

F&B FOCUS

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Volume 5 • Issue 1



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Page 6 | Determination of 4-Methylimidazole in Cola Soft Drinks • **Page 8 |** Determination of Oxygen in Wine • **Page 12 |** How to Choose the Right Environmental Sampling Medium



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Like the Food Industry, it is critical for the Beverage Industry to preserve product quality for the well-being and safety of consumers. Beverage manufacturers need to consider risks such as cross-contamination with allergens, spoilage, and fermentation in their quality control plans and processes. VWR is here to help, with years of expertise supporting the F&B Industry and breadth of product choice including media, rapid tests, consumables, instruments, and services. From sampling to analysis to production —VWR has it covered!

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Featured Inside	Page
Chromatography Products.....	3
Acetonitrile, HiPerSolv CHROMANORM Super Gradient for HPLC.....	3
Reference Standard Buffers.....	3
Article – Determination of 4-Methylimidazole in Cola Soft Drinks using a Purospher®STAR RP-18e Column and UV Detection.....	4-6
MQuant™ Test Strips & Reflectoquant® Systems.....	7
DR3900 Spectrophotometer & TNTplus™ Vial Chemistries.....	7
Article – Determination of Oxygen in Wine.....	8-9
Ion Chromatography (IC) PolyVials.....	9
Basic Protection Industrial Garments & Accessories.....	10-11
Article – How to Choose the Right Environmental Sampling Medium.....	12
ESK® Sampling Kits.....	13
Sterile Sample Bags.....	13
Specimen Containers.....	9
Money Saving Offers	
Microcentrifuge Tubes offer- Free Vortex Mixer.....	14
LabWater System offer- Free 2nd Purification Pack.....	14
Advanced Analytics Chemicals- Dollar Match.....	14
Rotovapors - Limited Time Savings.....	14
MVMT™ Critical Performance Chairs.....	15
Tissue Culture Products- Free Pipette.....	15
Pipet Tips- Free Single Channel Pipettor.....	15
Space Saver 24" Deep Worktables- Limited Time Savings.....	15
Essential Testing Products for the Brewing Industry.....	16
BRAND Titrette® Bottletop Burette with Class A Precision.....	17
Food Sampling & Storage Bottles.....	18
Syringe Filters.....	18
Grade 313 Fluted Circles.....	18
Solutions for Your Wine Laboratory.....	19
Mobile Lab Furniture Solutions.....	19
MICROGRIP® PURPLE NITRILE® Gloves.....	20
Nitrile Examination Gloves.....	20
Grippy Floor Mat with Adhesive Backing.....	20
Disposable Petri Dishes.....	21
Disposable Culture Tubes.....	21
Transfer Pipets.....	21
Aerosol Filter Pipet Tips.....	21
Light-Duty Tissue Wipers.....	21
Peltier Low Temperature Incubators.....	22
S-Blender-1A for Microbiological Sample Preparation.....	22
Orion Star T900 Series Potentiometric Titrators.....	23

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Description	Cat. No.	Price
BAKERBOND® Wide-Pore WP Octyl (C8) Column, Analytical	JT7105-1	Ea./ 2231.65
BAKERBOND® Narrow-Pore Prep Packings	JT7025-1	Ea./ 5009.63
Baker-flex® Precoated Flexible TLC Sheets, 200µm Thickness, F254, 25 x 75mm Plate, Silica Gel Coating	JT4463-2	Pk. 200/ 278.14
Baker-flex® Precoated Flexible TLC Sheets, 250µm Thickness, F254, 25 x 75mm Plate, Silica Gel Coating	JT4449-2	Pk. 200/ 288.15
BAKERBOND® SPE Columns, Reversed Phase, Octadecyl, 6 mL	JT7020-6	Pk. 30/ 224.89

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Acetonitrile, HiPerSolv CHROMANORM® Super Gradient for HPLC

From the exclusive family of high-quality, competitively priced VWR Chemicals BDH – High Purity solvents for HPLC applications. These solvents are manufactured and packed in state of the art ISO9001 solvent production facilities and feature an unparalleled combination of performance and price for even the most demanding liquid chromatography applications.

Solvents are pumped through 0.2micron filters on filling and packaged under Nitrogen.



Size	Packaging	Cat. No.	Each	Case of
1 L	Amber Glass Bottle. 45 mm Neck	BDH83639.100E	101.23	6/ 576.61
4 L	Amber Glass Bottle	BDH83639.400	286.34	4/ 760.51
5 L	Aluminum Bottle	BDH83639.500	329.22	4/ 877.02

VWR Chemicals BDH Reference Standard Buffers

- Available as either colorless or colored solutions
- Calibrated in an ISO 17025 certified laboratory using certified Standards
- Traceable to NIST Standard Reference Materials



pH Value	Color	pH Accuracy	Traceable to N.I.S.T. (SRM) No.	Cat. No.	Each
1	Colorless	±0.01	185, 186	BDH5004-20L	246.40
2	Colorless	±0.01	185, 186	BDH5012-20L	246.20
3	Colorless	±0.01	185, 186	BDH5000-20L	298.47
4	Red	±0.01	185,186	BDH0198-20L	215.29
4	Colorless	±0.01	185, 186	BDH5028-20L	193.07
5	Colorless	±0.01	185, 186	BDH5036-20L	204.44
6.86	Colorless	±0.01	185, 186	BDH5042-20L	221.29
7	Yellow	±0.01	186,191	BDH0194-20L	250.13
7	Colorless	±0.01	186, 191, 192	BDH5056-20L	277.18
9.18	Colorless	±0.01	186, 191, 192	BDH5068-20L	220.56
10	Blue	±0.01	186,191	BDH0190-20L	209.98
10	Colorless	±0.01	186, 191, 192	BDH5082-20L	277.18
12	Colorless	±0.02	186, 191, 192	BDH5090-20L	247.83
12.45	Colorless	±0.02	186, 191, 192	BDH5096-20L	411.56

Determination of 4-Methylimidazole in Cola Soft Drinks using a Purospher® STAR RP-18e Column and UV Detection

Anita Piper and Patrik Appelblad, Millipore Sigma



Introduction

4-Methylimidazole (4-MI), **figure 1**, is a heterocyclic compound derived from imidazole through substitution of the hydrogen in position 4 by a methyl group. 4-MI is a known animal carcinogen and it may be formed when carbohydrates and amino-containing compounds react during browning of food, but also in certain fermentation processes, and in types of caramel coloring produced with ammonia or ammonia and sulfites based processes. Recently, high levels of 4-MI has been found in many cola soft drinks including Coca-Cola, Pepsi-Cola, Diet Coke, and Diet Pepsi. Additionally, it has been found in roasted foods, grilled meats, and coffee. Dark beers and common cola soft drinks may contain more than 100µg of 4-MI per 12-ounce canister.

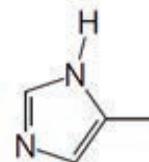
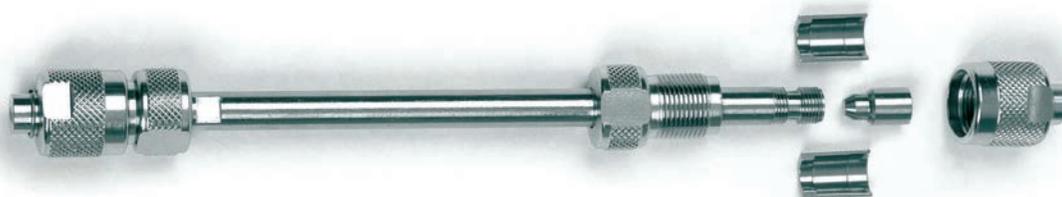


Figure 1. Chemical structure of 4-methylimidazole (4-MEI).

In February 2011, the Center for Science in the Public Interest (CSPI) petitioned United States Food and Drug Administration (US FDA) to withdraw its authorization for caramel colorings that contain 4-MI, and in the interim to change the name of the additive to “ammonia-sulfite process caramel coloring” or “chemically modified caramel coloring” for labeling purposes. California has added 4-MI to its list of probable carcinogens, and of this reason leading manufacturers of cola soft drinks declared in March 2012 to change their recipes to avoid a cancer warning label in compliance with Californian law.

Herein, a simple yet rugged analytical procedure is presented for direct analysis of 4-MI in well known cola soft drinks, and light versions of said beverages, and where no sample preparation is needed, using a high pH stable Purospher STAR C18-end-capped reversed phase (RP) column and UV detection.



