

**Proposed Amendments to 02 NCAC 09F .0101 - .0306  
To be published in the NC Register 12/17/12**

**TEXT OF PROPOSED RULES:**

**02 NCAC 09F .0101 GENERAL**

(a) Ethylene glycol base engine coolant concentrate, when used at 40 to 70 percent concentration in water, ~~shall function~~ functions effectively during both winter and summer in automotive vehicle cooling systems to provide protection against freezing, boiling and corrosion.

(b) Ethylene glycol base engine coolant concentrate shall consist ~~essentially~~ of ethylene glycol and shall contain ~~suitable~~ corrosion inhibitors, a foam suppressor, and sufficient water to dissolve the additives and to provide a packaged product that can be poured at temperatures as low as zero degrees Fahrenheit (-17.8 degrees C). Other glycols such as propylene and diethylene may be included up to a maximum of 15 percent if the chemical and physical properties ~~in Tables 1 and 2~~ referenced in Rules .0102 and .0103 of this Section, respectively, are met.

(c) The product when installed in accordance with the vehicle manufacturers' recommendations and those on the product label ~~shall be suitable for use~~ shall not adversely affect fluid flow and heat transferred where used in a properly maintained cooling system in normal passenger car service for a minimum of one ~~year without adversely affecting fluid flow and heat transfer.~~ year.

*History Note: Authority G.S. 106-579.7;  
Eff. February 1, 1976*

**02 NCAC 09F .0102 PHYSICAL AND CHEMICAL REQUIREMENTS**

Ethylene glycol base engine coolant concentrate shall conform to the physical and chemical property requirements ~~prescribed as follows:~~ prescribed by ASTM International (formerly the American Society for Testing Materials) Standards on Engine Coolants standards for ethylene glycol base engine coolant concentrate which are hereby incorporated by reference including subsequent amendments and editions. Copies of this document may be obtained from ASTM International, 100 Bar Harbor Drive, West Conshohocken, PA 19428-2959, at a cost of two hundred eleven dollars (\$211.00).

Table 1

<u>Property</u>	<u>Specified Values</u>	<u>ASTM Method</u>
<del>Specific gravity, 60/60 degrees F (15.6 degrees C)</del>	<del>1.110 to 1.145</del>	<del>D 1122</del>
<del>Freezing point, 50 percent by volume in distilled water</del>	<del>34 degrees F (-37 degrees C) or lower</del>	<del>D 1177</del>
<del>Freezing point, 33 1/3 percent by volume in distilled water</del>	<del>0 degrees F (-17.8 degrees C) or lower</del>	<del>D 1177</del>

-Pour point, undiluted, -maximum	0 degrees F (-17.8 degrees C)	D 97
-Boiling point, undiluted, -minimum	300 degrees F (148.9 degrees C)	D 1120
-Boiling point, 50 percent by -volume in distilled water, -minimum	226 degrees F (108 degrees C)	D 1120
-Ash content, maximum percent -by weight	5	D 1119
-pH, undiluted	5.5 to 11.0	D 1287
-pH, 50 percent by volume in -distilled water	7.5 to 11.0	D 1287
-Reserve alkalinity, minimum	10	D 1121
-Water, percent by weight, -maximum	5	D 1123

*History Note: Authority G.S. 106-579.7;  
Eff. February 1, 1976.*

**02 NCAC 09F .0103 PERFORMANCE REQUIREMENTS**

Ethylene glycol base engine coolant concentrate shall conform to the laboratory test performance requirements outlined below for either the Corrosion in Glassware Test (ASTM Method D 1384) or the Simulated Service Test (ASTM Method D 2570), in addition to the requirements for the Foaming Test (ASTM Method D 1881) and the Cavitation Erosion Test (ASTM Method D 2809); prescribed by ASTM International (formerly the American Society for Testing Materials) Standards on Engine Coolants standards for ethylene glycol base engine coolant concentrate which are hereby incorporated by reference including subsequent amendments and editions. Copies of this document may be obtained from ASTM International, 100 Bar Harbor Drive, West Conshohocken, PA 19428-2959, at a cost of two hundred eleven dollars (\$211.00).

