

# VWR® photometry

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04. REAGENTS &  
STANDARDS



# VWR® photometry

Welcome to the VWR branded range of products for photometry.

Photometers are widely used in many research, QC and pharmaceutical labs for applications within chemistry, biochemistry, life science and water analysis. Our products offer quality and great value for money whilst supporting the whole workflow including spectrophotometers, photometers, cuvettes, standards and reagents.

VWR, part of Avantor has many years of experience supporting photometry applications, we can offer expert guidance to help you find the right products for your application.



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# VWR® UV/VIS spectrophotometers

## SINGLE BEAM UNITS

VWR introduces 2 new single beam models the PV4 VIS Spectrophotometer and the P4 UV/VIS spectrophotometer so we now have 7 single beam models, each with a ready to use package including glass or quartz cells. Both PV4 and P4 are re-designed and differentiate from other models with a smaller footprint and a high resolution TFT color LCD touch screen. All units are robust and feature easy handling plus all the functions required for daily measurements in your lab. A large sample compartment coupled with an extensive range of optional accessories allow you to customise your unit to your requirements.



## SPLIT BEAM UNIT

The M4 UV/VIS Spectrophotometer is a new unit that differentiates from the other UV/VIS spectrophotometers by having a xenon lamp and split beam optics. It is also re-designed with a smaller footprint and a TFT color LCD touch screen.

## DOUBLE BEAM UNIT

UV- 6300PC is a powerful and all round top performer in a host of different applications, from research to pharmaceutical labs, QC to new material development with our large range of accessories.

**2 YEAR  
WARRANTY**

# Software

Two different software packages - M.Wave Professional or UV-Analyst (depending on the model) transform these stand-alone units to allow greater results storage and more demanding analysis of results.

## M.WAVE PROFESSIONAL

Full functionality of stand-alone unit plus more powerful data processing, expanded data collecting and storage capability. Optional for V-1200, included with UV-1600PC.

### Basic functionalities:

- Basic photometric mode
- Quantitative test (standard curve)
- Wavelength scanning
- Kinetics
- DNA/protein
- Multiwavelength test
- System utility

### PC system requirements:

Pentium or above PC, CD-ROM, USB ports; 32 MB memory (>256 MB is strongly recommended); >50 MB hard disc space; Microsoft Windows 2000/XP/Vista/7/10

### More advanced software functionalities

- Printable spectrums, results and reports
- No memory limits by spectrophotometer
- Standard curve
- Up to 20 standards, curve fitting: Linear/linear through zero/square
- Wavelength scan
- Automatic record of peaks and valleys (unlimited number of channels)
- Off-line calculation and processing including:
  - 1st to 4th derivation
  - Rescaling axes, smoothing, combination, zooming, overlap
- Multiwavelength scan
- Up to 20 wavelengths
- DNA/protein concentration

## PC SOFTWARE UV-ANALYST

Full functionality of stand-alone unit plus more powerful data processing, expanded data collecting and storage capability. Included with V-3000PC, UV-3100PC and UV-6300PC.

### Basic functionalities:

- Basic photometric mode
- Quantitative test (standard curve)
- Wavelength scanning
- Kinetics
- DNA/protein
- Multiwavelength test
- System utility

### PC system requirements:

Pentium or above PC, CD-ROM, USB ports; 32 MB memory (>256 MB is strongly recommended); >50 MB hard disc space; Microsoft Windows 2000/XP/Vista/7/10

### More advanced software functionalities

- Printable spectrums, results and reports
- No memory limits by spectrophotometer
- Standard curve - up to 20 standards
- Wavelength scan
- Automatic record of peaks and valleys (unlimited number of channels)
- Off-line calculation and processing including:
  - 1st to 4th derivation
  - Smoothing, combination, zooming, overlap
- Multiwavelength scan
- Up to 20 wavelengths
- Multiple sample measurement (with optional automatic cell changer Cat. No. 634-6010)

**VWR® VISIBLE SPECTROPHOTOMETER, V-1200**

The V-1200 is designed for routine, daily, quality control requirements, in-process control and teaching laboratories.

- Large LCD display (128×64 P)
- Can save up to a total of 200 results and 200 standard curves
- Download data to PC via USB interface

Supplied with four optical glass cells, four-position cell changer, power cable with UK and EU plug and dust cover.



Display	LCD, 128×64 P
Absorbance range	-0,3...+3,0 A
Optical design	Grating monochromator
Absorbance accuracy	±0,002 A/h @ 500 nm
Photometric accuracy	±0,5% T
Photometric range	0 - 200% T
Wavelength accuracy	±2 nm
Wavelength range	325 - 1000 nm
Wavelength repeatability	≤0,8 nm
Stray light	≤0,3% T
Spectral bandwidth	4 nm
Light source	Tungsten
Languages	English, German, Spanish, French
Output	USB
Electrical	220 V/50 Hz
Detector	1200 lines/mm silicon photodiode
W×D×H	490×360×210 mm
Weight	12 kg

Description	Model	Pk	Cat. No.
Visible spectrophotometer	V-1200	1	634-6000

Description	Path length (mm)	Window material	Pk	Cat. No.
<b>Square cuvettes</b>				
Square cuvettes	10	Glass	4	634-6013
Square cuvettes	20	Glass	2	634-6014
Square cuvettes	30	Glass	2	634-6015
Square cuvettes	50	Glass	2	634-6016
Square cuvette	100	Glass	1	634-6017
<b>Cell holders</b>				
Cell holder for test tubes			1	634-6009
Cell holder, solid sample, 10 mm path length			1	634-6011
Cell holder with 4x 10 mm path length cells			1	634-6003
Cell holder with Ø 22 mm 10 to 100 mm path length cylindrical cell			1	634-6006
Cell holder with 4x 50 mm path length cells			1	634-6004
Cell holder with 4x 100 mm path length cells			1	634-6005
Cell holder for microcells with beam height 15 mm			1	634-0687
<b>Accessories</b>				
M. Wave Professional software			1	634-0774

**VWR® VISIBLE SPECTROPHOTOMETER, PV4**

The PV4 visible spectrophotometer is an easy to use instrument with advanced performance.

