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Committee D26 on Halogenated Organic Solvents and Fire Extinguishing Agents
Subcommittee D26.04 on Test Methods

Research Report D26-1004

Interlaboratory Study to Establish Precision Statements for ASTM D3401-97(2006) Standard Test Methods for Water in Halogenated Organic Solvents and Their Admixtures

ASTM International
100 Barr Harbor Drive
West Conshohocken, PA 19428-2959

1. Title

Committee D-26.04 on Halogenated Organic Compounds

Interlaboratory Test Study for the Determination of Water in Halogenated Organic Compounds (D-3401-78)

2. Introduction

This study was performed to determine the precision of ASTM D-3401, Water Content of Chlorinated Solvents

3. Test Method

D-3401-78 (attached)

4. List of Participating Laboratories

The five participating producer labs and contacts are as follows:

Jim McCabe
Diamond Shamrock Chemical Co.
7528 Auburn Road
Painsville, OH 44077

Jim Renfro
Dow Chemical U.S.A.
Building A-1230
Freeport, TX 77541

Tim Hopkins
ICI Americas, Inc.
Chemicals Resale Department
Marsh Road and Concord Place
Wilmington, DE 19897

Don Reich
PPG Industries Chemicals Division
Columbia Southern Road
Lake Charles, LA 70602

Gene Meyer
Vulcan Materials Co.
Customer Service Laboratory
P.O. Box 12283
Wichita, KS 67277

5. Interlaboratory Test Program Instructions

A. Five laboratories will participate in testing six standards. Each method in each standard will be tested in triplicate. Five solvent grades will be tested. For each test method, fifteen replicates per solvent sample will be generated yielding a total of 75 replicates per method.

B. Five grades of virgin solvent will be tested. Four producer labs have been assigned to supply the respective test samples. Three one-gallon (glass jug) samples from the same production lot will be supplied to each participating lab. The supplying lab will hold six one-gallon samples from the same lot in reserve for any necessary retesting. Solvent grades to be tested and the supplying lab assignments are as follows:

Methylene Chloride Vapor Degreasing Grade	Diamond
1,1,1-Trichloroethane Vapor Degreasing Grade	Vulcan
Trichloroethylene Vapor Degreasing Grade	PPG
Perchloroethylene Vapor Degreasing Grade	Dow
Perchloroethylene Dry Cleaning Grade	Dow

C. Each lab will have a single analyst perform triplicate analyses on a specific sample. Replicates will be analyzed on at least two different days by the analyst.

D. All test results will be reported as measured values (i.e. - no less than or greater than results).

6. Data (attached)

Table I	Outliers between days
Table II	Outliers between labs
Table III	Repeatability Evaluation
Table IV	Reproducibility Evaluation

7. Summary

Precision of ASTM D-3401-78

The precision data are based on 4 samples by 5 laboratories on 3 days and 1 sample by 4 laboratories on 3 days. The water concentrations reported in the samples ranged from about 13 to 85 ppm. Precision is expressed in absolute terms (2S, D2S).

Repeatability (Single-Operator) - The repeatability has been estimated to be ±5 ppm. Two tests do not differ significantly unless their difference exceeds 7 ppm.

Reproducibility (Multi-laboratory) - The reproducibility has been estimated to be ±12 ppm. Two test results do not differ significantly unless their difference exceeds 17 ppm.