued under the fixed designation D6082; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope*

1.1 This test method describes the procedure for determining the foaming characteristics of lubricating oils (specifically transmission fluid and motor oil) at 150°C.

1.2 Foaming characteristics of lubricating oils at temperatures up to 93.5°C are determined by Test Method D892 or IP 146.

1.3 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

D892 Test Method for Foaming Characteristics of Lubricating Oils

E1 Specification for ASTM Liquid-in-Glass Thermometers

E128 Test Method for Maximum Pore Diameter and Permeability of Rigid Porous Filters for Laboratory Use

E1272 Specification for Laboratory Glass Graduated Cylinders

2.2 Energy Institute Standards:³

IP 146 Standard Method of Test for Foaming Characteristics of Lubricating Oils

3. Terminology

3.1 Definitions:

3.1.1 *diffuser, n—for gas*, a device for dispersing gas into a liquid (Test Method D892).

3.1.1.1 *Discussion*—Although diffusers can be made of either metallic or non-metallic materials, in this test method the diffuser is sintered stainless steel.

3.1.2 *entrained air (or gas), n—in liquids*, a two-phase mixture of air (or gas) dispersed in a liquid in which the liquid is the major component on a volumetric basis.

3.1.2.1 *Discussion*—The air (or gas) is in the form of discrete bubbles of about 10 to 1000 μm in diameter. The bubbles are not uniformly dispersed. In time, they rise to the surface to coalesce to form larger bubbles which break or form foam. Subsurface coalescence can also occur, in which case, the bubbles will rise more rapidly.

3.1.3 *foam, n—in liquids*, a collection of bubbles formed in or on the surface of a liquid in which the air or gas is the major component on a volumetric basis.

3.1.4 *gas, n—a fluid (such as air) that has neither independent shape nor volume but tends to expand indefinitely.*

3.1.5 *lubricant, n—any material interposed between two surfaces that reduces friction or wear between them.*

3.1.5.1 *Discussion*—In this test method, the lubricant is an oil which may or may not contain additives such as foam inhibitors.

3.1.6 *maximum pore diameter, n—in gas diffusion*, the diameter of a capillary of circular cross-section which is equivalent (with respect to surface tension effects) to the largest pore of the diffuser under consideration. The pore dimension is expressed in micrometers (μm).

3.1.7 *permeability, n—in gas diffusion*, the rate of a substance that passes through a material (diffuser) under given conditions.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *bottom volume*—the volume of liquid sample, that is, sample substantially free of air, at any given time during the test.

3.2.2 *collapse time, n—in foam testing*, the time in seconds, for zero foam to appear after the air is disconnected at the end of the five minute air blowing time.

¹ This test method is under the jurisdiction of ASTM Committee D02 on Petroleum Products and Lubricants and is the direct responsibility of Subcommittee D02.06 on Analysis of Lubricants.

Current edition approved Aug. 1, 2006. Published September 2006. Originally approved in 1997. Last previous edition approved in 2001 as D6082-01. DOI: 10.1520/D6082-06.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from Energy Institute, 61 New Cavendish St., London, WIG 7AR, U.K., <http://www.energyinst.org.uk>.