

Hydrogen Peroxide

Methods

Hydrogen peroxide is a strong oxidizing agent with a variety of uses. Applications include the treating of industrial effluents and domestic waste and serving as a disinfectant in aseptic packaging.

For the food and beverage industry, CHEMetrics Hydrogen Peroxide CHEMets and Vacu-vials products are used extensively to monitor sterilization solutions in the packaging and sanitizing processes.

The Ferric Thiocyanate Method

Reference: D. F. Boltz and J. A. Howell, eds., *Colorimetric Determination of Nonmetals*, 2nd ed., Vol. 8, p. 304 (1978).

The ferric thiocyanate method consists of ammonium thiocyanate and ferrous iron in acid solution. Hydrogen peroxide oxidizes ferrous iron to the ferric state, resulting in the formation of a red thiocyanate complex. Chlorine will not interfere with this method. Ferric iron, peracetic acid, and cupric copper will interfere.* Results are expressed as ppm (mg/L) H₂O₂.

The DPD Method

References: USEPA Methods for Chemical Analysis of Water and Wastes, Method 330.5 (1983). APHA Standard Methods, 23rd ed., Method 4500-Cl G - 2000. D.F. Boltz and J.A. Howell, eds., *Colorimetric Determination of Nonmetals* 2nd ed., Vol. 8, p. 303 (1978).

With the DPD Method, hydrogen peroxide reacts with DPD (N, N-diethyl-p-phenylenediamine) in the presence of potassium iodide and ammonium molybdate to form a pink product. Results are expressed as ppm (mg/L) H₂O₂.

The Ceric Sulfate Titrimetric Method

Reference: Developed by CHEMetrics.

CHEMetrics developed a titrimetric method using ceric sulfate as the titrant and ferroin as the end point indicator. A color change from green to orange signals the end of the titration. Results are expressed as percent (%) H₂O₂. The test range can be modified by performing a sample dilution. **Details are provided in the kit instructions for ranges of 0.01 - 0.1% through 2-20%.**

Visual Kit

Range: 0-0.5 ppm
MDL: 0.025 ppm / Method: DPD

CHEMets Kit	Cat#
CHEMets Refill, 30 ampoules	R-5502
Activator Solution Pack, six 10 mL bottles	A-5500 ¹
Activator Solution Pack, six 10 mL bottles	A-5501 ¹
Comparator 0, 0.05, 0.10, 0.15, 0.20, 0.30, 0.40, 0.50 ppm	C-5502

Kit comes in a plastic case and contains everything needed to perform 30 tests: Refill, Comparator, Activator Solutions, 25 mL sample cup and instructions.

Range: 0-0.8 & 1-10 ppm
MDL: 0.05 ppm /Method: Ferric Thiocyanate


CHEMets Kit	Cat#
CHEMets Refill, 30 ampoules	R-5510
Low Range Comparator 0, 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.8 ppm	C-5501
High Range Comparator 1, 2, 3, 4, 5, 6, 7, 8, 10 ppm	C-5510

Kit comes in a plastic case and contains everything needed to perform 30 tests: Refill, Low and High Range Comparators, 25 mL sample cup and instructions.

¹ The accessory pack supplies enough solution to perform at least 200 tests.

* Contact technical@chemetrics.com for more information.



 **WARNING!** The product employing the Ferric Thiocyanate method can expose you to chemicals including methanol, which is known to the State of California to cause birth defects or other reproductive harm. For more information, go to www.P65Warnings.gov.

Range: 0-25 & 30-300 ppm
MDL: 5 ppm / Method: Ferric Thiocyanate

	Cat#
VACUettes Kit	K-5510D
VACUettes Refill, 30 ampoules	R-5510D
Low Range Comparator 0, 5, 7.5, 10, 12.5, 15, 20, 25 ppm	C-5501D
High Range Comparator 30, 60, 90, 120, 150, 175, 200, 250, 300 ppm	C-5510D

Kit comes in a plastic case and contains everything needed to perform 30 tests (except distilled water): Refill, Low and High Range Comparators, dilutor snapper cup, micro test tube and instructions.