Highly accurate and reliable, with several basic functions, such as photometry test, quantitation test and spectrum scanning.

Display	5" colour screen (480x272)
Optical design	Single beam
Photometric range	-0,301...+3 A; 0 - 200% T ; 0 - 9999,9 C
Wavelength accuracy	±0,5 nm
Wavelength repeatability	<0,2 nm
Stray light	<0,05% T
Scanning speed	4200 nm/min
Light source	Tungsten lamp
Memory	236 KB (built-in), unlimited (USB memory stick)
Languages	English, German, French, Spanish, Portuguese, simplified Chinese
Baseline flatness	±0,002 A
Detector	Silicon detector
WxDxH	456x360x185 mm
Weight	10,5 kg
Power	100 - 240 V AC; 50/60 Hz; 75 W
Printer	Serial printer, USB printer in line with HP PCL3 GUI printing language Serial port (printing), USB-A (storage and printing), USB-B (online)



Description	Model	Range	Pk	Cat. No.
Visible spectrophotometer	PV4	320 - 1100 nm	1	634-1088

**Avantor Services**

# Equipment and instrument services

Avantor Services helps you simplify equipment and instrument services, in and around the laboratory.

Our team specializes in providing a quick and targeted response to your needs. We also offer consultative and customized solutions. This enables you to:

- Improve efficiency by keeping your equipment in compliance
- Optimize your budget and maximize your equipment investment

With our network of ISO 9001 / IEC17025 accredited service providers, we can be your single point of contact for all equipment and instrument service needs.

We are focused on helping you in the following areas:

- Calibration
- Certification
- Qualification and Validation
- Temperature Mapping
- Preventive Maintenance
- Warranty Management

Visit [vwr.com/avantors\\_services](http://vwr.com/avantors_services) for more information.

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**VWR® UV/VISIBLE SPECTROPHOTOMETER, UV-1600PC**

The UV-1600PC is designed for routine daily quality control requirements, in-process control and teaching laboratories.

- Can save up to a total of 200 results and 200 standard curves
- Download data to PC via USB interface
- Optional accessories including an automatic eight-cell changer

Supplied with four optical glass cells, two quartz cells, four-position cell holder, power cable with UK and EU plug, dust cover and application software for PC control.



<b>Display</b>	Graphic LCD (128×64 P)
<b>Absorbance range</b>	–0,3...+3,0 A
<b>Photometric accuracy</b>	±0,2% T
<b>Photometric range</b>	0 - 200% T
<b>Photometric stability</b>	±0,002 A/h @ 500 nm
<b>Wavelength accuracy</b>	±0,5 nm
<b>Wavelength range</b>	190 - 1100 nm
<b>Wavelength repeatability</b>	≤0,3 nm
<b>Stray light</b>	±0,05% T @ 220; 360 nm
<b>Spectral bandwidth</b>	4 nm
<b>Light source</b>	Tungsten
<b>Languages</b>	English, German, Spanish, French
<b>Output</b>	USB
<b>Electrical</b>	220 V/50 Hz
<b>Detector</b>	Grating 1200 lines/mm silicon photodiode
<b>W×D×H</b>	490×360×240 mm
<b>Weight</b>	14 kg

Description	Model	Pk	Cat. No.
UV/Visible spectrophotometer including 4-cell changer	UV-1600PC	1	634-6001

Description	Path length (mm)	Window material	Pk	Cat. No.
<b>Square cuvettes</b>				
Square cuvettes	10	Glass	4	634-6013
Square cuvettes	20	Glass	2	634-6014
Square cuvettes	30	Glass	2	634-6015
Square cuvettes	50	Glass	2	634-6016
Square cuvette	100	Glass	1	634-6017
<b>Cell holders</b>				
Cell holder with automatic changer for 8 cells			1	634-6010
Water-jacketed cell holder for 4x 10 mm path length cells			1	634-6012
Cell holder with 4x 10 mm path length cells			1	634-6003
Cell holder with 1 water-jacketed 10 mm path length cell			1	634-6007
Cell holder with 4x 50 mm path length cells			1	634-6004
Cell holder with 4x 100 mm path length cells			1	634-6005
<b>Accessories</b>				
Sipper system, 15 mm (appropriate flow cell required)			1	634-0699
Constant temperature (Peltier) system, 15 mm			1	634-0698
Deuterium lamp			1	634-6038



**VWR® UV/VISIBLE SPECTROPHOTOMETER, P4**

The P4 UV/Vis spectrophotometer is an easy to use instrument with advanced performance.

- Highly accurate and reliable
- Simple, elegant design with aluminum base
- Easy to change lamp, user friendly interface

It provides several basic functions, such as photometry test, quantitation test and spectrum scanning.



