

PREPARATION OF SYNTHETIC ACIDIC AQUEOUS CONDENSATE**Application**

This method is used to prepare an aqueous mixture of organic and mineral acids simulating the acidic aqueous condensate that can form inside internal combustion engines. The solution is then used in aging tests as specified in Material Specifications or on Engineering Drawings to assess the suitability of materials for operation in such an environment.

Equipment and Materials**Volumetric Flasks**

1000 mL capacity.

Graduated Pipettes

20 mL graduated pipette.

1 mL graduated pipette.

Dark Glass Storage Bottles

1000 mL capacity.

Electrochemical pH Meter**Methanoic (Formic) Acid**

98 - 100 %

Glacial Ethanoic (Acetic) Acid**Hydrochloric Acid**

Specific Gravity: 1.18

Nitric Acid

Specific Gravity: 1.42

Sulphuric Acid

Specific Gravity: 1.84

Date	Action	Revisions
2000 08 22	Revised	Editorial – no technical change A. Cockman
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Conditioning and Test Conditions

All test values indicated herein are based on material conditioned in a controlled atmosphere of 23 +/- °C and 50 +/- 5 % relative humidity for not less than 24 h prior to testing and tested under the same conditions unless otherwise specified.

Procedure

1. Add approximately 500 mL distilled water to a 1000 mL volumetric flask. Pipette the following quantities of acid into the flask ensuring that the acid is thoroughly mixed and the pipette is cleaned after each addition:

14.0 mL Methanoic Acid
15.0 mL Ethanoic Acid
1.0 mL Hydrochloric Acid
11.0 mL Nitric Acid
1.0 mL Sulphuric Acid

Add distilled water to make volume up to 1000 mL.

2. Transfer the solution to a dark glass storage bottle and label "Synthetic Acid Condensate - Stock Solution". Add the necessary acid warning labels.
3. Pipette 12.5 mL of the "Stock Solution" into a 1000 mL volumetric flask and dilute to 1000 mL with distilled water. Check pH to ensure that it falls within the range 2-3. Adjust as necessary by the addition of further "Stock Solution" or distilled water.
4. Transfer this solution to a dark glass storage bottle and label "Synthetic Acid Condensate - Working Solution". Add the necessary acid warning labels.
5. In use, the Working Solution shall be regularly monitored for pH and fresh solution made up from the stock solution when the pH rises above 3.

Chemicals, materials, parts, and equipment referenced in this document must be used and handled properly. Each party is responsible for determining proper use and handling in its facilities.