SPECIFICATION FOR CONVENTIONAL ETHYLENE GLYCOL BASE COOLANT/ANTIFREEZE FOR HEAVY DUTY ENGINES, FULLY FORMULATED

Wherever "specified" is used herein, it shall mean "specified in the invitation to bid and the order."

Wherever reference is made herein to any other specification, standard, regulation or method, it shall mean the latest revision thereof in effect at the time of invitation to bid.

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1. **Intent:**

This specification covers the fully formulated phosphate free low silicate ethylene glycol base engine coolant concentrate for use in liquid cooled internal combustion engines.

1.2 The intended use of this product is for heavy-duty liquid cooled diesel-powered internal combustion engines equipped with latest emission-control technologies (EGR, DPF, SCR etc.) to meet current Federal EPA Clean-air Standards.

2. **Kind:**

2.1 The coolant/antifreeze must be phosphate free and conventional fully formulated from new or virgin 100% Ethylene Glycol. Phosphate must not be used as an intended ingredient in the formulation.

2.2 The coolant/antifreeze shall be pre-charged with a Supplemental Coolant Additive (SCA) and SCA shall be blended into the coolant/antifreeze according to Time RP 329 Type B.

2.3 It shall incorporate nitrites to provide wet sleeve linear protection against cavitation and reduce the risk of scale build up.

3. **Requirements:**

3.1 The coolant/antifreeze must be produced from new or virgin ingredients. The coolant/antifreeze recycled by reverse osmosis, distillation or ion exchange will not be accepted under this specification.

3.2 The coolant/antifreeze color to be Fuchsia (Pink) or yellow.

3.3 The coolant/antifreeze must be compatible with Penray Need Release Filter/Inhibitor Technology or equal as used in heavy diesel engines.

3.4 The bidder must provide completed and detailed technical specification and sale brochures on the product bid, to document compliance with the bid requirements, including ASTM D-6210-25 or latest version.

3.5 The coolant/antifreeze shall be no more injurious than water to hoses, gaskets and pump seals and shall have no harmful effects on the various finishes used on automotive vehicles.

3.6 The coolant/antifreeze shall be compatible with N.Y.C. tap water in all dilutions when the resultant mixtures are allowed to stand in the dark for 24 hours. No precipitation or separation of the two layers shall be permitted; slight cloudiness is not objectionable. When used at 40-70% concentration in water, the product shall function effectively during both summer and winter.

3.7 If required, the bidder shall submit within five (5) days after notification and place designated, two (2) one-gallon samples of coolant/antifreezehe proposes to furnish.

3.8 The coolant/antifreeze supplied during the contract period shall be the same formulation as that upon which the award was based. NYC requires that the use of single manufacturing brand of specified coolant/antifreeze to avoid the inherent risks of incompatibility among the different manufacturer's coolants. In the event of more than one brand may be supplied within the duration of the contract, the supplier must notify the OCP/DCAS in advance of delivery for approval.

4. **Applicable Documents:**

ASTM D6210-25: Standard Specification for Fully Formulated Glycol Base Engine Coolant for Heavy Duty Engine or latest version.

ASTM D4985- 10(2023): Standard Specification for Low Silicate Ethylene Glycol Base Engine Coolant for Heavy Duty Engines Requiring a Pre charged of Supplemental Coolant Additive (SCA) or latest version.

ASTM D3306-21: Standard Specification for Glycol Base Engine Coolant for Automobile and Light Duty Service or latest version.

ASTM E1177-23: Standard Specification for Engine Coolant

Grade Ethylene Glycol or latest version.

5. **Applications:**

5.1 The antifreeze shall meet the heavy-duty engine coolant specification of TMC RP 329 Type B and ASTM D6210.The product also shall meet ASTM D3306 for automotive service. It will use low silicate technology to provide maximum protection to metal alloys found in most heat transfer systems.

6. **Performance:**

6.1 The coolant/antifreeze shall meet or exceed the Performance requirement for engines of following manufacturers: Caterpillar, Cummins CES 14603, Detroit Diesel 93K217, Freightliner 48-22880, MTU: MTL 5048/Mercedes, Navistar Bl, Paccar, Volvo/Mack, John Deere H24Al & John Deere H24Cl.

7. **Freeze/Boil Protection Chart:**

The intended use of this product is to mix/dilute with water as under to provide adequate Freeze/Boil protection.

