Ford Motor Company

FORD LABORATORY TEST METHOD AK 106-01

QUANTITATIVE ANALYSIS OF THE TOTAL ALKALINITY OF CLEANERS

Application

This test method is used to determine the total alkalinity of cleaners. The procedure is intended to be a simplified version of the applicable ASTM standard (e.g., D 501 or D 800) as well as being more appropriate for dealing with the many formulations of cleaners that are commonly encountered in plant operations.

Apparatus Required

Hotplate

Titration Apparatus

Erlenmeyer Flask
300 mL

Beaker
100 mL

The above apparatus is available from any reputable laboratory equipment supply house.

Material Required

Hydrochloric Acid
Concentrated, reagent grade.

Solutions Required

Hydrochloric Acid Solution - 0.5 N

Methyl Purple Indicator
An aqueous solution containing approximately 0.1 % active constituent.

Source: Harry Fleisher Chemical Co.
Benjamin Franklin Station
Washington, D.C. 20044

or equivalent.

Date	Action	Revisions	
2001 01 22	Revised	Editorial – no technical change	A. Cockman
2000 03 23	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 +/- 2 °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. Take a 0.5 to 1.0 g aliquot of the prepared 1 % solution of cleaner into a 300 mL Erlenmeyer flask.

2. Add methyl purple indicator.

3. Titrate with 0.5 N hydrochloric acid solution to the end point (a change from green to purple).

4. Heat this solution to boiling.

5. Boil for 10 minutes. This step is required in order to remove carbon dioxide which interferes with true end point.

6. If the indicator reverts back to the green color, the solution must be titrated again with more 0.5 N hydrochloric acid.

7. Calculate the alkalinity (usually) as Na_2O

$$\% Na_2O = \frac{\text{Total mL 0.5 N HCL Used} \times 0.0155 \times 100}{\text{Weight of Sample}}$$

Note: Nitrites, if present, may interfere with the determination of total alkalinity. If this should happen, apparent alkalinity should be reported using the end point that was obtained in Step #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.

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