Absorbance range	-0,3...+3,0 A
Photometric range	0 - 200% T
Wavelength accuracy	±0,5 nm
Wavelength repeatability	<0,2 nm
Scanning speed	4200 nm/min
Light source	Tungsten/deuterium
Memory	236 Kb
WxDxH	456x360x185 mm
Weight	10,7 kg
Power	100 - 240 V AC; 50/60 Hz; 120 W

Description	Model	Range	Pk	Cat. No.
UV/Visible spectrophotometer	P4	190 - 1100 nm	1	634-1089

**VWR® UV/VIS SPECTROPHOTOMETER, M4**

The M4 single split-beam spectrophotometer, with flashing xenon lamp, is an easy to use, highly reliable and accurate product.

- Single split-beam design for sample and blank variability can be monitored at the same time
- Xenon flash lamp with a very strong energy in the UV and visible range
- Connects to a computer based on Windows® through various interfaces

Measure absorbance and transmission at any defined wavelength, generate a graph and search for peaks and valleys, also analyse the graph by built-in methods.

The application can be extended to luminosity determination, multiple wavelength measurement, quantitative analysis, dynamic determination, DNA/protein determination and spectral measurements.

GLP/GMP compliant.

Supplied with a user manual, 10 mm quartz cuvette, 10 mm glass cuvette, fuse, power cable and dust cover.



Display	5" colour touch screen
Wavelength range	190 - 1100 nm
Spectral bandwidth	2 nm
Light source	Flashing xenon lamp
Languages	6 can be switched: English, German, French, Spanish, Portuguese, simplified Chinese, Russian
Output	USB; serial port; Bluetooth® (optional)
WxDxH	456x360x185 mm
Weight	10,5 kg

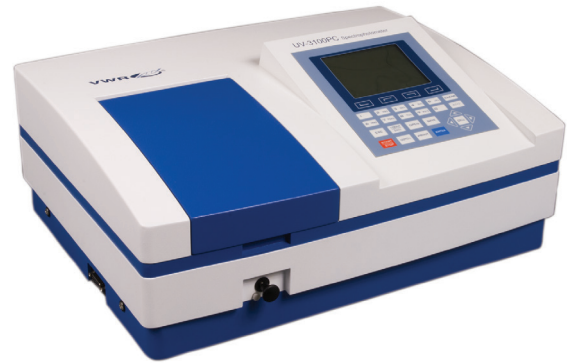
Description	Model	Pk	Cat. No.
UV/Vis spectrophotometer	M4	1	634-1087

**VWR® VISIBLE SPECTROPHOTOMETER, V-3000PC**

Visible spectrophotometer for advanced routine measurements and educational applications.

- Absorption, transmission and concentration photometry
- Up to 10 quantitative standards
- Four methods for calibration curve (linear, linear through zero, square and cubic)
- Off-line calculation: Re-scaling, curve tracking and peak search

Supplied with 4 glass cells, dust cover, USB cable, 8 GB USB stick, software, 4-position cell holder (10 mm) and power cables with UK, CH and EU plugs.



Display	Graphic LCD, 5", 320×240 P
Absorbance range	–0.3...+3.0 A
Absorbance accuracy	±0,005 A @ 1 A
Photometric accuracy	≤±0,5% T
Photometric range	0 - 200% T; 0 - 9999 conc.
Photometric reproducibility	±0,2% T
Photometric stability	±0,002 A/h @ 500 nm
Wavelength accuracy	±0,5 nm
Wavelength range	320 - 1100 nm
Stray light	±0,05% T @ 360 nm
Spectral bandwidth	4 nm
Scanning speed	100 - 1000 nm/min (max. 3000)
Light source	Tungsten
Memory	200 values
Languages	English, German, Spanish, French
Interfaces	USB connections to PC and for memory stick / parallel port to printer
Electrical	220 V/50 Hz
W×D×H	490×360×240 mm
Weight	12 kg

Description	Model	Pk	Cat. No.
Vis spectrophotometer	V-3000PC	1	634-6040

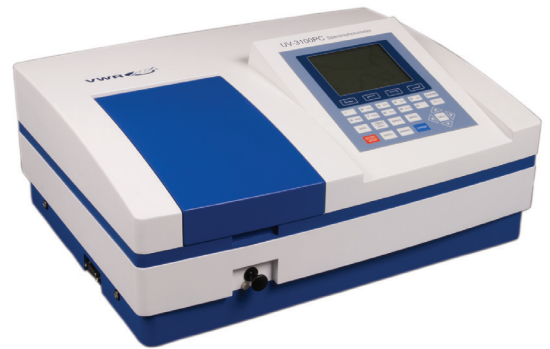
Description	Height (mm)	Path length (mm)	Window material	Pk	Cat. No.
<b>Flow cells</b>					
Flow cell	15	10	Optical glass	1	634-0691
Flow cell	15	10	Quartz	1	634-0695
<b>Cell holders</b>					
Cell holder for test tubes				1	634-6009
Cell holder with automatic changer for 8 cells				1	634-6010
Cell holder, solid sample, 10 mm path length				1	634-6011
Water-jacketed cell holder for 4x 10 mm path length cells				1	634-6012
Cell holder with 4x 10 mm path length cells				1	634-6003
Cell holder with 1 water-jacketed 10 mm path length cell				1	634-6007
Cell holder with Ø 22 mm 10 to 100 mm path length cylindrical cell				1	634-6006
Cell holder with 4x 50 mm path length cells				1	634-6004
Cell holder with 4x 100 mm path length cells				1	634-6005
Cell holder for microcells with beam height 15 mm				1	634-0687
<b>Accessories</b>					
Sipper system, 15 mm (appropriate flow cell required)				1	634-0699
Constant temperature (Peltier) system, 15 mm				1	634-0698
Deuterium lamp				1	634-6038

**VWR® UV/VISIBLE SPECTROPHOTOMETER, UV-3100PC**

UV/Visible spectrophotometer for advanced measurements in quality control, biochemical and pharmaceutical applications.