Experimental Conditions

Column:	Purospher®STAR RP-18 endcapped (3 µm) 100x2.1mm (Cat. No. 97021-985)																
Mobile phase (v/v):	A: Acetonitrile, 100 % (Cat. No. BDH1103-4LP) B: 5 mM Ammonium Hydroxide, 100%																
Gradient:	<table border="1"> <thead> <tr> <th>Time (min)</th> <th>% A</th> <th>% B</th> <th></th> </tr> </thead> <tbody> <tr> <td>0-10</td> <td>2 →20</td> <td>98 →80</td> <td>Linear gradient</td> </tr> <tr> <td>10-15</td> <td>2 →25</td> <td>80 →75</td> <td>Linear gradient</td> </tr> <tr> <td>15-20</td> <td>25 →2</td> <td>75 →98</td> <td>Equilibration</td> </tr> </tbody> </table>	Time (min)	% A	% B		0-10	2 →20	98 →80	Linear gradient	10-15	2 →25	80 →75	Linear gradient	15-20	25 →2	75 →98	Equilibration
Time (min)	% A	% B															
0-10	2 →20	98 →80	Linear gradient														
10-15	2 →25	80 →75	Linear gradient														
15-20	25 →2	75 →98	Equilibration														
Flow rate:	85 µL/min.																
Chromatographic system:	Dionex Ultimate 3000 VWD-3400, 5Hz, Response Time 0,1s, UV=215nm																
Injection Volume:	10 µL																
Temperature:	40 °C																
Sample:	Direct injection of cola soft drinks																

Sample Preparation

1. Open the soft drink canister and degas the cola soft drink to remove all carbon dioxide.
2. Fill autosampler vials with sample and perform direct injection.

Tips & Tricks

The mobile phase is based on a low concentration basic ammonium hydroxide solution, and of this reason sensitive and easily affected by the surrounding carbon dioxide in the atmosphere. To maintain stable and robust retention time, two approaches are possible.

1. Make new solutions of 5mM ammonium hydroxide every day of analysis and make sure mobile phase bottles are closed.
2. Use a carbon dioxide trap on the 5mM ammonium hydroxide mobile phase bottle.

Results and Discussion

4-methylimidazole has a pka value of 7.5, and a logP value of 0.2, which makes it possible to retain on both RP and hydrophilic interaction liquid chromatographic (HILIC) columns. To meet the quantitative analysis requirements for 4-MI in different cola soft drinks, including light products containing artificial sweeteners, three different columns were tested. Attempts were carried out using a ZIC®-HILIC column, and two reversed phase

columns; a monolithic Chromolith® HighResolution RP-18e and a particulate 3 µm Purospher®STAR RP-18e column. On all columns while using acidic and neutral pH mobile phases, good retentivity of 4-MI was achieved, but close or overlapping elution with matrix components, especially in the light products, prevented quantitation using UV detection.

Increasing the pH to 10, by using ammonium hydroxide in the mobile phase and thereby deionizing 4-methylimidazole, altered the chromatographic profile and improved the overall resolution between the target analyte and matrix components. To facilitate use of high pH mobile phases, a column such as Purospher®STAR RP-18e is required (where the operational pH range is 1.5-10.5). Considering separation, detection and sample preparation for analysis of 4-MI in cola soft drinks, provisional optimal conditions were obtained using a 100x2.1mm i.d. Purospher®STAR RP-18e column having 3µm particles. Degassing of sample prior analysis was the only requirement in terms of sample preparation. By applying the experimental conditions given it is possible to carry out direct injection of cola soft drinks using UV detection. If positive confirmation analysis is required, i.e. mass spectrometric detection, no adaptation is needed since the mobile phase composition is MS friendly (**figure 2**).



Application to Real Samples

In **figure 3 & 4**, direct injection of Coca Cola, and spiked Coca Cola samples are shown. The chromatograms illustrate that 4-methylimidazole can easily be separated from the matrix using this method and the concentration of 4-MI is low.

In **figure 5**, a direct injection of Coca Cola light illustrate that 4-methylimidazole can easily be

quantified with UV detection. Same result was obtained from a direct injection of Pepsi Cola light sample, see **figure 6**.

In **figure 7 & 8**, direct injection of Coca Cola zero sample, and spiked Coca Cola zero samples are shown, respectively.

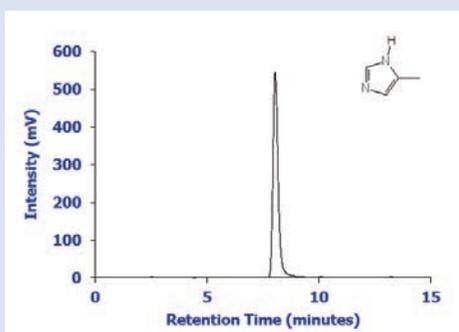


Figure 2: Chromatogram showing retention of 4-MI (300 µg/mL standard solution) on a 100x2.1mm id Purospher®STAR RP-18e column.

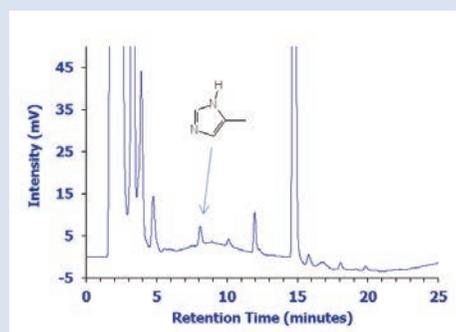


Figure 5: Chromatogram showing direct injection of a Coca Cola light sample.

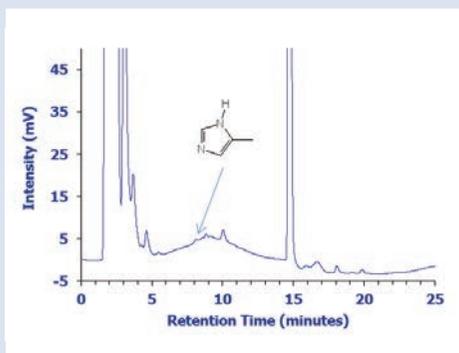


Figure 3: Chromatogram showing 10 µL direct injection of a Coca Cola sample.

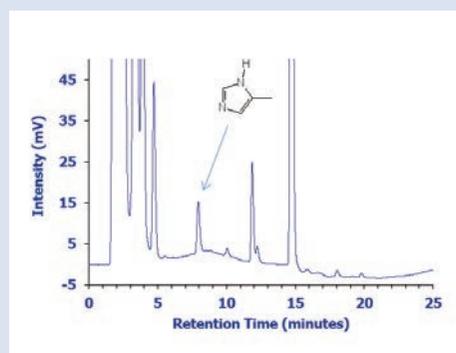


Figure 6: Chromatogram showing direct injection of a Pepsi Cola light sample.

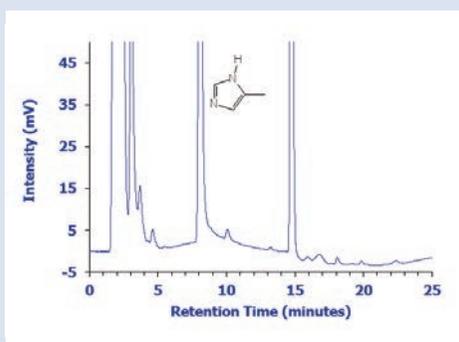


Figure 4: Chromatogram showing direct injection of a spiked Coca Cola sample (+52 µg/mL of 4-MI).

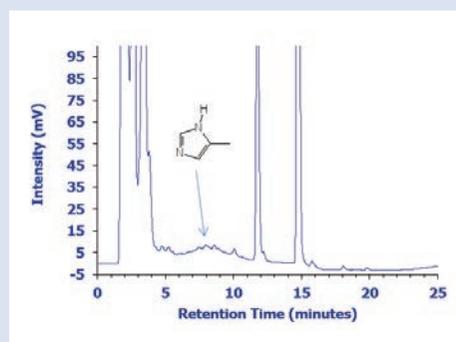


Figure 7: Chromatogram showing direct injection of a Coca Cola zero sample.

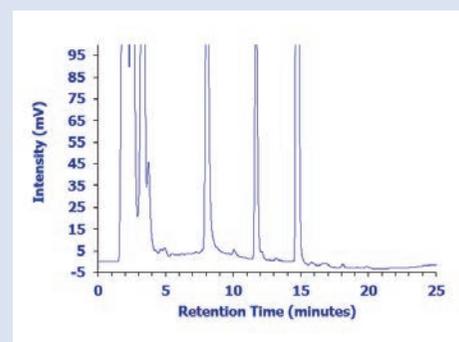


Figure 8: Chromatogram showing direct injection of a spiked Coca Cola zero sample (+52 µg/mL 4-MI).

MilliporeSigma Beverage Testing

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Be Right™

Whether your goal is to maintain permit compliance, prevent product loss, or optimize water treatment, Hach's DR3900 spectrophotometer and TNTplus™ Vial Chemistries will help you succeed.

- Simple preparation
- Fast execution
- Comprehensive documentation
- Available with (or without) RFID for easy method update, sample ID and certificate of analysis



Description	Wavelength	Cat. No.	Each
DR3900 Benchtop VIS Spectrophotometer with RFID Technology	320 – 1100 nm	75921-230	4540.75

TNTplus Vial Chemistries	Measurement Range	EPA Approved	Cat. No.	Pack of 25
Ammonia TNTplus™, ULR (EPA)	0.015-2.00 NH ₃ -N	Yes	75919-202	56.16
Ammonia TNTplus™, HR (EPA)	47-130 NH ₃ -N	Yes	75919-318	55.91
Phosphorus, Reactive and Total* TNTplus™, LR	0.05-1.5 P (0.15-4.5 PO ₄)	Yes	75919-328	72.56
Phosphorus, Reactive and Total TNTplus™, HR	0.5-5.0 P (1.5-15.0 PO ₄)	Yes	75919-250	56.57

No. of Tubes: 25. For a full list of TNTplus vial chemistries visit www.vwr.com/hach.
*Digestion required for Total

Determination of Oxygen in Wine

Petra Pütz, Hach Application Manager



“Oxygen is the greatest enemy of wine.”