Table 2

Weight Loss

milligrams/specimen, maximum

Test

(or other property described)

ASTM Method

-Corrosion in Glassware \_\_\_\_\_ D 1384

— Copper \_\_\_\_\_ 10

— Solder \_\_\_\_\_ 30

— Brass \_\_\_\_\_ 10

— Steel \_\_\_\_\_ 10

— Cast iron \_\_\_\_\_ 10

— Aluminum \_\_\_\_\_ 30

-Simulated Service Test \_\_\_\_\_ D 2570

— Copper \_\_\_\_\_ 20

— Solder \_\_\_\_\_ 60

— Brass \_\_\_\_\_ 20

— Steel \_\_\_\_\_ 20

— Cast iron \_\_\_\_\_ 20

— Aluminum \_\_\_\_\_ 60

-Foaming \_\_\_\_\_ Volume 150 m., maximum; \_\_\_\_\_ D 1881

Break time 5 seconds, maximum

-Cavitation Erosion \_\_\_\_\_ There shall be no pitting, \_\_\_\_\_ D 2809

cavitation or erosion of

the water pump that will

produce a rating below 8

History Note: Authority G.S. 106-579.7;

Eff. February 1, 1976.

**02 NCAC 09F .0201 GENERAL**

Alcohol base engine coolant concentrate shall consist essentially of methyl alcohol. Other alcohols such as ethyl and isopropyl may be included if the chemical and physical properties listed in Tables 3 and 4 in Rules .0202 and .0203 of this Section, respectively, are met. conform to the standards prescribed by ASTM International (formerly the American Society for Testing Materials) Standards on Engine Coolants for alcohol base engine coolant which are hereby incorporated by reference including subsequent amendments and editions. Copies of this document may be obtained from ASTM International, 100 Bar Harbor Drive, West Conshohocken, PA 19428-2959, at a cost of two hundred eleven dollars (\$211.00).

*History Note: Authority G.S. 106-579.7;  
Eff. February 1, 1976.*

**02 NCAC 09F .0202 PHYSICAL AND CHEMICAL REQUIREMENTS**

Alcohol base engine coolant concentrate shall conform to the physical and chemical property requirements prescribed as follows: by ASTM International (formerly the American Society for Testing Materials) Standards on Engine Coolants standards for alcohol base engine coolant concentrate which are hereby incorporated by reference including subsequent amendments and editions. Copies of this document may be obtained from ASTM International, 100 Bar Harbor Drive, West Conshohocken, PA 19428-2959, at a cost of two hundred eleven dollars (\$211.00).

**Table 3**

<u>Property</u>	<u>Specified Value</u>	<u>ASTM Method</u>
<del>Freezing Point, 50 percent by volume in distilled water</del>	46 degrees F	D 1177
<del>Ash content, maximum percent by weight</del>	3.5	D 1119
<del>Reserve alkalinity, minimum</del>	2.5	D 1121
<del>Water, percent by weight, maximum</del>	5	D 1123

*History Note: Authority G.S. 106-579.7;  
Eff. February 1, 1976.*

**02 NCAC 09F .0203 PERFORMANCE REQUIREMENTS**

Alcohol base engine coolant concentrate shall conform to the laboratory test performance requirements prescribed as follows: by ASTM International (formerly the American Society for Testing Materials) Standards on Engine Coolants standards for alcohol base engine concentrate which are hereby incorporated by reference including subsequent amendments and editions. Copies of this document may be obtained from ASTM International, 100 Bar Harbor Drive, West Conshohocken, PA 19428-2959, at a cost of two hundred eleven dollars (\$211.00).

Table 4

<u>Test</u>	<u>Weight Loss</u> <u>milligrams/specimen, maximum</u> <u>(or other property described)</u>	<u>ASTM Method</u>
<u>Corrosion in Glassware</u>		<u>D 1384</u>
<u>Copper</u>	<u>10</u>	
<u>Brass</u>	<u>10</u>	
<u>Steel</u>	<u>10</u>	
<u>Cast iron</u>	<u>10</u>	
<u>Solder</u>	<u>20</u>	
<u>Aluminum</u>	<u>40</u>	
<u>Foaming</u>	<u>Volume 150 ml., maximum;</u> <u>Break time 5 seconds,</u> <u>maximum</u>	<u>D 1881</u>

*History Note: Authority G.S. 106-579.7;  
Eff. February 1, 1976.*

**02 NCAC 09F .0204 METHODS OF TESTING**

The methods of testing to be used in determining fidelity of ethylene glycol and alcohol base engine coolant products to the physical, chemical and performance requirements are those of the American Society for Testing and Materials (ASTM) as found in the 1973 Annual Book of ASTM Methods, Parts 17 and 22. ASTM International Standards on Engine Coolants which are hereby incorporated by reference including subsequent amendments and editions. Copies of this document may be obtained from ASTM International, 100 Bar Harbor Drive, West Conshohocken, PA 19428-2959, at a cost of two hundred eleven dollars (\$211.00).

