



Designation: D 6210 – 03

Standard Specification for Fully-Formulated Glycol Base Engine Coolant for Heavy-Duty Engines¹

This standard is issued under the fixed designation D 6210; 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 specification covers the requirements for fully-formulated glycol base coolants for cooling systems of heavy-duty engines. When concentrates are used at 40 to 60 % glycol concentration by volume in water of suitable quality, (see Appendix X1), or when prediluted glycol base engine coolants (50 % volume, % minimum) are used without further dilution, they will function effectively during both winter and summer to provide protection against corrosion, cavitation, freezing, and boiling.

1.2 This specification is intended to cover the requirements for engine coolants prepared from virgin or recycled ethylene or propylene glycol.

1.3 The coolants governed by this specification are categorized as follows:

Coolant Type	Description
I-FF	Ethylene glycol base concentrate
II-FF	Propylene glycol base concentrate
III-FF	Ethylene glycol predilute (50 vol %)
IV-FF	Propylene glycol predilute (50 vol %)

1.4 Coolant concentrates meeting this specification do not require any addition of Supplemental Coolant Additive (SCA) until the first maintenance interval when a maintenance does of SCA is required to continue protection in certain heavy duty engine cooling systems, particularly those of the wet cylinder liner-in-block design. The SCA additions are defined by and are the primary responsibility of the engine manufacturer or vehicle manufacturer. If they provide no instructions, follow the SCA supplier's instructions.

1.5 This specification does not cover extended service interval coolants.

1.6 The values stated in SI units are to be regarded as standard. The values given in parentheses are for information only.

1.7 *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:

D 1126 Test Method for Hardness in Water²

D 1293 Test Method for pH of Water²

D 3306 Specification for Glycol Base Engine Coolant for Automobile and Light Duty Service³

D 4327 Test Method for Anions in Water by Chemically-Suppressed Ion Chromatography²

D 5828 Test Method for Compatibility of Supplemental Additives (SCA) and Engine Coolant Concentrates³

3. General Requirements

3.1 Concentrated and prediluted coolants shall meet all of the respective requirements of Specification D 3306.

3.2 The coolant concentrate mixed with water or the prediluted coolant, when maintained with maintenance doses of SCA in accordance with the engine manufacturer's recommendations, and those on the product label, shall be suitable for use in a properly maintained cooling system in normal service for a minimum of two years (see Appendix X1).

4. Additional Requirements

4.1 The coolant concentrate or prediluted coolant additionally shall provide protection in operating engines against cavitation corrosion (also termed liner pitting) and against scaling of internal engine hot surfaces. Hot surfaces typically are within the engine head, head spacer, upper cylinder liner, or liquid cooled exhaust manifold. ASTM has test methods under development for both cavitation corrosion and hot surface scaling. Until these procedures are approved as ASTM standards, the mandatory requirements of Annex A1 shall apply.

4.2 Both the concentrated and prediluted coolants shall contain less than 50 ppm sulfate ion.

¹ This specification is under the jurisdiction of ASTM Committee D15 on Engine Coolants and is the direct responsibility of Subcommittee D15.07 on Specifications. Current edition approved May 10, 2003. Published July 2003. Originally approved in 1998. Last previous edition approved in 1998 as D 6210 - 98a.

² Annual Book of ASTM Standards, Vol 11.01.

³ Annual Book of ASTM Standards, Vol 15.05.