



Standard Test Method for Foaming Characteristics of Lubricating Oils¹

This standard is issued under the fixed designation D 892; 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.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope*

1.1 This test method covers the determination of the foaming characteristics of lubricating oils at 24°C and 93.5°C. Means of empirically rating the foaming tendency and the stability of the foam are described.

1.2 The values stated in acceptable SI units are to be regarded as the standard.

1.3 *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.* For specific warning statements, see Sections 7, 8, and 9.1.1.

2. Referenced Documents

2.1 ASTM Standards:

D 445 Test Method for Kinematic Viscosity of Transparent and Opaque Liquids and the Calculation of Dynamic Viscosity²

D 4175 Terminology Relating to Petroleum, Petroleum Products, and Lubricants³

E 1 Specification for ASTM Thermometers⁴

E 128 Test Method for Maximum Pore Diameter and Permeability of Rigid, Porous Filters for Laboratory Use⁵

3. Terminology

3.1 Definitions:

3.1.1 *diffuser*, *n*—for gas, a device for dispersing gas into a fluid.

3.1.1.1 *Discussion*—In this test method the diffuser may be made of either metallic or non-metallic materials.

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 volume of the liquid is the major component.

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 tend to 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 rise more rapidly.

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

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

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

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

3.1.5.1 *Discussion*—The pore dimension is expressed in micrometres in this test method.

3.1.6 *permeability*, *n*—in gas diffusion, the flow of gas, through the gas diffuser.

3.1.6.1 *Discussion*—In this test method, the permeability is measured at a pressure of 2.45 kPa (250 mm of water) in millilitres per minute.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *dynamic bubble*, *n*—the first bubble to pass through and escape from the diffuser followed by a continuous succession of bubbles when testing for the maximum pore diameter in Annex A1.

3.2.1.1 *Discussion*—When a diffuser is immersed in a liquid, air can be trapped in the pores. It can escape eventually or as soon as a pressure is applied to the diffuser. When testing

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.

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In the IP, this test method is under the jurisdiction of the Standardization Committee. This test method has been approved by the sponsoring committees and accepted by the cooperating societies in accordance with established procedures.

² *Annual Book of ASTM Standards*, Vol 05.01.

³ *Annual Book of ASTM Standards*, Vol 05.02.

⁴ *Annual Book of ASTM Standards*, Vol 14.03.

⁵ *Annual Book of ASTM Standards*, Vol 14.02.

*A Summary of Changes section appears at the end of this standard.