Coolant/Water Ratio	Protection From	
	Freezing Down to	Boiling Up to
50/50	-34°F(-37°C)	265°F(129°C)
60/40	-62°F(-52°C)	270°F(132°C)

8. **Test Properties:**

The test properties and performance requirements of the supplied coolant/antifreeze shall be in accordance with the below limits for the fully formulated new or virgin Ethylene Glycol.

8.1 Test Properties Table

Test Properties and Performance Requirements of Heavy-Duty Engine Coolant/Antifreeze

Physical and Chemical Requirements		
Properties	**Test Method**	**Typical Results**
Specific Gravity @60°F	ASTM D1122	1.1- 1. 3
Freezing Point	ASTM D1177	-37°C
Boiling Point, Min.	ASTM D1120	129°C
pH	ASTM D1287	10.0-11.0
Boron, ppm, Min.	ASTM D6130	400
Nitrite, ppm, Min.	ASTM D5827	2700
Nitrate, ppm, Min.	ASTM D5827	800
Silicon, ppm, Max.	ASTM D6130	250
Chloride, ppm, Max.	ASTM D5827	25
Reserve Alkalinity, ml,	ASTM D1121	10
Phosphate, PPM, Max.	ASTM D5827	50
Formate, mg/1 glycol degradation acid, Max.	ASTM D5827	50
Glycolate, mg/1 glycol degradation acid, Max.	ASTM D5827	50
Performance Requirements		
Simulated Service Weight loss, mg/specimen		
Copper	ASTM D2570	10
Solder		30
Brass,		10
Steel		10
Cast iron		10
Aluminum		30
Corrosion of cast Aluminum Alloy's at Heat Rejecting Surfaces mg/cm2/week	ASTM D4340	1.0
Foaming value, ml, Break Time, seconds.	ASTM D1881	150 5
Cavitation Erosion: Rating for Pitting, Cavitation, and Erosion of the water pump,	ASTM D 2809	8

8.2 The Ash Content of concentrated product shall not exceed 5% by weight determined by ASTM D1119-05 (2015) or latest version.

Note: The coolant/antifreeze shall perform satisfactorily in a properly maintained cooling system under normal operating conditions in accordance with the manufacturer's recommendation and for the minimum required period as indicated on the product label. If there is adequate evidence that the City has or may suffer equipment damage due to use of the product, the City reserves that right to recover damages from the awarded bidder and or manufacturer after proper testing and final determination of fault is made.

9. **Quality Assurance Provisions:**

9.1 The coolant/antifreeze shall be tested in accordance with the methods of American Society of Testing Materials (ASTM), and/or TMC/ATA 329; however, other applicable methods of test or examination may be employed subject to the prior approval by the Department of Administrative Services. In addition, the laboratories engaged to carry out such tests must be approved by the commissioner of Department of Citywide Administrative Services.

10. **Packing:**

10.1 The packing shall be in accordance with the best commercial practice.

10.2 The Antifreeze/Coolant shall be packed in 1 (one) and 5(five) gallons plastic container or 55 (fifty-five} gallons reusable metal drums.

10.3 All coolants supplied shall have a shelf life of at least two years in normal use when packed in the containers as specified.

11. **Identification:**

11.1 In addition to the labeling requirements of applicable Federal, State and Local authorities, cans and drums shall be marked with the name of the material, the N.Y.C. specification number, the net contents, and name of the manufacturer, the name of the contract or purchase order and the commodity code number.

11.2. Shipping containers shall be plainly marked with the name of contents, quantity contained therein, name of the contractor, name of the manufacturer, name of the contact or purchase order, and the commodity code number.

APPENDIX

Note 1: In order that each request for contract or purchase order quotations will result in fair competition and delivery of the coolant/antifreeze required, the requisition must contain the following information:

(A) **Name of Commodity** - Ethylene Glycol Base Coolant/Antifreeze, Fully Formulated

(B) **Specification Number** - #10-C-61:26

(C) **Type** - Conventional Fully Formulated Phosphate Free Low Silicate Ethylene Glycol Base Engine Coolants Concentrate.

(D) **Size of Container** - Stated whether 1- or 5-gallons plastic cans, or 55 gallons metal drum.

(E) **Quantity** - Number of gallons at 15°C

(F) **Delivery** - State Point(s) and manner of delivery

Note 2: For the information of the Bureau of Quality Assurance:

If, in the opinion of the inspector, tests and analyses are necessary to determine compliance with any requirement of this specification, a sample consisting of not less than one gallon shall be randomly chosen.

Note 3: Copies of this specification may be obtained from:

Department of Citywide Administrative Services
Office of Citywide Procurement
Bureau of Quality Assurance
1 Centre Street - 18th Floor
New York, NY 10007