Range: 0-100 & 120-1200 ppm
MDL: 20 ppm / Method: Ferric Thiocyanate

	Cat#
VACUettes Kit	K-5510B
VACUettes Refill, 30 ampoules	R-5510B
Low Range Comparator 0, 20, 30, 40, 55, 70, 85, 100 ppm	C-5501B
High Range Comparator 120, 240, 360, 480, 600, 700, 800, 1000, 1200 ppm	C-5510B

Kit comes in a plastic case and contains everything needed to perform 30 tests (except distilled water): Refill, Low and High Range Comparators, dilutor snapper cup, micro test tube and instructions.

Range: 0-50 & 60-600 ppm
MDL: 10 ppm / Method: Ferric Thiocyanate

	Cat#
VACUettes Kit	K-5510A
VACUettes Refill, 30 ampoules	R-5510A
Low Range Comparator 0, 10, 15, 20, 25, 35, 40, 50 ppm	C-5501A
High Range Comparator 60, 120, 180, 240, 300, 350, 400, 500, 600 ppm	C-5510A

Kit comes in a plastic case and contains everything needed to perform 30 tests (except distilled water): Refill, Low and High Range Comparators, dilutor snapper cup, micro test tube and instructions.

Range: 0-1000 & 1200-12,000 ppm
MDL: 200 ppm / Method: Ferric Thiocyanate

	Cat#
VACUettes Kit	K-5510C
VACUettes Refill, 30 ampoules	R-5510C
Low Range Comparator 0, 200, 300, 400, 550, 700, 850, 1000 ppm	C-5501C
High Range Comparator 1200, 2400, 3600, 4800, 6000, 7000, 8000, 10,000, 12,000 ppm	C-5510C

Kit comes in a plastic case and contains everything needed to perform 30 tests (except distilled water): Refill, Low and High Range Comparators, dilutor snapper cup, micro test tube and instructions.

Range: 0.1-1.0% (up to 20% with dilution)
MDL: 0.10% Method: Ceric Sulfate Titrant with Ferroin Indicator

	Cat#
Titrets Kit	K-5530

Increments: 0.10, 0.11, 0.12, 0.13, 0.14, 0.15, 0.16, 0.18, 0.20, 0.25, 0.30, 0.35, 0.40, 0.50, 0.70, 1.0%

Kit comes in a cardboard box and contains everything needed to perform 30 tests (except distilled water): thirty ampoules with valve assemblies, 1.0 mL syringe, 3.0 mL syringe, titrettor, 25 mL sample cup and instructions.



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Instrumental Kits

Multi-Analyte Photometers

V-2000 / V-3000

(See page 14 for instrumental features)

Range: 0-6.00 ppm
Method: Ferric Thiocyanate

	Cat#
Vacu-vials Kit	K-5543

Kit comes in a cardboard box and contains everything needed to perform 30 tests: thirty ampoules, 25 mL sample cup, ampoule blank and instructions.

Vacu-vials Kits require the use of a CHEMetrics Direct-Readout Photometer (photometers sold separately) or a spectrophotometer capable of accepting a 13 mm diameter round cell. See page 14 for details.

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SAM Single Analyte Photometer

(See page 16 for instrumental features)

Range: 0-6.00 ppm
Method: Ferric Thiocyanate

	Cat#
Hydrogen Peroxide SAM Kit	I-2016

Vacu-vials Kit, 30 ampoules, 25 mL sample cup, ampoule blank and instructions.

K-5543

SAM Kit comes in a plastic case and contains everything needed to perform 30 tests: Vacu-vials Kit, SAM Photometer, light shield, 4 AAA batteries, screwdriver, and instructions.

Components and Accessories

Description	Cat#
Sample Cup Pack, 25 mL (6 ea)	A-0013
Micro Test Tube Pack (10 ea)	A-0015
Dilutor Snapper Cup Pack (6 ea)	A-0018
Ampoule Blank Pack (5 ea)	A-0023
Syringe Pack, 1.0 mL (6 ea)	A-0027
Titrettor Pack (1 ea)	A-0053
Syringe Pack, 3.0 mL (6 ea)	A-0063
* Sample Zeroing Accessory Pack	A-0503
Hydrogen Peroxide Standard (for 0.5 ppm standard)	A-5505

* For use when testing colored or turbid samples. See page 13 for details.

Instructions and SDSs are posted on our website.

If no shelf life is listed for a product, then the shelf life is at least 1 year.

