



Draft Practice for Estimating pH to Verify Status of Lab Samples, and other methods in process by D19

William Lipps, Eurofins Eaton Analytical



The pH standard in title is in D19.05



We will get to pH later, but first, let me ~~sell you~~ tell you about a few other things.

Examples of other new methods by D19



Standards in Development by D19.02



WK63806 Development and Optimization of D19 Chemical Analysis Methods intended for EPA compliance reporting

D2777-13 Standard Practice for Determination of Precision and Bias of Applicable Test Methods of Committee D19 on Water

D1129-13 Standard Terminology Relating to Water (most referenced Standard)

Standards in Development by D19.03



WK58910 Guide to Terminology for Process Instrumentation

WK44406 New Test Method for On-Line Monitoring of Total Organic Carbon, Total Carbon and Total Inorganic Carbon in Water by Catalyzed Ozone Hydroxyl Radical Oxidation and Detection of Resulting Carbon Dioxide

Standards in Development by D19.04



WK23397 New Test Method for Standard Test Method for Determination of Strontium-89 and Strontium-90 in Water by Cerenkov Counting

WK60568 Rapid Radiochemical Determination of Alpha-Emitting Uranium Isotopes in Water

WK63465 Rapid Sequential Alpha Spectrometric Determination of Isotopes of Americium, Curium, Plutonium, and Uranium in Environmental Water Samples

Standards in Development by D19.05



WK51894 Anions in High Ionic Water by Ion Chromatography Using Tandem Suppressed Conductivity and Ultraviolet (UV) Detection

WK42422 New Test Method for Determination of Ammonia Nitrogen by Semi-Automated Gas Diffusion Colorimetry

WK57556 Total Hardness of Water, Waste Water with Color Using Titration and Optical Spectroscopy as End Point Determination

WK65181 Estimating pH to Verify Preservation of Laboratory Samples

Are we gonna
look at pH
now?



Estimating pH to Verify Preservation of Laboratory Samples



Rationale

This practice intends to be referenced in ASTM methods for use in verifying pH at time of sampling, at receipt at a laboratory, or during analytical steps that require a certain pH. This practice estimates the pH and is not a quantitative determination of pH and is not to be used in place of the field or laboratory determination of pH by methods such as ASTM D1293.

Committee	Sent	Returned	% Returned
D19.05	53	32	60.38

Affirmative	18
Negative	0
Abstain	14
% Affirmative	100

COMMENTS:

David M Gray
JERRY L PARR
James W Egan
Kevin T Schlueter

Why develop a “practice” to determine pH by strips?



Run #	Sample Number	Client	Test/Bottle#	Temp. °C	Reported pH	Comments
LCS	pH 4.0			20.3	4	(+/- 0.1)
1	201904040300::2	NEWMEXICODWB-NM	544	19.3	6.2	FISHER STRIPS- 6.0
2	201904040153::1	FARMINGTON-UT	544	19	6	FISHER STRIPS- 6.0
3	201904040142::1	AMERICAN-CANYON	544	18.9	6.3	FISHER STRIPS- 6.0
4	201904040142::3	AMERICAN-CANYON	544	19	6	FISHER STRIPS- 5.0
5	201904040096::1	ROSEVILLE	544	19.1	7.7	FISHER STRIPS- 5.0
6	201904040096::2	ROSEVILLE	544	19	7.6	FISHER STRIPS- 5.0
7	201904040096::3	ROSEVILLE	544	19	7.7	FISHER STRIPS- 5.0

All samples get checked for pH and Chlorine using “spot test”

Failed “spot test” verified by meter

Why don’t paper and meter agree? Or do they?

We compared samples of meter and paper



Method	Acceptance Criteria	Paper (n = 40)	Probe (n=40)	Bias (of paper)
544	6.5 – 7.5	5.6	6.33	- 0.7
541	< 3	3.8	3.12	+ 0.7

- This testing was only on samples that “failed” by paper
- “narrow range” test strips used (theoretically ± 0.5)
- “color” intensity varies lot to lot and between lots

A pH 6 buffer using a narrow range indicator solution



Some of these things are not like the other



Manufacturer instruction = pH 5.5 or less

The intent of this pH method provide guidance, and be referred to in other methods



Draft ASTM Ammonia Method WK 42422

10.2 Preserve samples by adding H_2SO_4 to pH 2 and storing at 2 to 6°C. Verify that pH is about 2 with 0 – 13 pH paper **as described in Practice DXXXX-XX**

Reliance of pH paper and strips indicates need for guidance beyond manufacturer instructions.

More detail on problems with testing pH provided in Session **Identifying and Combatting Inappropriate Laboratory Practices** Tuesday afternoon

Standards in Development by D19.06



WK57480 Measuring Volatile Organic Compounds (VOCs) in Water utilizing Headspace Analysis with Gas Chromatography and Mass Spectrometry (Headspace GC/MS)

WK54549 Determination of Pesticides, PCBs, and Polychlorinated Biphenyl Congeners in Aqueous Solution by Tandem GCMSMS

WK67565 Spectroscopic Identification and Quantification of Microplastic Particles in Municipal Wastewater Using Raman and FTIR Spectroscopy

WK68866 Determination of Adsorbable Organic Fluorine in Waters and Waste Waters by adsorption on Activated Carbon followed by Combustion Ion Chromatography

Standard in Development by D19.07



F660-83(2013) Standard Practice for Comparing Particle Size in the Use of Alternative Types of Particle Counters

Examples of D19.07 Standards

D6764-02(2013) Standard Guide for Collection of Water Temperature, Dissolved-Oxygen Concentrations, Specific Electrical Conductance, and pH Data from Open Channels

D6855-17 Standard Test Method for Determination of Turbidity Below 5 NTU in Static Mode

Standard in Development by D19.08



D4548-11 Standard Test Method for Anion-Cation Balance of Mixed Bed Ion-Exchange Resins (revision)

Examples of D19.08 Standards

D2187-17 Standard Test Methods and Practices for Evaluating Physical and Chemical Properties of Particulate Ion-Exchange Resins

D3863-87(2011) Standard Test Method for Retention Characteristics of 0.40 to 0.45- μm Membrane Filters Used in Routine Filtration Procedures for the Evaluation of Microbiological Water Quality

Standard in Development by D19.24



D3731-87(2012) Standard Practices for Measurement of Chlorophyll Content of Algae in Surface Waters (revision)

D5259-19 Standard Test Method for Isolation and Enumeration of Enterococci from Water by the Membrane Filter Procedure (revision)

D5392-19 Standard Test Method for Isolation and Enumeration of Escherichia coli in Water by the Two-Step Membrane Filter Procedure (revision)

Activities in selected executive committees



- D19.90.02 –
 - rewrite and modernize bylaws
 - Update web site
- D19.90.01
 - Update scopes for all subcommittees
 - Compile list of EPA approved methods for website
 - Evaluate and approve ILS test plans
- D19.90.04
 - Schedule biannual meetings with EPA
- D19.95
 - Coordinate ISO TC147 TAG
 - Chair = head of US delegation

Summary



ASTM D19 is volunteers divided into various task groups of expertise

Members create methods, guides, and practices

Members consist of users, producers, general interest

Many ASTM methods are approved, and more will be

Discussion



William Lipps

williamlipps@eurofinsus.com

Eurofins Eaton Analytical, LLC

www.eurofinsus.com