—Louis Pasteur

For more than 2,000 years, winegrowers have been trying to keep the oxygen content of their wines as stable and as low as possible. Undesirable oxidation processes, which can strongly impair the quality of the wine, should be avoided. The oxygen concentration in wine is therefore measured at a number of stages (production, storage, filling). Digital Luminescent Dissolved Oxygen (LDO) technology makes this determination simpler and more reliable than ever before. The Hach LDO sensor can measure the oxygen content quickly and simply anywhere.

Background

The quality of a wine is crucially influenced by its oxygen content. Depending on the concentration of dissolved oxygen, oxidation processes may occur, which have a negative effect on the wine:

- The color deepens
- Formation and multiplication of microorganisms
- Loss of freshness and aroma
- Rapid aging



On the other hand, red wine in particular needs a certain amount of oxygen during the maturation process in order to develop. At the latest, more oxygen should be added to young red wine if it has an unpleasant odor (hydrogen sulphide formation) and the tannin structure is dry and unattractive. This usually occurs immediately after fermentation. During the filling stage, however, no more oxygen should be added.

Significance of Oxygen Analysis

Whatever the circumstances, an exact knowledge of the oxygen concentration in wine is of immense significance. Especially as the dosage and consumption of sulfurous acid (preservatives and antioxidant) depends mainly on the amount of dissolved oxygen. Determining oxygen before the filling stage therefore simplifies the correct sulphur dioxide dosage. Ideally the filling stage should be reached with 0.2–0.5 mg/L dissolved oxygen.

Oxygen Measurement with LDO

With Hach HQD meters, it is now possible to monitor the oxygen content of wine in a variety of measurement locations, including in the barrel, the tank, or the bottle. The maintenance-free LDO oxygen electrode from Hach yields exact measurement results in just a few seconds. Thanks to LDO technology, the substances in the wine have no influence on the value. It makes no difference whether the measurement is carried out in red, rose or white wine, or whether turbidities are present. Up to 500 measured values can be stored in the HQD and/or simply printed or transferred to a PC. Incidentally, the HQD can also determine pH and conductivity if the corresponding electrodes are used.

“We measure the dissolved oxygen in our wines in order to monitor their chemical stability and as part of our quality control procedures. The oxygen concentration should always be kept below 1 mg/L. We enjoy working with the HQD and the LDO electrode from Hach, because it is simple to operate and provides precise measured values. Equally important is that the instrument and the electrode require no maintenance, and the instrument functions so reliably. We use the HQD to measure oxygen in wine barrels as well as bottles.”

— Pecznik László, Managing Director, Boranal Kft., Hungary



Rugged outdoor electrodes with long cables

The HQD offers a special highlight: the determination of LDO on site (e.g. in the barrel or tank). Besides the usual standard electrode, a rugged outdoor electrode is available with a cable length of up to 30m. The watertight probe in a steel housing is impact resistant and can be immersed in a medium some distance away without any difficulty.



VWR
COLLECTION

designed for
research & analysis

VWR® Ion Chromatography (IC) PolyVials

- Ion chromatography analysis of environmental, water/wastewater, pharmaceutical, and research samples
- Filter cap vials provide in-line filtration, reducing sample treatment and overall cost

VWR IC Vials for Dionex Autosamplers

Made of high-grade polypropylene, vials provide in-line filtration that can eliminate additional sample filtering steps, reducing sample pre-treatment time and overall costs. VWR IC 7mL Vials with pierceable caps are compatible with Dionex AS-50 or AS-AP autosamplers.

VWR IC Vials for Metrohm-Peak Autosamplers

With a 16mm diameter and a capacity of up to 12mL, these conical tubes have a pierceable polyethylene cap that keeps airborne contaminants out, yet is easily penetrated by sampling needle.



Capacity, mL	For Use With	Cap Type	Cat. No.	Pack of
IC Vials for Dionex Autosamplers				
7	Dionex AS-50/AS-AP	Pierceable Polyethylene	10571-308	250/ 156.85
5	Dionex AS-40/AS-DV	40–60 µm Porous Filter	10571-344	250/ 133.83
0.5	Dionex AS-40/AS-DV	40–60 µm Porous Filter	10571-348	250/ 133.83
5	Dionex AS-40/AS-DV	40–60 µm Porous Filter, Sample Pack	10799-706	10/ 7.73
5	Dionex AS-40/AS-DV	Cap - No Filter	10571-346	250/ 88.71
IC Conical Tube Vial for Metrohm-Peak Autosamplers				
12	Metrohm-Peak IC	Pierceable Polyethylene	10571-312	1,000/ 245.56

Conclusion

The ability to monitor intended and unintended oxygen input during wine making, storage and filling has many advantages.

- Greater stability of white and rose wines
- Complete and successful fermentation process
- Stabilization of the color and structure of red wines
- Control of the “aroma profile” of white and rose wines
- Reduction of the amount of antioxidant (sulfurous acid)
- Customers receive wine with an optimal sensory make-up
- Avoidance of complaints

Important tip for LDO determination in a wine bottle: During the measurement, the probe should be moved a few times (simply but carefully allow it to “fall” onto the bottle neck). This prevents air bubbles from collecting on the measuring sensor and influencing the result.

Specifications

HQ30d & HQ40d	
Oxygen (LDO)	
Measuring Range	0.00–20.0 mg/l; 0–200 %
Resolution, Selectable	0.01 or 0.1 mg/l; 0.1 % saturation
Accuracy	±1 % of the measuring range
Air Pressure Compensation	Automatic
Other Characteristics	Automatic correction of salinity; choice of language; different measuring methods can be used (manual, interval, continuous); watertight to IP67; cable lengths 1–30 m; usable in the laboratory and on site
Special features of LDO	No calibration needed; maintenance-free; drift-free measured values; no polarization; suitable for oxygen measurement in red, rose and white wines.
Conductivity	
Measuring Range	0.01 µS/cm – 200 mS/cm
Resolution	Max. 5 digits, 2 decimal places, if possible
Accuracy	±0.5 % (1 µS/cm – 200 mS/cm)
Temperature Compensation	Non-linear (natural water in accordance with EN ISO 7888), non-linear (NaCl), linear coefficient [numeric value] %/°C, no compensation
pH	
Measuring range	0–14
Resolution	0.1 / 0.01 / 0.001
Accuracy	±0.002
Temperature Compensation	Automatic

Portable Meter Packages	Certification	Cat. No.	Each
HQ30d, LDO101 Dissolved Oxygen Probe	.CE.WEEE.	89174-050	1695.93
HQ30d, LDO101 Rugged Dissolved Oxygen Probe	.CE.WEEE.	89174-070	2217.00
HQ30d, pH, Conductivity, Dissolved Oxygen, ORP, and ISE Multi-Parameter Meter	.CE.WEEE.	89174-004	936.30
HQ40d, LDO101 Rugged Dissolved Oxygen Probe	UL/CSA/TUV.CE.WEEE.	89174-072	2478.94
HQ40d, LDO101 Rugged Dissolved Oxygen and pH101 Rugged pH Probes	UL/CSA/TUV.CE.WEEE.	89174-076	3310.46
HQ40d, pH, Conductivity, Dissolved Oxygen, ORP, and ISE Multi-Parameter Meter	UL/CSA/TUV.CE.WEEE.	89174-006	1226.09

All models feature pH, ORP, Conductivity, LDO, LBOD, Conductivity (Salinity, TDS), ISE, and Temp parameters.



designed for protection

VWR® Basic Protection Industrial Garments and Accessories

VWR Basic Protection Industrial garments and accessories are disposable and are manufactured from lightweight and breathable fabric. They are an excellent basic barrier with a wide choice of color options to use in color coding for everything from mitigating risk in a food safety program to managing critical control points or differentiating various production areas. This product line is ideal for a variety of areas including industrial, food and beverage, production, and visitors.

- Economical, disposable garments designed for mitigating food contamination risk
- First line barrier made from lightweight, breathable fabric
- Color coding facilitates management of critical control points

VWR® Basic Protection Industrial Coveralls

- Lightweight basic barrier
- Tapered Collar
- Snap Front



Size	S	M	L	XL	2X	3X	4X
Body (A)	66"	67"	68"	69"	70"	71"	72"
Chest (B)	25"	26"	27"	28"	29"	30"	31"
Leg (C)	28"	29"	30"	30"	31½"	32½"	33"

Size	Cat. No.	Case of 25
White		
Small	75874-030	42.34
Medium	75874-032	42.34
Large	75874-034	44.48
X-Large	75874-036	44.48
Blue		
Small	75874-044	42.34
Medium	75874-254	42.34
Large	75874-256	44.48
X-Large	75874-258	44.48
Green		
Small	75874-266	42.34
Medium	75874-268	42.34
Large	75874-270	44.48
X-Large	75874-272	44.48
Red		
Small	75874-280	42.34
Medium	75874-282	42.34
Large	75874-284	44.48
X-Large	75874-286	44.48



Visit vwr.com to find additional sizes.

