



Designation: D5828 – 97 (Reapproved 2023)

Standard Test Method for Compatibility of Supplemental Coolant Additives (SCAs) and Engine Coolant Concentrates¹

This standard is issued under the fixed designation D5828; 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

Supplemental coolant additives (SCAs) are used to impart special properties, usually resistance to cavitation corrosion, to engine coolants used in diesel engines with replaceable cylinder liner sleeves. Engines with this design require additives that are not normally found in commercial engine coolant concentrates.

1. Scope

1.1 This test method covers determination of the compatibility of commercial SCA and commercial ethylene and propylene glycol engine coolant concentrates. This test method focuses on the solubility of specific chemical species formed in the engine coolant. The short duration of the test (24 h), among other restrictions, makes the test method of limited use for sorting out a variety of chemical compatibility problems in which a component of the SCA may react with a component of the coolant additive package. The test as currently written also does not deal with the issue of hard water compatibility, in which a component of the coolant or SCA additive package reacts with the hardness (Ca and Mg) to form a precipitate.

1.2 The values stated in SI units are to be regarded as standard. The values given in parentheses are mathematical conversions to inch-pound units that are provided for information only and are not considered 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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

¹ This test method is under the jurisdiction of ASTM Committee D15 on Engine Coolants and Related Fluids and is the direct responsibility of Subcommittee D15.11 on Heavy Duty Coolants.

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2. Referenced Documents

2.1 ASTM Standards:²

E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

D1193 Specification for Reagent Water

D1796 Test Method for Water and Sediment in Fuel Oils by the Centrifuge Method (Laboratory Procedure)

D3585 Specification for ASTM Reference Fluid for Coolant Tests

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *engine coolant concentrate*—an undiluted ethylene or propylene glycol containing additives and only a small amount of water, usually less than 5 %.

3.1.2 *reference engine coolant concentrate*—a standard material prepared according to the formulary given in Annex A2 of this test method. This material should not be confused with reference coolant in accordance with Specification D3585.

3.1.3 *reference supplemental coolant additive (SCA)*—a standard SCA prepared according to the formulary given in Annex A1 of this test method.

3.1.4 *supplemental coolant additive*—a liquid or solid material that is added to a coolant at a specified concentration.

4. Summary of Test Method

4.1 A mixture of engine coolant concentrate and deionized water containing approximately twice the recommended concentration of SCA is heated to 88 °C (190 °F) for 24 h. The solution is centrifuged after returning to ambient temperature,

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.