- Absorption, transmission and concentration photometry
- Up to 10 quantitative standards
- Four methods for calibration curve: Linear - linear through zero - square - cubic
- Off-line calculation, re-scaling, curve tracking and peak search
- Kinetic scanning time course or reacting rate calculations

Supplied with 4 glass cells, 2 quartz cells (not V3000-PC), dust cover, USB cable, 8 GB USB stick, software, 4-position cell holder (10 mm) and power cables with UK, CH, EU plugs.



Display	5" graphic LCD (320x240 P)
Absorbance range	-0,3...+3,0 A
Optical design	Monochromator (single beam)
Absorbance accuracy	±0,005 A
Photometric accuracy	≤±0,5% T
Photometric range	0 - 200% T; 0 - 9999 conc.
Photometric reproducibility	±0,2% T
Photometric stability	±0,002 A/h @ 500 nm
Wavelength accuracy	±0,5 nm
Wavelength range	190 - 1100 nm
Stray light	±0,05% T @ 220 and 360 nm
Spectral bandwidth	2 nm
Scanning speed	Low, medium, high: 50 nm/s (max. 3000 nm/min)
Light source	Deuterium/tungsten
Memory	200 values
Languages	English, German, Spanish, French
Interfaces	USB connection to PC / USB connection to memory stick
No. of standards	200
Keyboard	Solvent resistant alphanumeric
Weight	14 kg

Description	Model	Pk	Cat. No.
UV/Visible spectrophotometer	UV-3100PC	1	634-6042

Description	Height (mm)	Path length (mm)	Window material	Pk	Cat. No.
<b>Flow cells</b>					
Flow cell	15	10	Optical glass	1	634-0691
Flow cell	15	10	Quartz	1	634-0695
<b>Cell holders</b>					
Cell holder for test tubes				1	634-6009
Cell holder with automatic changer for 8 cells				1	634-6010
Cell holder, solid sample, 10 mm path length				1	634-6011
Water-jacketed cell holder for 4x 10 mm path length cells				1	634-6012
Cell holder with 4x 10 mm path length cells				1	634-6003
Cell holder with 1 water-jacketed 10 mm path length cell				1	634-6007
Cell holder with Ø 22 mm 10 to 100 mm path length cylindrical cell				1	634-6006
Cell holder with 4x 50 mm path length cells				1	634-6004
Cell holder with 4x 100 mm path length cells				1	634-6005
Cell holder for microcells with beam height 15 mm				1	634-0687
<b>Accessories</b>					
Sipper system, 15 mm (appropriate flow cell required)				1	634-0699
Constant temperature (Peltier) system, 15 mm				1	634-0698
Deuterium lamp				1	634-6038

**VWR® UV/VISIBLE SPECTROPHOTOMETER, UV-6300PC**

UV/Visible spectrophotometer with double beam optical system, designed for applications including general research, pharmaceutical, biochemical and clinical laboratory use, new material development and quality control.

- Standard photometrics: Absorption, transmission and concentration
- Quantitative analysis and kinetics, multi-wavelength scan and spectrum scan
- DNA/RNA and protein analysis
- Internal control via keypad and PC control (optional)
- UV-Vis Analyst software for more powerful data processing and expanded data collecting

Supplied with 4 optical glass cells, 2 quartz cells, dust cover, USB cable, USB (8 GB) stick, UV-Vis Analyst software for PC control, cell holders for sample and reference, power cables with UK, CH and EU plugs.

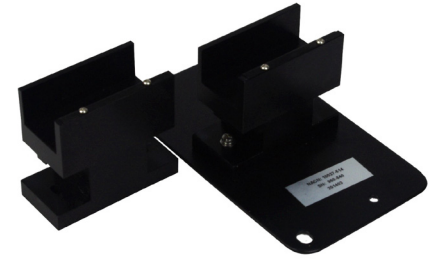


Display	LCD, 320x240 P
Absorbance range	-0,3...+3,0 A
Optical design	Double beam
Absorbance accuracy	±0,002 A @ 1,0 A
Photometric accuracy	≤0,3% T
Photometric range	0 - 200% T; 0 - 9999 conc.
Photometric stability	0,001 A/h @ 500 nm
Wavelength accuracy	±0,3 nm
Wavelength range	190 - 1100 nm
Stray light	≤0,05% T @ 220 and 360 nm
Scanning speed	100 - 3000 nm/min. Intervals: 0,1; 0,2; 0,5; 1,0; 5,0 nm
Light source	Tungsten/deuterium
Memory	200 results and 200 curves
Languages	English, French, German, Spanish
Interfaces	Parallel printer
Output	USB
WxDxH	590x420x260 mm
Weight	26 kg