VWR® Basic Protection Industrial Aprons

- Fluid Impervious polyethylene
- Easy to don



Size	Universal
Body (A)	47¼"
Width (B)	27½"

Color	Cat. No.	Case of 1,000
White	76008-556	104.52
Blue	76008-558	104.52

VWR® Basic Protection Industrial CPE Shoe Covers

- Durable
- Two color options

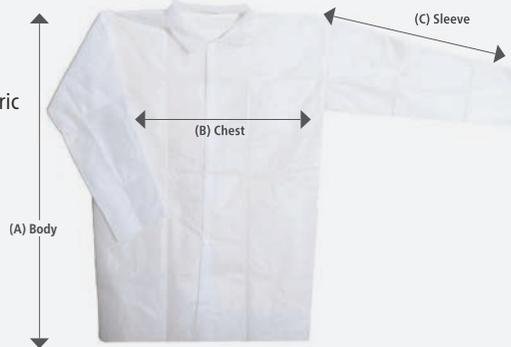


Size	Universal
Length (A)	16"
Height (B)	6"

Color	Cat. No.	Case of 1,000
White	76008-560	41.60
Blue	76008-562	41.60

VWR® Basic Protection Industrial Lab Coats

- Tapered Collar
- Snap Front
- Comfortable non-woven fabric



Size	S	M	L	XL	2X	3X	4X
Body (A)	33½"	35½"	37½"	40"	43¼"	45½"	47¼"
Chest (B)	24½"	25½"	26"	26¾"	27½"	28½"	29"
Sleeves(C)	22"	22"	22"	22"	23"	23"	23"

Size	Cat. No.	Case of 30
White		
Small	76008-420	25.73
Medium	76008-422	25.73
Large	76008-426	26.05
X-Large	76008-428	26.54
Blue		
Small	76008-436	25.73
Medium	76008-438	25.73
Large	76008-440	26.05
X-Large	76008-442	26.54
Green		
Small	76008-486	25.73
Medium	76008-488	25.73
Large	76008-490	26.05
X-Large	76008-492	26.54
Red		
Small	76008-500	25.73
Medium	76008-502	25.73
Large	76008-504	26.05
X-Large	76008-506	26.54

Visit vwr.com to find additional sizes.

VWR® Basic Protection Industrial Beard Covers

- Comfortable fit and nylon construction
- Ideal for all types of beards

Description	Size	Color	Cat. No.	Case of 1,000
Nylon	18"	White	75829-206	71.14
SPP	18"	White	76008-554	38.49



VWR® Basic Protection Industrial Bouffant Caps

- Non-woven durable fabric
- Single-use barrier
- Pleated and traditional fit options



Size	Color	Dia., Relaxed/Stretched, in.	Cat. No.	Case of 1,000
Pleated Bouffant Caps				
Small	White	8 / 21	76008-514	27.10
Large	White	8½ / 24	76008-516	32.21
Small	Blue	8 / 21	76008-518	27.10
Large	Blue	8½ / 24	76008-520	32.21
Small	Green	8 / 21	76008-530	27.10
Large	Green	8½ / 24	76008-532	32.21
Small	Red	8 / 21	76008-522	27.10
Large	Red	8½ / 24	76008-524	32.21
Small	Yellow	8 / 21	76008-526	27.10
Large	Yellow	8½ / 24	76008-528	32.21
Traditional Bouffant Caps				
Small	White	8 / 21	76008-534	34.13
Large	White	8½ / 24	76008-536	47.02
Small	Blue	8 / 21	76008-538	34.13
Large	Blue	8½ / 24	76008-540	47.02
Small	Green	8 / 21	76008-550	34.13
Large	Green	8½ / 24	76008-552	47.02
Small	Red	8 / 21	76008-542	34.13
Large	Red	8½ / 24	76008-544	47.02
Small	Yellow	8 / 21	76008-546	34.13
Large	Yellow	8½ / 24	76008-548	47.02

VWR® Basic Protection Industrial Nylon Hairnets

- Comfortable, sturdy nylon
- Keeps hair secure and out of the way

Size, in.	Cat. No.	Case of 1,000
White		
18	75997-646	65.55
21	75829-204	69.04
24	75997-636	72.46
Black		
18	76076-784	65.60
21	76076-782	68.95
24	76076-786	72.46
Blue		
18	76076-778	65.60
21	76076-776	68.95
24	76076-780	72.46



How to Choose the Right Environmental Sampling Medium

Puritan Medical Products, Guilford, ME



Need help determining which of our environmental sampling products is right for your specific application? Our line of ESK® Environmental Sampling Kits are used for environmental monitoring, hygiene control, sanitization programs and bioburden determination across a range of industries, from food safety to pharmaceuticals.

In order to ensure our ESK Sampling Kits were appropriate for the varied applications of our diverse clients, we spent time in the marketplace with different end users. We studied your process, listened to your needs, then went to our R&D team to design the best environmental sampling swabs for any application.

What we ended up with was a line of environmental sampling products suitable for a wide array of diverse applications. All of our ESK Sampling Kits have a small, polyester tip attached to a quick-turn, leak resistant cap, giving you optimum control. Where they differ from one another is the four medium options we offer, each with its own specific use:

- Neutralizing Buffer
- Buffered Peptone Water
- Leethen Broth
- Butterfield's Solution

So which medium is right for your application?

Neutralizing Buffer

Neutralizing Buffer is recommended for use in microbiological examination of surfaces for food and dairy products. This medium has the ability

to inactivate the bacteria and bacteriostatic effect of chlorine as well as quaternary ammonium compounds. This means after cleaning surfaces and food equipment with disinfectants, swab samples are taken to examine the effectiveness of the disinfectants. Neutralizing buffer medium neutralizes the antibacterial effect of such disinfectants on the swabs, thus allowing the bacteria to survive if they are present. For example, *Staphylococcus aureus* is commonly found in post food processing contamination, which is generally due to human contact or contaminated food contact surfaces. The presence of a large number of *Staph aureus* bacteria in food indicates poor handling or poor sanitation.

Buffered Peptone Water

Buffered Peptone Water is used for pre-enrichment of injured salmonella species from food specimens prior to inoculation to a selective enriched medium for isolation and identification. When salmonella species are present in food, certain food processing conditions such as heat, desiccation, preservatives, and pH changes may injure bacteria cells. Therefore pre-enriched nonselective buffered peptone water medium allows for injured cells to repair and facilitate the recovery of salmonella. Peptone in the medium contains carbon, nitrogen, vitamins and minerals which injured cells consume to recover. After salmonella cells are repaired and multiplied in the Buffered Peptone Water, they are transferred to a selective enriched medium for isolation and identification.

Leethen Broth

In the food and cosmetic industries, all work stations, equipment, and utensils used in daily

processes are cleaned using different disinfectants. Using Leethen Broth allows manufacturers to determine the effectiveness of their cleaning program by taking swab samples of cleaned equipment. After collection, the samples are then transferred into a tube containing Leethen Broth medium, which neutralizes the surface disinfectants, chlorine, or fluorides, facilitating an environment in which bacteria may grow. The addition of polysorbate 80 to the medium neutralizes the surface disinfectants. Lecithin is added to neutralize quaternary ammonium compounds.

Butterfield's Solution

Butterfield's Solution is used for dilution and enumeration of microorganisms in water, food, dairy, and pharmaceutical products. When the number of bacteria in a sample is too high (and thereby difficult to enumerate), serial dilutions are prepared in tubes containing Butterfield's Solution. A sample from each tube is then transferred to a culture medium plate, incubated, and read after 24 hours. The plate with a bacteria count between 30-300 is selected and multiplied by the same dilution factor to obtain the number of bacteria in the original sample.

Don't see the medium you're looking for? We also offer custom media solutions for many applications. Hopefully this brief overview of the environmental sampling mediums contained in our ESK Sampling Kits has given you a better idea of how to choose the right product for your specific application.



Puritan ESK® Sampling Kits

Easy-to-use, reliable test kits come with a small polyester tip attached to a quick-turn, leak-resistant cap to ensure optimum control. Shelf life is 18 months. Made in USA.

Tip Size	17.4 mm (0.687")
Handle Length	82.55 mm (3.25")
Tip Diameter	5.15 mm (0.203")
Overall Tube Length	103.12 mm (4.06")

Description	Fill Solution, mL	Cat. No.	Case of 50
Buffered Peptone Water	4	89221-718	62.84
Buffered Peptone Water	10	89221-722	67.89
Butterfields Solution	4	89221-694	64.11
Butterfields Solution	10	89221-698	69.74
Lethen Broth	4	89221-702	63.05
Lethen Broth	10	89221-706	74.23
Neutralizing Buffer	4	89221-710	64.13
Neutralizing Buffer	10	89221-714	66.99



designed for every day use

VWR® Sterile Sample Bags

Transport and store solids, semisolids, and liquids for environmental and carcass sampling, quality assurance procedures, and food industry applications.