*History Note: Authority G.S. 106-579.7;  
Eff. February 1, 1976.*

2 NCAC 09F .0305      PHYSICAL AND CHEMICAL REQUIREMENTS

Methoxy propanol base engine coolant concentrate and full-fill mixtures shall conform to the physical and chemical properties prescribed as follows: by ASTM International (formerly the American Society for Testing Materials) Standards on Engine Coolants standards for methoxy propanol base engine coolant concentrate and full-fill mixtures which are hereby incorporated by reference including subsequent amendments and editions. Copies of this document may be obtained from ASTM International, 100 Bar Harbor Drive, West Conshohocken, PA 19428-2959, at a cost of two hundred eleven dollars (\$211.00).

Table 1

<u>Property</u>	<u>Specified Value</u>		<u>ASTM Method</u>
	<u>Concentrate</u>	<u>Full-Fill</u>	
<del>Specific gravity, -77/77 degrees F (-25.0 degrees C)</del>	<del>0.910 to 0.935</del>	<del>0.970 to 0.995</del>	<del>D 1122</del>
<del>Freezing point, -50 percent by -volume in -distilled water</del>	<del>19 degrees F</del>	<del>or lower</del>	<del>D 1177</del>
<del>Freezing point, -33 1/3 percent -by volume in -distilled water</del>	<del>+10 degrees F</del>	<del>or lower</del>	<del>D 1177</del>
<del>Freezing point, -as is</del>	<del>19 degrees F</del>	<del>or lower</del>	<del>D 1177</del>
<del>Pour (slush) -point, as is</del>	<del>50 degrees F</del>	<del>or higher</del>	<del>D 97</del>
<del>Boiling point, -undiluted minimum</del>	<del>230 degrees F</del>		<del>D 1120</del>
<del>Boiling point,</del>	<del>209 degrees F</del>		<del>D 1120</del>

-50 percent by -volume in distilled -water, minimum			
-Boiling point, -as is, minimum		209 degrees F	D 1120
-Ash content, -maximum percent by -weight	5	2 1/2	D 119
-pH, undiluted	5.5 to 11.0	5.5 to 11.0	D 1287
-pH, 50 percent -by volume in -distilled water	7.5 to 11.0	7.5 to 11.0	D 1287
-Reserve alkalinity, -minimum	10	5	D 1121
-Water, percent -by weight, -maximum	5	50	D 1123

*History Note: Authority G.S. 106-579.7;*

*Eff. February 1, 1982.*

**02 NCAC 09F .0306 PERFORMANCE REQUIREMENTS**

Methoxy propanol base engine coolant concentrate and full-fill mixtures shall conform to the laboratory test performance requirements outlined below for either the Corrosion in Glassware Test (ASTM Method D-1384) or Simulated Service Test (ASTM Method D-1881) and the Cavitation-Erosion Test (ASTM Method D-2809); prescribed by ASTM International (formerly the American Society for Testing Materials) Standards on Engine Coolants standards for methoxy propanol base engine coolant concentrate and full-fill mixtures which are hereby incorporated by reference including subsequent amendments and editions. Copies of this document may be obtained from ASTM International, 100 Bar Harbor Drive, West Conshohocken, PA 19428-2959, at a cost of two hundred eleven dollars (\$211.00).

Weight Loss		
milligrams/specimen, maximum		
Test	(or other property described)	ASTM Method
Corrosion in Glassware		D-1384
Copper	10	
Solder	30	
Brass	10	
Steel	10	
Cast Iron	10	
Aluminum	30	
Simulated Service Test		D-2570
Copper	20	
Solder	60	
Brass	20	
Steel	20	
Cast Iron	20	
Aluminum	60	
Foaming	Volume: 150 ml, maximum	D-1881
	Break time: 5 seconds, maximum	
Cavitation Erosion	There shall be no pitting, cavitation or erosion of the water pump that will produce a rating below 8	D-2809

*History Note: Authority G.S. 106-579.7;  
Eff. February 1, 1982.*

**EXPLANATION/REASON FOR PROPOSED RULES:**

The proposed amendments will modernize the antifreeze analytical methods and clarify regulatory requirements for internal combustion engine antifreezes by matching analytical practices with current national standards. The proposed amendment in .0101 deletes reference to tables proposed to be deleted in .0102 and .0103 to limit confusion. Incorporating by reference ASTM standards will improve North Carolina's conformity with national standards employed by the industry. The amendments also update names, charges, and locations for obtaining the relevant standards.

**INSTRUCTIONS ON HOW AND WHERE TO SUBMIT COMMENTS ON THE PROPOSED RULES:**

Any person may object to the proposed rules by submitting a written statement of objection(s) to David S. McLeod, Secretary, NC Board of Agriculture, 1001 Mail Service Center, Raleigh NC 27699-1001.

Any person wishing to submit comments on the proposed rules may do so by submitting written comments to David S. McLeod, Secretary, NC Board of Agriculture, 1001 Mail Service Center, Raleigh, NC 27699-1001.

The Comment period ends 2/15/13.