Description	Model	Pk	Cat. No.
UV/Visible spectrophotometer	UV-6300PC	1	634-6041

Description	Path length (mm)	Window material	Pk	Cat. No.
<b>Square cuvettes</b>				
Square cuvettes	10	Quartz	2	634-6018
<b>Cell holders</b>				
Cell holder for test tubes			1	634-6009
Cell holder for 1 cylindrical cell			1	634-6048
Cell holder with automatic changer for 8 cells			1	634-6010
Cell holder, solid sample, 10 mm path length			1	634-6011
Cell holder with 4x 10 mm path length cells			1	634-6003
Cell holder (reference) with 1x 10 mm path length standard cell			1	634-0778
Water-jacketed cell holder for 1x 10 mm path length standard cell (external water bath required)			1	634-6049
Cell holder with 1 water-jacketed 10 mm path length cell			1	634-6007
Cell holder with Ø 22 mm 10 to 100 mm path length cylindrical cell			1	634-6006
Cell holder with 4x 50 mm path length cells			1	634-6004
Cell holder for 4x 50 mm path length rectangular cells			1	634-6045
Cell holder, single position, for test tubes, max. height 100 mm			1	634-6051
Cell holder with 4x 100 mm path length cells			1	634-6005
Cell holder for 4x 100 mm path length rectangular cells			1	634-6046
Cell holder, for solid samples, max. thickness 3,5 mm			1	634-6052
Cell holder for 1x 100 mm path length rectangular cell			1	634-6047
Cell holder for microcells with beam height 15 mm			1	634-0687
Water-jacketed cell holder for 4x sample 10 mm path length standard cells (external water bath required)			1	634-6050
<b>Accessories</b>				
Sipper system, 15 mm (appropriate flow cell required)			1	634-0699
Constant temperature (Peltier) system, 15 mm			1	634-0698
Deuterium lamp			1	634-6038
Halogen lamp (12 V/20 W), Osram			1	634-0776

VWR® CELL HOLDERS



Cylindrical cell holder

Description	Pk	Cat. No.
Cell holder, for solid samples, max. thickness 3,5 mm	1	634-6052
Cell holder, single position, for test tubes, max. height 100 mm	1	634-6051
Cell holder, solid sample, 10 mm path length	1	634-6011
Cell holder (reference) with 1x 10 mm path length standard cell	1	634-0778
Cell holder for 1 cylindrical cell	1	634-6048
Cell holder for 1x 100 mm path length rectangular cell	1	634-6047
Cell holder for 4x 100 mm path length rectangular cells	1	634-6046
Cell holder for 4x 50 mm path length rectangular cells	1	634-6045
Cell holder for microcells with beam height 15 mm	1	634-0687
Cell holder for test tubes	1	634-6009
Cell holder with 1 water-jacketed 10 mm path length cell	1	634-6007
Cell holder with 4x 100 mm path length cells	1	634-6005
Cell holder with 4x 10 mm path length cells	1	634-6003
Cell holder with 4x 50 mm path length cells	1	634-6004
Cell holder with automatic changer for 8 cells	1	634-6010
Cell holder with Ø 22 mm 10 to 100 mm path length cylindrical cell	1	634-6006
Single cell holder with 1x 10 mm path length standard cell	1	634-0777
Water-jacketed cell holder for 1x 10 mm path length standard cell (external water bath required)	1	634-6049
Water-jacketed cell holder for 4x 10 mm path length cells	1	634-6012
Water-jacketed cell holder for 4x sample 10 mm path length standard cells (external water bath required)	1	634-6050

VWR® STANDARD CUVETTES

Description	Height (mm)	Path length (mm)	Window material	Pk	Cat. No.
Flow cell	15	5	Optical glass	1	634-0690
Flow cell	15	10	Optical glass	1	634-0691
Flow cell	15	20	Optical glass	1	634-0692
Flow cell	15	30	Optical glass	1	634-0693
Flow cell	15	5	Quartz	1	634-0694
Flow cell	15	10	Quartz	1	634-0695
Flow cell	15	20	Quartz	1	634-0696
Flow cell	15	30	Quartz	1	634-0697

VWR® SQUARE CUVETTES

Description	Path length (mm)	Window material	Pk	Cat. No.
Square cuvettes	10	Glass	4	634-6013
Square cuvettes	20	Glass	2	634-6014
Square cuvettes	30	Glass	2	634-6015
Square cuvettes	50	Glass	2	634-6016
Square cuvette	100	Glass	1	634-6017
Square cuvettes	10	Quartz	2	634-6018
Square cuvettes	20	Quartz	2	634-6019
Square cuvettes	30	Quartz	2	634-6020
Square cuvettes	50	Quartz	2	634-6021
Square cuvette	100	Quartz	1	634-6022

VWR® MICRO CUVETTES

Description	Height (mm)	Volume (µl)	Path length (mm)	Window material	Pk	Cat. No.
Micro cell	15	100	10	Quartz	1	634-0688
Micro cell	15	200	10	Quartz	1	634-0689
Micro cell	15	500	10	Quartz	1	634-6025

**VWR® DISPOSABLE CUVETTES**

Disposable cuvettes in either optical polystyrene (PS) or polymethyl methacrylate (PMMA), for use with most polar solvents, acids and alkaline solutions.

- Minimum variation of extinction values
- Recessed windows, clear and clean optical path
- Optimum transmittance and reduced risk of contamination

For determinations in water analysis, chemistry and life science applications.

Resealable – cuvettes are assorted by cavity numbers.