- Pliant, highly resistant virgin polyethylene sterile tubing with no side seals
- Wire closure insures airtight seal, and wide-sealed bottoms provide added leakproof protection



Capacity, mL (oz.)	Thickness, mil	W x H, cm	Cat. No.	Pack of	Case of 1,000
450 (15)	2.5	11.4 x 22.9	82007-706	500/ 186.74	312.68
650 (22)	3	14 x 22.9	82007-708	500/ 225.52	377.61
1650 (55)	3	17.8 x 30.5	82007-726	250/ 142.06	493.72

VWR® Specimen Containers

Durable, translucent containers for storage or transport of most liquid or solid specimens.

- Polypropylene with polyethylene caps
- Suitable for storage and transport of liquids or solids
- Avoirdupois and metric unit graduations



Capacity, mL (oz.)	Sterility	Cap Color	Cat. No.	Case of
120 (4)	Yes	Blue	15704-092	100/ 139.53
133 (4.5)	No	Purple	25384-148	500/ 228.41
133 (4.5)	Yes	White	15704-088	100/ 113.06

For more information and many additional options; visit vwr.com.

MONEY SAVING OFFERS



VWR® Microcentrifuge Tubes

Over \$490 value!

Buy \$250 of VWR Disposable Microcentrifuge Tubes and Receive a FREE Mini Vortex Mixer!

Graduated, polypropylene tubes feature flat caps and frosted areas on the sides for easy labeling. RNase- and DNase-free. All tubes are autoclavable, nonsterile, and packaged in resealable bags.



FREE Mini Vortex Mixer
(Cat. No. 10153-688)

For more information and qualifying Tubes, visit vwr.com/promotions and search Promo Code 5086.

Offer expires 6.30.2018.

ELGA LabWater Systems



Buy an ELGA LabWater System and Get a FREE 2nd Purification Pack!

Qualifying Systems include our comprehensive range of pure and ultrapure water (Type I, II, III) purification.

*These items come together



System	Cat. No.	FREE 2nd Purification Pk
PURELAB Chorus	10034-540, 10034-542, 10034-544, 10034-546, 10034-548, 76048-804, 76048-806, 76048-808, 76048-810, 76048-796, 76048-798	10035-894, 10035-890, 76048-854, 76048-852
	89204-072, 89204-074, 89204-076, 89204-078, 89204-080, 89204-082, 89204-084, 89204-086	89204-376
	89204-088, 89204-092, 89221-838, 89221-840, 89221-844, 89221-848, 89221-852, 89221-856, 89221-860	89204-392, 89204-404
PURELAB Option Q	89204-016, 89204-018, 89204-024, 89204-026	89204-348
PURELAB Option R	89204-000, 89204-002, 89204-008, 89204-010	89204-308
PURELAB Option S	89203-984, 89203-986, 89203-992, 89203-994	89204-308
PURELAB Pulse	89204-040, 89204-042	89221-822
PURELAB Pulse, Flex 2	89221-862	89221-822 & 89204-392*
PURELAB Ultra	89204-052, 89204-054, 89204-056, 89204-058, 89204-060, 89204-062, 89204-064, 89204-066, 89204-068, 89204-070	89204-368, 89204-370, 89204-372, 89204-374

Visit vwr.com/promotions and search Promo Code 5188. Offer valid on listed ELGA LabWater PURELAB® Systems purchased between 1.1.2018 through 12.31.2018. Customer must purchase 1st purification pack with order to receive the 2nd free through online redemption. Cannot be combined with other offers; one redemption only.

Redeem offer by 1.15.2019.

MilliporeSigma Advanced Analytics Chemicals



Buy a minimum of \$500 in MilliporeSigma Advanced Analytics Products - Any Solvents, Inorganics, or Chromatography Products, and we'll MATCH Your Purchase with Free Products!

Value of FREE product will be based on list price with a cap of \$1,500. Free product may not exceed purchased amount.

Visit vwr.com/promotions and search Promo Code 4169. Offer expires 12.31.2018.



Value up to \$1,500

Buchi Rotovapors

Limited-time savings on off BUCHI R-300M and R-300 Rotovapors and Rotovapor Bundles!

Save 25%!



Description	Coating	Cat. No.	Each
R-300M Rotavapors			
Cold Trap Condenser	None	MP10024-016	4386
Cold Trap Condenser	P+G	MP10023-914	4531
Vertical Condenser	None	MP10024-012	4075
Vertical Condenser	P+G	MP10024-014	4220
Cold Trap Condenser w/I-300 Interface, Woulff Bottle	P+G	MP10807-184	6555
Cold Trap Condenser w/I-300 Interface, Valve Unit	P+G	MP10807-188	6985
Vertical Condenser w/I-300 Interface, Woulff Bottle	P+G	MP10807-244	6244
Vertical Condenser w/I-300 Interface, Valve Unit	P+G	MP10807-248	6674
Cold Trap Condenser w/I-300 Pro Interface, Woulff Bottle	P+G	MP10807-186	7767
Cold Trap Condenser w/I-300 Pro Interface, Valve Unit	P+G	MP10807-190	8197
Vertical Condenser w/I-300 Pro Interface, Woulff Bottle	P+G	MP10807-246	7455
Vertical Condenser w/I-300 Pro Interface, Valve Unit	P+G	MP10807-250	7885
Cold Trap Condenser, w/I-300 Interface, V-300 Vacuum Pump	P+G	MP10023-944	9141
Vertical Condenser, w/I-300 Interface, V-300 Vacuum Pump	P+G	MP10023-942	8842
R-300 Rotavapors			
Cold Trap Condenser	None	MP10023-930	5208
Cold Trap Condenser	P+G	MP10023-932	5352
Vertical Condenser	None	MP10023-926	4902
Vertical Condenser	P+G	MP10023-928	5044
Cold Trap Condenser w/I-300 Interface, Woulff Bottle	P+G	MP10808-450	7344
Cold Trap Condenser w/I-300 Interface, Valve Unit	P+G	MP10808-454	7769
Vertical Condenser w/I-300 Interface, Woulff Bottle	P+G	MP10808-510	7038
Vertical Condenser w/I-300 Interface, Valve Unit	P+G	MP10808-514	7461
Cold Trap Condenser w/I-300 Pro Interface, Woulff Bottle	P+G	MP10808-452	8538
Cold Trap Condenser w/I-300 Pro Interface, Valve Unit	P+G	MP10808-456	8962
Vertical Condenser w/I-300 Pro Interface, Woulff Bottle	P+G	MP10808-512	8232
Vertical Condenser w/I-300 Pro Interface, Valve Unit	P+G	MP10808-516	8655
Cold Trap Condenser, w/I-300 Interface	P+G	MP10023-958	9756
Cold Trap Condenser, w/I-300 Pro Interface	P+G	MP10023-960	10,890
Cold Trap Condenser, w/I-300 Interface, F-305 Chiller	P+G	MP10808-670	14,859
Cold Trap Condenser, w/I-300 Pro Interface, F-305 Chiller	P+G	MP10808-676	13,725
Vertical Condenser, w/I-300 Interface	P+G	MP10023-954	9465
Vertical Condenser, w/I-300 Pro Interface	P+G	MP10023-956	10,599
Vertical Condenser, w/I-300 Interface, F-305 Chiller	P+G	MP10023-970	13,434
Vertical Condenser, w/I-300 Pro Interface, F-305 Chiller	P+G	MP10808-682	14,568

No redemption required, simply use the special MP Catalog numbers when order is placed. Promotional part numbers are available for a limited time, must be used at the time of purchase, and may be ordered via the "ORDER ENTRY" link on vwr.com. (Promotional part numbers cannot be found via Search on vwr.com.) For assistance with ordering, please contact VWR Customer Service at 1.800.932.5000. Offer valid in the U.S. only. Promo Code 5189.

Offer expires 6.30.2018.

Make Your Lab Rule with MVMT™ Seating from BioFit!

Get a FREE Lab Rules Mug while supplies last!

- A revolutionary advancement for ultra-critical environments
- COMFORT at its best – award-winning design with full adjustability
- Backrest lumbar support with 3" height adjustment range



FREE Mug!



BioFit® MVMT Critical Performance Chairs	Backrest Dim., W x H, in.	Seat Height, in.	Cat. No.	Each
Low	17.5 x 15	17 – 21	76124-538	1136.96
Medium Bench	17.5 x 15	20 – 27	76124-540	1322.97
High Bench	17.5 x 15	24 – 33.5	76124-542	1328.20
Low	7.5 x 19.5	17 – 21	76124-532	1196.53
Medium Bench	7.5 x 19.5	20 – 27	76124-534	1382.54
High Bench	7.5 x 19.5	24 – 33.5	76124-536	1388.81

Visit vwr.com/labsetup, select New Lab Offers and search **Promo Code 5099**. Offer expires 12.31.2018.



designed for every day use

VWR Tissue Culture Products Offer

Buy \$500 of VWR Tissue Culture Products and Receive a FREE Pipette.

Choose from these products, either untreated or treated for increased cell attachment:

- VWR® Cell Culture Flasks
- VWR® Cell Culture Dishes
- VWR® Cell Culture Plates
- VWR® Cell Culture Scrapers



Value over \$490

FREE VWR® Powerpette® Pro Pipet Filler (Cat. No. 75856-458)

For more information, and a complete list of qualifying Cell Culture products, visit vwr.com/promotions and search **Promo Code 5087**.

Offer expires 6.30.2018.



designed for every day use

VWR® Pipet Tips

Over \$380 Value

Buy \$750 of Filter or General Refill Tips and Receive a FREE Single Channel Pipette!

