

ENGINEERING MATERIAL SPECIFICATION

Material Name

Specification Number

ADDITIVE - COOLANT - HEAVY DUTY DIESELS

ESN-M99B169-A

1. SCOPE

The material defined by this specification is an additive for engine coolants - both 100 % water and ethylene glycol-based antifreeze solution.

2. APPLICATION

This specification was released originally for material which enhances long-term protection properties, such as corrosion/sealing/cavitation protection, of coolants in heavy duty diesel engines.

3. REQUIREMENTS

3.1 STANDARD REQUIREMENTS FOR PRODUCTION MATERIALS

Material suppliers and part producers must conform to the Company's Standard Requirements For Production Materials (WSS-M99P1111-A).

3.2 LABORATORY TESTS

The following tests shall be performed using a 50:50 solution of monoethylene glycol (technical grade, free of iron and chloride, and containing less than 10 % of other glycols) and corrosive water (ASTM D 1384). This test solution shall be treated with the recommended level of the candidate additive.

3.2.1 Glassware Corrosion

(ASTM D 1384 except solder coupons to be of high lead type with 97.5 lead/2 tin/0.5 silver composition)

Weight Loss, max

. Cast iron, steel, brass	5 mg/coupon
. Cast aluminum, solder	10 mg/coupon

3.2.2 Cast Iron Cavitation

(ASTM G 32 except as modified in ASTM STP 705-1980, pp 233-269)

Weight Loss, max	7 mg
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Date	Action	Revisions
2002 08 22	Revised	Updated and renumbered
1995 08 28	Activated	
1985 12 16	CNT-020586	Released

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3.2.3 Foaming Characteristics
(ASTM D 1881)

Increase in volume during aeration, max 50 mL

Time for foam break after aeration is stopped, max 5 s

3.2.4 Reserve Alkalinity, min
(ASTM D 1121)

8 mL

3.2.5 Compatibility

Must pass

Additive package approved to this specification shall be compatible with all commonly used engine coolants. Compatibility is demonstrated by passing tests listed in the preceding clauses, except substitute appropriate coolant in place of monoethylene glycol.

3.2.6 Storage Stability

Must pass

Store the additive in a suitable container at 65 to 67 °C for 20 days. The aged additive must meet all the requirements listed in the preceding clauses.

3.3 COOLING SYSTEM PERFORMANCE TESTS

The candidate additive shall be approved only after successful completion of appropriate dynamometer and/or fleet tests specified by the affected product engineering office.

3.4 SERVICE ADDITIVE

The following requirements must be met for coolant additive supplied to Ford Parts and Service Division only.

3.4.1 Chemical and Physical Properties

Specific chemical and physical properties are not specified in para 3.4, but an Engineering Quality Control Supplement will be issued to cover each approved material. The selected engineering approved source shall furnish appropriate chemical and physical properties along with the production tolerance limits that apply to the material(s) upon which approval was given. The agreed upon values and limits will be issued to Quality Control by the affected product engineering office. These values will then be used by Quality Control for ongoing quality verifications. The Quality Control Supplement is an integral requirement of this specification. If more than one source supplies material to this specification, a Quality Control Supplement will be issued for each specific approved material.

3.4.2 Labeling

3.4.2.1 Provisions of this specification are applicable when material is used according to labeling directions. Any precautions involved in the use of the material must be clearly stated on the product label.