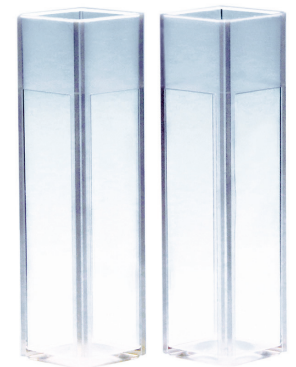
Type	Range	Volume (ml)	Path length (mm)	Window material	Pk	Cat. No.
Semi-micro	300 – 900 nm	1,5 – 3	10	PMMA	100	634-0678
Macro	300 – 900 nm	2,5 – 4,5	10	PMMA	100	634-0677
Semi-micro	340 – 900 nm	1,5 – 3	10	PS	100	634-0676
Macro	340 – 900 nm	2,5 – 4,5	10	PS	100	634-0675

**VWR® MACRO CUVETTES**

Disposable macro cuvettes, four clear sides.

- Clear and clean optical path
- Four windows for precise measurements
- Manufactured under controlled room conditions

Specially designed for fluorescence spectroscopy.



Range	Height (mm)	Volume (ml)	Path length (mm)	Window material	Pk	Cat. No.
340 – 900 nm	35	2,5 – 4,5	10	PS	100	634-1067



Designed for protection

VWR® solutions for safe production of cytotoxic drugs

A SPECIAL RESPONSIBILITY FOR PRODUCT, EMPLOYEE AND PATIENT

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**VWR® SOLVENTS FOR SPECTROSCOPY, SPECTRONORM**

SPECTRONORM solvents have extensive specifications to meet the highly demanding requirements of UV applications.

- Guaranteed UV transmission specifications
- Evaporation residue less than 5 ppm for the majority of solvents
- Batch-to-batch reproducibility
- Filtered at 0,2 µm and bottled under nitrogen
- Fitted with caps with PTFE liners to prevent contamination



Description	Pack type	Pk	Cat. No.
Acetonitrile ≥99.9%, SPECTRONORM for spectroscopy	Glass bottle	2,5 l	84701.320
1-Butanol ≥99.8%, SPECTRONORM for spectroscopy	Glass bottle	1 l	84709.290
Cyclohexane ≥99.7%, SPECTRONORM for UV spectrophotometry	Glass bottle	1 l	23225.296
N,N-Dimethylformamide ≥99.8%, SPECTRONORM for spectroscopy	Glass bottle	1 l	84710.290
N,N-Dimethylformamide ≥99.8%, SPECTRONORM for spectroscopy	Glass bottle	2,5 l	84710.320
1,4-Dioxane ≥99.8% unstabilised, SPECTRONORM for spectroscopy	Glass bottle	1 l	84715.290
n-Heptane ≥99.0%, SPECTRONORM for spectroscopy	Glass bottle	2,5 l	84712.320
Methanol ≥99.9%, SPECTRONORM for spectroscopy	Glass bottle	2,5 l	84705.320
2-Propanol ≥99.8%, SPECTRONORM for spectroscopy	Glass bottle	2,5 l	84706.320
Tetrahydrofuran ≥99.8% unstabilised, SPECTRONORM for spectroscopy	Glass bottle	1 l	84707.290
Toluene ≥99.8%, SPECTRONORM for spectroscopy	Glass bottle	1 l	84708.290

**VWR® UV-VISIBLE SPECTROSCOPY LINEARITY STANDARDS AT 235, 257, 313 AND 350 NM**

Linearity standards packed in permanently sealed UV cuvettes or 100 ml amber bottles.

Description	Pk	Cat. No.
Blank - 0,001M perchloric acid for linearity standards at 235, 257, 313 and 350 nm	100 ml	84756.180
Potassium dichromate linearity standards at 235, 257, 313 and 350 nm - 0 mg/l, 20 mg/l, 40 mg/l, 60 mg/l, 80 mg/l, 100 mg/l (6 permanently sealed UV cuvettes plus blank)	1 SET	84750.600
Potassium dichromate absorbance/transmission standard - 20 mg/l linearity standards at 235, 257, 313 and 350 nm	100 ml	84757.180
Potassium dichromate absorbance/transmission linearity standard at 235, 257, 313 and 350 nm, 20 mg/l (single permanently sealed UV cuvette plus blank)	1 SET	84751.600
Potassium dichromate absorbance/transmission standard - 40 mg/l linearity standards at 235, 257, 313 and 350 nm	100 ml	84758.180
Potassium dichromate absorbance/transmission linearity standard at 235, 257, 313 and 350 nm, 40 mg/l (single permanently sealed UV cuvette plus blank)	1 SET	84752.600
Potassium dichromate absorbance/transmission standard - 60 mg/l linearity standards at 235, 257, 313 and 350 nm	100 ml	84759.180
Potassium dichromate absorbance/transmission linearity standard at 235, 257, 313 and 350 nm, 60 mg/l (single permanently sealed UV cuvette plus blank)	1 SET	84753.600
Potassium dichromate absorbance/transmission standard - 80 mg/l linearity standards at 235, 257, 313 and 350 nm	100 ml	84760.180
Potassium dichromate absorbance/transmission linearity standard at 235, 257, 313 and 350 nm, 80 mg/l (single permanently sealed UV cuvette plus blank)	1 SET	84754.600
Potassium dichromate absorbance/transmission standard - 100 mg/l linearity standards at 235, 257, 313 and 350 nm	100 ml	84761.180
Potassium dichromate absorbance/transmission linearity standard at 235, 257, 313 and 350 nm, 100 mg/l (single permanently sealed UV cuvette plus blank)	1 SET	84755.600

**VWR® UV-VISIBLE SPECTROSCOPY LINEARITY STANDARDS AT 213 AND 261 NM**

Linearity standards at 213 and 261 nm, packed in permanently sealed UV cuvettes or 100 ml amber bottles.