- VWR Signature™ Low-Retention Aerosol Filter Pipet Tips
- VWR® Filter Tips, Extra Long
- VWR® Next Generation Pipet Tip Refill System



FREE Single Channel Pipettor (Choose Cat. No. 89130-554, 89130-562, 89130-566)



To learn more and see all qualifying tips, visit vwr.com/promotions and search **Promo Code 5085**.

Offer expires 6.30.2018.

Metro Space Saver 24" Deep Worktables



For a limited time, save 20%!

Space Saver Worktables can be put together in minutes without the use of special tools. Bottom shelf or frame is adjustable in 1in. increments.

Save 20%!

- Built to last, made with strong, robust stainless steel
- Proven Stability, 1in. diameter posts and exclusive Super Erecta Shelf® construction assure a rigid, sway-free table
- Stationary with leveling foot or mobile utilizing a 5in. polymer corrosion resistant caster



Description	Dimensions, D x W x H, in.	Cat. No.	Each
Stationary			
Solid Shelf	24 x 36 x 34	76181-320	1335.50
Solid Shelf	24 x 48 x 34	76181-322	1420.50
Solid Shelf	24 x 60 x 34	76181-324	1519.00
3-Sided Frame	24 x 36 x 34	76181-326	1335.50
3-Sided Frame	24 x 48 x 34	76181-328	1420.50
3-Sided Frame	24 x 60 x 34	76181-284	1519.00
Mobile			
Solid Shelf	24 x 36 x 34	76181-286	1684.75
Solid Shelf	24 x 48 x 34	76181-288	1792.25
Solid Shelf	24 x 60 x 34	76181-290	1889.75
3-Sided Frame	24 x 36 x 34	76181-330	1684.75
3-Sided Frame	24 x 48 x 34	76181-332	1792.25
3-Sided Frame	24 x 60 x 34	76181-334	1889.75

No redemption necessary, simply use the VWR Catalog numbers listed here to receive the 20% savings. Hurry, this pricing is only available until 6.30.2018. Offer valid in the U.S. Only. **Promo Code 5190**.

Offer expires 6.30.2018.

Essential Testing Products for the Brewing Industry

Use this representative guide to source the consumables, filtration products, equipment, and chemicals you need to produce beer. From sampling, to analysis and quality control – VWR has it covered.

To find all the products you need for a complete brewing workflow, visit vwr.com/food-beverage.



Sample Collection

	Cat. No.
VWR Chemicals BDH Reference Standard Buffers	BDH5046-500ML
VWR® Polypropylene Carboys	89170-786
VWR® Sample Sak™ Sample Bags	11216-000
VWR® Disposable Serological Pipets	89130-902
VWR Signature™ Pipet Tips	37001-528
Neptune™ Universal Pipet Tips	89168-762
VWR® Wide Mouth Laboratory Bottles	414004-112
	414004-115
	414004-126
VWR® Graduated Polypropylene Beakers	414004-143
VWR® Disposable Petri Dishes	25384-302

Water & Beer Analysis

	Cat. No.
VWR® sympHony™ Benchtop Meter with pH Probe	89231-664
HACH DR 1900 Portable Spectrophotometer	10145-568
VWR® Advanced 3500 Orbital Shaker	89032-096
ELGA PURELAB® Chorus 1 General Science Water System	10034-544
PerkinElmer® Velocity-Wax GC Columns	97054-288
VWR® 18 mm Screw-Thread Headspace Vials & Caps	10119-902, 10119-914
SilTite™ FingerTite Starter Kit	97051-952
Millipore Sigma Methanol, HPLC	EM-MX0475-1
Millipore Sigma TitriPUR® Hydrochloric Acid	EM1.09057.2500
Millipore Sigma TitriPUR® Sulfuric Acid	EM1.09074.4000
VWR Chemicals BDH Magnesium Chloride Hexahydrate, ACS	BDH9244-500G
AEMD ACS Grade Potassium Phosphate, Dibasic	EM-PX1570-1
Millipore Sigma Pure Ethyl Alcohol, 190 Proof	EMD-EX0290-1

Sample Preparation

	Cat. No.
VWR® High-Performance Centrifuge Tubes	89039-666
VWR® SuperClear™ Ultra-High Performance Centrifuge Tubes	21008-242
VWR® BigTop™ Microcentrifuge Tubes	20170-333
VWR® Erlenmeyer Flasks	89095-270
	10126-408
	10126-410
VWR® Standard Line Cell Culture Flasks	10062-872
VWR® Grade 315, Crepe Fluted Filter Circles	28331-048

General Supplies

	Cat. No.
VWR Signature™ Ergonomic High Performance Single-Channel Pipettor Kit	75788-456
BRAND accu-jet® pro Pipet Controller	89009-348
VWR® Light-Duty Tissue Wipers	82003-820
Customized Workstations— VWR® Bench Selector	vwr.com/benchselector
Labconco® REDISHIP Purifier®	
Logic+® Class II A2 Biosafety Cabinets	89413-128
VWR® Contour™ Self-Skinned Urethane Chairs	80086-439

Contact your VWR Sales Representative to learn more!

Microbiology

	Cat. No.
VWR® Disposable Transfer Pipets	16001-188
VWR Life Science AMRESCO Yeast Genomic DNA Purification Kit	89492-618
VWR Life Science AMRESCO PCR Mix, 2X	97063-322
VWR® Mini Gel II Complete Horizontal Electrophoresis System	95043-650

HiMedia® Products for Controlling the Fermentation Process

Agar Media	
Actidione Agar Base w/o Actidione®	95020-150 🍷
Actidione Agar w/ Actidione	95022-906 🍷
Lysine Medium Base	95021-866
50% Potassium Lactate	71005-792
Malt Agar	61000-058
Modified NBB Agar (Pedi-Lacto Selective Agar Base)	95021-332
Universal Beer Agar, Modified	95021-210
Universal Beer Agar (UB Agar)	95021-796 🍷
WL Nutrient Medium	95020-592 🍷
WL Differential Agar	95020-392 🍷
Wort Agar	61000-628 🍷

Liquid Media	
Anaerobic Fermentation Medium Base	95022-580
Andrade Peptone Water	95022-412 🍷
Andrade Peptone Water w/ Meat Extract	95022-444 🍷

Blue Agar	95021-776
Bromo Cresol Purple Broth Base (Yeast Fermentation Broth Base)	95022-154 🍷
CHO Medium Base	95021-712 🍷
Enteric Fermentation Base	95021-420
Glucose Agar	95021-308
Glucose Broth	95022-370 🍷
Peptone Water	95020-080 🍷
Universal Liquid Medium	95020-952
WL Differential Agar	95020-392 🍷
WL Differential Broth	95021-788 🍷
WL Nutrient Broth	95020-134 🍷
Wort Broth	95021-694 🍷

HiMedia® Brewing Products

Coliforms	
Bromo Cresol Purple Agar w/ Lactose	95020-822 🍷
Fluid Lactose Medium	95020-076 🍷
MacConkey Agar w/ 0.15% Bile Salts, CV and NaCl	95020-204 🍷
MacConkey Broth Purple w/ BCP	95020-214 🍷
Lactobacilli/Yeasts	
Lactic Acid Bacteria Selective Broth Base (Raka-Ray No. 3 Broth Base)	95021-062
BD Raka-Ray No. 3 Medium	90001-018
Lactic Bacteria Differential Agar	95020-458 🍷
Lactic Bacteria Differential Broth	95020-456 🍷

Lee's Multidifferential Agar	95020-954 🍷
Litmus Milk	61000-124
Lysine Medium Base	95022-120
50% Potassium Lactate	71005-792
M-BCG Yeast and Mould Agar	95021-236
M-BCG Yeast and Mould Broth	95022-956
MRS Agar (Lactobacillus MRS Agar)	95022-946 🍷
Oxytetra Glucose Yeast Agar Base (OGYE Agar Base)	61000-134
Oxytetra Selective Supplement	89134-988
Pedi Lacto Selective Agar Base	95021-332
Rogosa SL Agar	95020-904
Rose Bengal Chloramphenicol Agar	95022-944 🍷
SCHWARZ Differential Medium	95020-950 🍷
Tomato Juice Medium Base	95022-956 🍷
Universal Beer Agar (UB Agar)	95021-796 🍷
Universal Beer Agar, Modified	95021-210
Universal Liquid Medium	95020-952
WL Differential Agar	95020-392 🍷
WL Differential Broth	95021-788 🍷
WL Nutrient Broth	95020-134 🍷
WL Nutrient Medium	95020-592 🍷
Wort Agar	61000-628 🍷
Yeast Malt Agar (YM Agar) (ISP Medium No. 2)	95021-804 🍷

Products with 🍷 icon are also available as HiVeg™ Media.



BRAND Titrette® Bottletop Burette with Class A Precision

The BRAND Titrette is the world's first bottletop burette to provide titration within ASTM and ISO error limits for Class A glass burettes. The Titrette® makes routine titrations faster, easier, and more accurate.

