



Standard Test Method for Evaluation of Engine Oils in Diesel Four-Stroke Cycle Supercharged 1M-PC Single Cylinder Oil Test Engine¹

This standard is issued under the fixed designation D6618; 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.

INTRODUCTION

This test method can be used by any properly equipped laboratory, without outside assistance. However, the ASTM Test Monitoring Center (TMC)² provides reference oils and an assessment of the test results obtained on those oils by the laboratory. By this means, the laboratory will know whether their use of the test method gives results statistically similar to those obtained by other laboratories. Furthermore, various agencies require that a laboratory utilize the TMC services in seeking qualification of oils against specifications. For example, the U.S. Army imposes such a requirement, in connection with several Army engine lubricating oil specifications.

Accordingly, this test method is written for use by laboratories that utilize the TMC services. Laboratories that choose not to use those services may simply ignore those portions of the test method that refer to the TMC.

This test method may be modified by means of Information Letters issued by the TMC. In addition, the TMC may issue supplementary memoranda related to the test method.

1. Scope*

1.1 This test method covers a four-stroke cycle diesel engine test procedure for evaluating engine oils for certain high-temperature performance characteristics, particularly ring sticking, ring and cylinder wear, and accumulation of piston deposits. Such oils include both single viscosity SAE grade and multiviscosity SAE grade oils used in diesel engines. It is commonly known as the 1M-PC test (PC for Pre-Chamber) and is used in several API oil categories, notably the CF and CF-2 and the military category described in MIL-PRF-2104 (see [Note 1](#)).

NOTE 1—Companion test methods used to evaluate other engine oil performance characteristics for API oil categories CF and CF-2 are discussed in SAE J304. The companion tests used by the military can be found in MIL-PRF-2104.

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

¹ This test method is under the jurisdiction of ASTM Committee D02 on Petroleum Products, Liquid Fuels, and Lubricants and is the direct responsibility of Subcommittee D02.B0.02 on Heavy Duty Engine Oils. The test engine sequences were originally developed in 1956 by ASTM Committee D02. Subsequently, the procedures were published in an ASTM Special Technical Publication.

Current edition approved April 1, 2016. Published June 2016. Originally approved in 2000. Last previous edition approved in 2014 as D6618 – 14. DOI: 10.1520/D6618-16.

² ASTM Test Monitoring Center, 6555 Penn Avenue, Pittsburgh, PA 15206-4489. The TMC issues Information Letters that supplement this test method. This edition incorporates revisions contained in all information letters through No. 15–1.

1.2.1 *Exception*—The values in parentheses are provided for information only.

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.*

1.4 This test method is arranged as follows:

TABLE OF CONTENTS

Scope	1
Reference Documents	2
Terminology	3
Summary of Test Method	4
Significance and Use	5
Apparatus	6
Test Engine	6.1
Engine Accessories	6.2 – 6.14
Engine Oil System	6.15
Cooling System	6.16
Fuel System	6.17
Intake Air System	6.18
Exhaust System	6.19
Blowby Meter	6.20
Thermocouples	6.21
Parts	6.22
Instrumentation	6.23
Crankcase Paint	6.24
Reagents and Materials	7
Fuel	7.1
Test Oil	7.2
Engine Coolant	7.3
Cleaning Materials	7.4
Safety	8

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