Description	Pk	Cat. No.
Nicotinic acid linearity standard set - 0 mg/l, 6 mg/l, 12 mg/l, 18 mg/l, 24 mg/l at 213 and 261 nm (set of 5 permanently sealed UV cuvettes plus blank)	1 SET	84762.600
Nicotinic acid absorbance/transmission standard 6 mg/l, linearity standards at 213 and 261 nm	100 ml	84768.180
Nicotinic acid absorbance/transmission standard 6 mg/l at 213 and 261 nm (single permanently sealed UV cuvette plus blank)	1 SET	84763.600
Nicotinic acid absorbance/transmission standard 12 mg/l, linearity standards at 213 and 261 nm	100 ml	84769.180
Nicotinic acid absorbance/transmission standard 12 mg/l at 213 and 261 nm (single permanently sealed UV cuvette plus blank)	1 SET	84764.600
Nicotinic acid absorbance/transmission standard 18 mg/l, linearity standards at 213 and 261 nm	100 ml	84770.180
Nicotinic acid absorbance/transmission linearity standard 18 mg/l at 213 and 261 nm (single permanently sealed UV cuvette plus blank)	1 SET	84765.600
Nicotinic acid absorbance/transmission standard 24 mg/l, linearity standards at 213 and 261 nm	100 ml	84771.180
Nicotinic acid absorbance/transmission linearity standard 24 mg/l at 213 and 261 nm (single permanently sealed UV cuvette plus blank)	1 SET	84766.600
Blank - 0,1M hydrochloric acid for linearity standards at 213 and 261 nm	100 ml	84767.180

**VWR® UV-VISIBLE SPECTROSCOPY WAVELENGTH STANDARDS**

Wavelength standards (certified at 0,1; 0,2; 0,5; 1; 2 and 5 nm slit widths) packed in six permanently sealed UV cuvettes or 100 ml amber bottles.

Description	Pk	Cat. No.
Samarium solution UV/Visible wavelength standard at 235 to 480 nm, certified at 0,1 nm, 0,2 nm, 0,5 nm, 1,0 nm, 2,0 nm and 5 nm slit widths	100 ml	84776.180
Samarium solution UV/Visible wavelength standard at 235 to 480 nm, certified at 0,1 nm, 0,2 nm, 0,5 nm, 1,0 nm, 2,0 nm and 5 nm slit widths (single permanently sealed UV cuvette)	1 SET	84773.600
Holmium oxide solution UV/Visible wavelength standard at 240 to 640 nm, certified at 0,1 nm, 0,2 nm, 0,5 nm, 1,0 nm, 2,0 nm and 5 nm slit widths	100 ml	84777.180
Holmium oxide solution UV/Visible wavelength standard at 240 to 640 nm, certified at 0,1 nm, 0,2 nm, 0,5 nm, 1,0 nm, 2,0 nm and 5 nm slit widths (single permanently sealed UV cuvette)	1 SET	84774.600
Didymium solution UV/Visible wavelength standard at 298 to 865 nm, certified at 0,1 nm, 0,2 nm, 0,5 nm, 1,0 nm, 2,0 nm and 5 nm slit widths	100 ml	84775.180
Didymium solution UV/Visible wavelength standard at 298 to 865 nm, certified at 0,1 nm, 0,2 nm, 0,5 nm, 1,0 nm, 2,0 nm and 5 nm slit widths (single permanently sealed UV cuvette)	1 SET	84772.600

**VWR® UV-VISIBLE SPECTROSCOPY STRAY LIGHT STANDARDS**

Stray light standards packed in permanently sealed UV cuvettes or 100 ml amber bottle.

Description	Pk	Cat. No.
Stray light blank – aqueous stray light standard	100 ml	84829.180
Stray light inorganic cut-off filter (200 nm) – potassium chloride, stray light standard	100 ml	84789.180
Stray light standard, inorganic cut-off filter at 200 nm, potassium chloride (single permanently sealed UV cuvette plus blank)	1 SET	84783.600
Stray light inorganic cut-off filter (205 nm) – sodium chloride, stray light standard	100 ml	84788.180
Stray light standard, inorganic cut-off filter at 205 nm, sodium chloride (single permanently sealed UV cuvette plus blank)	1 SET	84782.600
Stray light inorganic cut-off filter (227 nm) – lithium carbonate, stray light standard	100 ml	84787.180
Stray light standard, inorganic cut-off filter at 227 nm, lithium carbonate (single permanently sealed UV cuvette plus blank)	1 SET	84781.600
Stray light inorganic cut-off filter (260nm) – sodium iodide, stray light standard	100 ml	84786.180
Stray light standard, inorganic cut-off filter at 260 nm, sodium iodide (single permanently sealed UV cuvette plus blank)	1 SET	84780.600
Stray light inorganic cut-off filter at 260 nm – potassium iodide, stray light standard	100 ml	84785.180
Stray light standard, inorganic cut-off filter at 260 nm, potassium iodide (single permanently sealed UV cuvette plus blank)	1 SET	84779.600
Stray light inorganic cut-off filter at 390 nm – sodium nitrite, stray light standard	100 ml	84784.180
Stray light standard, inorganic cut-off filter at 390 nm, sodium nitrite (single permanently sealed UV cuvette plus blank)	1 SET	84778.600



**VWR® UV SPECTROSCOPY BANDWIDTH STANDARDS**

Bandwidth standards.