- Suitable for most titrants in concentrations up to 1 mol/L, an excellent choice for general chemistry, food/ beverage analysis, environmental fieldwork, and more
- Mounts directly on most titrant bottles, eliminating poured transfer
- Fills and titrates smoothly for exceptionally sensitive, drop-by-drop titrations, while large digital display eliminates meniscus reading errors
- Optional RS232 interface allows for direct data transfer to a PC

The Titrette can be quickly and easily disassembled in a matter of minutes – for cleaning, to replace the piston/cylinder, or to replace the batteries. Maintenance is easy and convenient, without the need to send it out for repair. To protect light-sensitive media, the installed clear cylinder inspection windows can be easily replaced with the supplied clip-on amber-colored windows. All components move within the housing, reducing headroom requirements. The compact design and the light weight ensure good stability. The titrating tube can be adjusted horizontally and vertically. The large handwheels provide smooth, precise control from rapid to dropwise titration.

Available with a RS232 interface for direct transfer of data to a PC, and suitable for most commonly used titrants up to 1mol/L in concentration, such as potassium permanganate, silver nitrate, EDTA, sodium hydroxide, and alcoholic potassium hydroxide.



Description	Accuracy at Nominal Volume	Cat. No.	Each
10 mL, Standard	≤ 0.05%	10111-824	1234.05
10 mL, RS232 Interface	≤ 0.05%	10111-826	1718.01
25 mL, Standard	≤ 0.025%	89094-926	1318.65
25 mL, RS232 Interface	≤ 0.025%	89094-930	1718.01
50 mL, Standard	≤ 0.02%	89094-928	1318.65
50 mL, RS232 Interface	≤ 0.02%	89094-932	1718.01



Titrating Tube: horizontally and vertically adjustable

Safe and Secure Bottles Ideal for Your Food Sampling and Storage Needs

CORNING

Corning® Gosselin™ HDPE Storage Bottles

- High density polyethylene (HDPE) bottles with wide neck for easy sample transfer
- Resin is lightweight and break-resistant
- Leak-proof closure systems
- Sterile and food-contact compliant



Capacity	Cap Size, mm	Cat. No.	Case of
Square			
150 mL	37	10022-312	300/ 348.00
250 mL	37	10022-310	210/ 324.00
500 mL	58	10022-306	175/ 345.00
1 L	58	10022-308	90/ 192.10
2 L	58	10799-436	50/ 178.00
2.5 L	77	10799-438	35/ 155.00
Round			
50 mL	27	75800-328	600/ 338.74
100 mL	37	75800-334	335/ 371.28
150 mL	37	75800-338	250/ 362.10
250 mL	37	75800-330	145/ 197.60
500 mL	58	75800-332	140/ 298.86
1 L	58	75800-336	68/ 229.50

Corning® Gosselin™ Octagonal PET Storage Bottles

Break-resistant bottles are an ergonomic and easy to handle alternative to glass.

- Leak-proof, tamper-evident HDPE screw cap
- Molded graduations for accurate measurements
- Sterile



Capacity	Neck Dia., mm	Cat. No.	Case of
30 mL	31.7	89235-040	120/ 156.95
60 mL	18	89235-042	96/ 145.20
125 mL	31.7	89204-714	48/ 96.94
250 mL	31.7	89204-716	48/ 159.02
500 mL	31.7	89204-718	24/ 93.47
1 L	31.7	89204-720	24/ 167.88

VWR COLLECTION

designed for
research & analysis

VWR® Syringe Filters

Polypropylene, nylon, and PTFE membranes are ideal for sample preparation and small volume chemical filtration. Cellulose acetate or polyethersulfone membranes are ideal for sterile filtration of buffers, tissue culture media or additives, and other biologicals. The polyethersulfone membrane offers high flow rates.



Syringe Filter Housing	Diam., mm	Membrane Material	Pore, µm	Cat. No.	Case of 100
Acrylic	25	Cellulose Acetate	0.2*	28145-475	284.50
Acrylic	25	Cellulose Acetate	0.45	28145-479	284.50
Acrylic	25	Polyether sulfone	0.2*	28145-499	361.97
Acrylic	25	Polyether sulfone	0.45	28145-503	380.21
Polypropylene	13	PTFE	0.45	28145-493	247.20
Polypropylene	25	Nylon	0.2	28145-487	259.58
Polypropylene	25	Nylon	0.45	28145-489	259.58
Polypropylene	25	Poly-propylene	0.2	28145-483	264.80
Polypropylene	25	Poly-propylene	0.45	28145-485	264.80
Polypropylene	25	PTFE	0.2	28145-495	276.16
Polypropylene	25	PTFE	0.45	28145-497	276.16

*Retains 107 Brevundimonas diminuta per cm² according to modified ASTM F838-83

Featured filters are nonsterile; visit vwr.com for additional options.

VWR COLLECTION

designed for
research & analysis

VWR® Grade 313 Fluted Circles

Ideal for drugs, pharmaceuticals, liquors, tinctures, chromatography, and protein-free filtrations in the clinical laboratory.

- Folded, qualitative
- Medium fine porosity
- Medium flow rate



Diameter, cm	Cat. No.	Pack of 100
12.5	28333-021	82.55
15	28333-043	89.15
18.5	28333-065	97.27
24	28333-087	108.11
32	28333-101	116.48
38.5	28333-123	126.91

Solutions for Your Wine Laboratory

At VWR, we understand that a wine's chemistry is directly related to its quality, and that product consistency requires reliable analytical procedures. Our comprehensive portfolio of winemaking consumables, wine testing equipment, and chemical analysis tools allow us to deliver a complete solution. Highlighted below is a selection of VWR Collection products for quality assurance processes. With more than one million available scientific products, we have you covered.

- pH Meter with ATC Probe
- pH Buffers
- Stir Plate
- Volumetric & Pasteur Pipets
- Phase Contrast Microscope
- Syringe Filters
- Microscope Slides
- Erlenmeyer Flasks
- Serological Pipets

pH TESTING

pH Meter with ATC Probe
pH Buffers: 3.00, 4.00, 7.00, 10.00
Glass Beakers, 50 mL
Stir Plate
Distilled Water

MICROBIOLOGY

Phase Contrast Microscope
Microscope Slides
Cover Slips
Lens Paper
Pasteur Pipets
Immersion Oil
Methylene Blue (Yeast Stain)

TITRATABLE ACIDITY (TA)

Buret
Buret Stand and Clamps
Stir Plate, with or without Hot Plate
Stir Bars
Glass Beakers, 250 mL
Volumetric Pipet, 5 mL
Degassing Source/Sparge Stone (for Wine Samples)
Normalized Sodium Hydroxide (NaOH)
Normalized Hydrochloric Acid (HCl) for TA Calibration
Phenolphthalein or pH Meter (for Endpoint Identification)
Distilled Water

VOLATILE ACIDITY

Cash Still Assembly
TA Assembly, Two Burettes, 50 mL
Erlenmeyer Flasks, 250 mL
Volumetric Pipet, 10 mL
Serological Pipet, 5 mL
Pipettor
Sodium Hydroxide, 0.1N
Phenolphthalein
Sulfuric Acid, 1+3
Iodine, 0.02N
Starch Indicator



VWR® Mobile Laboratory Furniture Solutions

Easily Expand or Optimize Your Workspace

Need to change a single-sided station into a double-sided one? How about deeper shelves or electrical inserts?

It's a snap to rearrange an existing workspace or start a new one from scratch. Everything from storage to lighting to keyboard trays can be placed wherever you want, whenever you want.

VWR Mobile Laboratory Furniture adapts to your growing needs and helps increase productivity, worker comfort, and workspace efficiency. And the modular, intelligent design helps take the hassle out of change. All parts and accessories will attach securely, so no parts are wasted.

You get the flexibility to create the system you need and the ability to modify your work space as necessary.

Visit vwr.com/mobilelabsolutions to get started today!!

VWR 
COLLECTION





designed for
protection

VWR® MICROGRIP® PURPLE NITRILE® Poly-Coated Powder-Free Gloves

Durable gloves have microtexture to enhance grip.

- Ambidextrous
- Beaded cuff
- Microtextured
- Polymer coating



Size	Cat. No.	Pack of 100	Case of 1,000
X-Small	40101-440	45.12	365.70
Small	40101-344	45.12	365.70
Medium	40101-346	45.12	365.70
Large	40101-348	45.12	365.70
X-Large	40101-350	45.12	365.70

VWR® Powder-Free Nitrile Examination Gloves

Ambidextrous gloves are extra soft and comfortable for every day use. They protect hands from a broad range of chemicals. Beaded cuff allows easy donning.

- Ambidextrous
- Nonsterile
- Extra soft and comfortable
- Protects hands from broad range of chemicals
- Ideal for use in industrial and laboratory applications



Size	Cat. No.	Pack of 100	Case of 1,000
X-Small	82026-423	29.15	225.73
Small	82026-424	29.15	225.73
Medium	82026-426	29.15	225.73
Large	82026-428	29.15	225.73
X-Large	82026-430	29.15	225.73
Mixed Bundle	470227-996	-	223.58

Make the Switch to PIG® Grippy® Floor Mat!



No slips.
No trips. All grip.



PIG Grippy Floor Mat sticks to the floor with a super-tight grip – no shifting, bunching up or flipping over – but removes easily with no residue. Grippy Mat absorbs leaks, spills and even condensation around ultra-low temperature freezers.

- Highly efficient mat soaks in moisture and wicks it away from the center to prevent puddling on the surface
- Design allows liquids to disperse evenly so the mat dries out quickly

Size, ft.	Absorbency	Packaging	Cat. No.	Roll of
3 x 5	4 Gal./Roll	10 Mats/Roll	10811-218	50 ft./ 175.05
3 x 10	4 Gal./Roll	5 Mats/Roll	10811-220	50 ft./ 175.05
3 x 100	8 Gal./Roll	1 Roll	10811-188	100 ft./ 296.24

Color: Black; Weight: Medium





designed for every day use

VWR® Disposable Petri Dishes

- Virgin crystal grade polystyrene provides optimum flatness and high optical clarity
- Stacking ring feature facilitates positive stacking
- Sterilized by irradiation or EO and are packaged in linear tear, medical style bags



Mono Petri Dishes, 100 x 15 mm	Packaging	Cat. No.	Case of
Fully Stackable	20/Bag	25384-342	500/ 313.00
Fully Stackable with ISO Mark	600/Case	89038-968	600/ 249.90
Fully Stackable, Select Lite	600/Case	89230-472	600/ 389.00
Stackable for Automation	24/Bag	25384-094	600/ 369.00
Semi-Stackable	20/Bag	25384-088	500/ 322.62
Semi Stackable with ISO Mark	500/Case	89038-970	500/ 225.00
Slippable for Automation	20/Bag	25384-302	500/ 313.00
Slippable, Media Saver Style	500/Case	89022-320	500/ 215.00

Many additional options are also available; visit vwr.com.

VWR® Disposable Culture Tubes

- Resistant to chemical attack and weathering
- Contents will not leach out and contaminate solutions
- High heat tolerance
- Uniform dimensions
- Convenient dispensing packages

O.D. x L, mm	Overflow Volume, mL	Cat. No.	Case of
6 x 50	0,75	47729-566	2,000/ 373.52
16 x 150	22	47729-580	1000/ 214.33
20 x 150	34	47729-584	500/ 268.04

Many additional options are also available; visit vwr.com.



VWR® Transfer Pipets

General purpose disposable Transfer Pipets are ideal for quick and safe fluid transfer. Manufactured from LDPE, they can be sealed, refrigerated, and gas sterilized.

- Will not shatter or break
- Can be used in liquid nitrogen
- Nontoxic and inert
- No bulb to insert or remove
- Uniform drop size

Capacity	Overall Length	Bulb Draw	Graduations	Drops per mL	Cat. No.	Pack of 500	Case of 5,000
7.5 mL	15.5 cm	3.2 mL	0.5 mL	20	16001-188	58.81	408.94

Nonsterile and bulk packed. Thin stem, small bulb, large bulb, and blood bank pipets are also available in a variety of sizes and packaging options; visit vwr.com.



VWR Signature™ Aerosol Filter Pipet Tips

Natural barrier aerosol tips incorporate a special high recovery polyethylene filter that traps aerosols and prevents cross-contamination by keeping the pipettor barrel clean.

- For use with most pipettors
- Certified RNase-, DNase-, endotoxin-, metal-, and human DNA-free



Description	Volume, µL	Length, cm	Cat. No.	Pack of	Case of
Ultrafine Point Tips	100–1000	8.9	16466-008	576/ 152.44	4608/ 886.59
Bevel Point Tips	1–50	5.1	53510-072	960/ 193.86	9600/1480.39

Packaging: 96/hinged rack. Tips are sterile; visit vwr.com to find nonsterile tips and additional packaging and volume options.

VWR® Light-Duty Tissue Wipers

- Virgin fiber tissue
- Absorbent, strong, and low-linting
- Ideal for lab, manufacturing, pharmaceutical, biomedical, and healthcare industries

Custom-size dispensers (available separately) hold wiper boxes securely, providing one-handed access to wipers. Wipers come in antistatic film-windowed dispenser boxes.

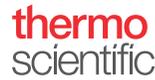


Light-Duty Tissue Wipers	W x L, in.	Cat. No.	Pack of	Case of
1-Ply, in Perforated Box	4½ x 8¾	82003-820	280/ 6.44	16,800/ 299.47
1-Ply	14 x 16¾	82003-822	140/ 20.90	2,100/ 207.39
3-Ply	14 x 16¾	82003-824	90/ 31.04	1,350/ 319.01

Dispensers		Cat. No.	Pack of	Case of
Small, for 4½ x 8¾ in. Wipers	–	14233-756	1/ 17.11	–
Medium, for 14 x 16¾ in. Wipers	–	14233-758	1/ 25.36	–
Large, for 14 x 16¾ in. Wipers	–	14233-760	1/ 30.88	–

Pallet quantity options are also available; visit vwr.com.

Heratherm Peltier Low Temperature Incubators



With outstanding energy efficiency and temperature performance, Thermo Scientific Heratherm refrigerated incubators can help you reach an untapped potential with incubation.

- Available in two sizes: 178L benchtop or 381L floor standing
- Temperature range: +5°C to +70°C
- Outstanding temperature uniformity and programmability for defined temperature ramping
- Stability to keep the samples in a safe timer - weekly/daily or real time mode
- Uniformity as good as $\pm 0.3^{\circ}\text{C}$

Energy efficiency without the use of harmful refrigerants



Description	Volume, L (cu. ft.)	Dimensions, W x H x D, in.	Shelves, Supplied (Max.)	Cat. No.	Each
Bench Top	178 (6.3)	25.2 x 36.2 x 29.1	2 (9)	75840-782	6685.05
Bench Top, Internal Outlet	178 (6.3)	25.2 x 36.2 x 29.1	2 (9)	75840-778	6997.68
Floor Standing	381 (13.5)	30.6 x 60.8 x 30.3	2 (17)	75840-784	9609.38
Floor Standing, Internal Outlet	381 (13.5)	30.6 x 60.8 x 30.3	2 (17)	75840-780	9923.03

Gosselin™ S-Blender-1A



The Gosselin™ S-Blender-1A is a high performance blender designed for microbiological sample preparation. The blender, which is suitable for a range of sample dilutions between 50mL and 400mL, ensures quick and accurate blending of any food, agricultural, chemical, or cosmetic sample.

Easy to Clean

- Removable stainless steel paddles
- Autoclavable paddles and door
- Removable blending chamber
- Integrated waste drawer

Adjustable Speed, Time, and Blending Strength

- Blending capacity: 80 to 400 mL bags
- Digital control, keypad, and LCD display
- Remaining time display
- Program setting mode (9 programs)
- Adjustable timer: 10 seconds to 210 seconds or continuous
- Adjustable speed (strokes/min.): slow (450), normal (550), and fast (650)



Description	Electrical	Capacity	Cat. No.	Each
Gosselin S-Blender-1A	115V	400 mL	10152-748	5768.09

Thermo Scientific Orion Star T900 Series Potentiometric Titrators

NEW

Orion Star T900 Series Potentiometric Titrators are ideal for pH preset endpoint titrations and equivalence/inflection point titrations including:

- Titratable acidity of juice, wine and food products
- Alkalinity of drinking water and wastewater
- Acids and acidity in various consumer and industrial products
- TAN (total acid number) and TBN (total base number) of industrial products
- Academic chemistry experiments using acid/base titrations

Prioritize Lab Throughput:

Start the titration and let the instrument run unattended until the titration is complete so you can focus on other tasks.

Fast Setup Time:

Setup and save electrode, titrant and titration parameters once using methods and then access up to ten methods as needed without any additional setup – methods allow the same test protocols to be used by multiple operators for impressive productivity and consistent test results.

Minimal Cost and Downtime:

Easily replaceable titrator parts minimize maintenance downtime while long lasting electrodes may reduce the cost of ownership.

Securely Document Test Results:

View results live, in the summary table and within the 100 point data log – also easy to transfer results for long term data retention using printer, computer or USB flash drive.

Accurate, Reproducible Results:

Automating the titration workflow enables analysis to be run using the same setup parameters and calculations every time.

Applications Database:

Tested and validated preprogrammed methods can be loaded onto your titrator and used as a template for fast, easy creation of custom user-defined methods.

Ordering Information

Each Orion Star T910 pH Titrator includes: 20mL burette, stirrer probe, dispenser probe, tubing kit, 1L plastic bottle, bottle cap, desiccant tube, computer cable, literature on USB drive, and 110-240 V power supply. Additionally, the Standard ROSS Kit also includes a ROSS Ultra pH electrode (10010-756), and an ATC probe (10010-744). The ROSS Sure-Flow Kit additionally includes a ROSS Sure-Flow pH electrode (10010-772) and an ATC probe (10010-744).



Description	Cat. No.	Each
Orion Star T910 pH Titrator	76191-348	2995.00
Orion Star T910 pH titrator, Standard ROSS Kit	76191-350	3265.00
Orion Star T910 pH Titrator, ROSS Sure-Flow Kit	76191-352	3295.00



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From breakthrough discovery to agile delivery of innovative products and services, Avantor® and VWR are one company.

Our shared vision: to be your trusted partner, providing discovery-to-delivery solutions, high-performance materials and expert support for your unique food and beverage production and quality testing requirements.

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