Suitable for UV spectroscopy applications.

Six permanently sealed UV cuvettes or a 100 ml amber bottle.

Description	Pk	Cat. No.
Bandwidth standard - blank - ratio of 268,7 nm peak to 266,8 nm trough	100 ml	84795.180
Bandwidth standard -toluene in hexane - ratio of 268,7 nm peak to 266,8 nm trough	100 ml	84833.180
Bandwidth standard - blank - ratio of 268,7 nm peak to 266,8 nm trough (single permanently sealed UV cuvette)	1 SET	84832.600
Bandwidth standard - toluene in hexane - with blank in sealed cuvettes - ratio of 268,7 nm peak to 266,8 nm trough (set of 2 permanently sealed UV cuvette)	1 SET	84830.600

**VWR® UV/VIS STANDARDS**

For spectrophotometer calibration according to European Pharmacopeia (Ph. Eur.)

- Absorbance control
- Testing of resolution power
- Stray light testing
- Wavelength accuracy testing

In the pharmaceutical industry, a regular check of UV/Visible spectrophotometers according to Ph. Eur. is mandatory. Even in other industries, researchers who are using UV/Vis spectrophotometers, and who are working according to e.g. GMP, GLP, USP or ISO guidelines, need to check and qualify their instruments on a regular basis.



Description	Pk	Cat. No.
UV/Vis standard 1, for absorbance control	1 KIT	86124.001
UV/Vis standard 1A, for absorbance control	1 KIT	86125.001
UV/Vis standard 2, for stray light testing	1 KIT	86126.001
UV/Vis standard 3, for stray light testing	1 KIT	86127.001
UV/Vis standard 4, for stray light testing	1 KIT	86128.001
UV/Vis standard 5, toluene solution in n-hexane for resolution testing	1 KIT	86129.001
UV/Vis standard 6, for wavelength testing	1 KIT	86130.001

**VWR® COLOUR STANDARD SOLUTIONS ASTM**

Ready to use colour solutions that are prepared gravimetrically on a weight/weight basis.

- Use either as calibration and/or quality control standards
- Designed specifically for use in ASTM analytical methods, and produced in accordance with ASTM D1500, D6045, D1209
- Traceable product certified by an independent laboratory
- Supplied in high quality, tamper-evident bottles

Description	Pk	Cat. No.
ASTM Colour Standard Sample A1	100 ml	84834.180
ASTM Colour Standard Sample A1	500 ml	84834.260
ASTM Colour Standard Sample A3	100 ml	84796.180
ASTM Colour Standard Sample A3	500 ml	84796.260
ASTM Colour Standard Sample A5	100 ml	84797.180
ASTM Colour Standard Sample A5	500 ml	84797.260
ASTM Colour Standard Sample A7	100 ml	84798.180
ASTM Colour Standard Sample A7	500 ml	84798.260



**VWR® COLOUR STANDARDS, SAYBOLT**

Ready to use colour solutions that are prepared gravimetrically on a weight/weight basis.

- Use either as calibration and/or quality control standards
- Designed specifically for use in ASTM analytical methods, and produced in accordance with ASTM D1500, D6045, D1209
- Traceable product certified by an independent laboratory
- Supplied in high quality, tamper-evident bottles



Description	Pk	Cat. No.
Saybolt Colour Standard -15	100 ml	84805.180
Saybolt Colour Standard -15	500 ml	84805.260
Saybolt Colour Standard 0	100 ml	84804.180
Saybolt Colour Standard 0	500 ml	84804.260
Saybolt Colour Standard +12	100 ml	84803.180
Saybolt Colour Standard +12	500 ml	84803.260
Saybolt Colour Standard +15	100 ml	84802.180
Saybolt Colour Standard +15	500 ml	84802.260
Saybolt Colour Standard +19	100 ml	84801.180
Saybolt Colour Standard +19	500 ml	84801.260
Saybolt Colour Standard +25	100 ml	84800.180
Saybolt Colour Standard +25	500 ml	84800.260
Saybolt Colour Standard +30	100 ml	84799.180
Saybolt Colour Standard +30	500 ml	84799.260

**VWR® COLOUR STANDARDS, PLATINUM-COBALT COLOUR ( PT-CO, HAZEN)**

Ready to use colour solutions that are prepared gravimetrically on a weight/weight basis and are designed to measure the visual colour of water supplies.

- Use either as calibration and/or quality control standards
- Designed specifically for use in ASTM analytical methods, and produced in accordance with ASTM D1500, D6045, D1209
- Traceable product certified by an independent laboratory
- Supplied in high quality, tamper-evident bottles



Description	Pk	Cat. No.
0 Hazen	1.000 ml	84806.290
10 Hazen	1.000 ml	84807.290
25 Hazen	1.000 ml	84808.290
40 Hazen	1.000 ml	84809.290
50 Hazen	1.000 ml	84810.290
80 Hazen	1.000 ml	84811.290
100 Hazen	1.000 ml	84812.290
250 Hazen	1.000 ml	84813.290
500 Hazen	1.000 ml	84814.290

**VWR® GARDNER COLOUR STANDARDS**

Ready to use colour solutions that are prepared gravimetrically on a weight/weight basis that are designed for grading the colour of similarly coloured liquids, such as resins, varnishes, lacquers, drying oils, fatty acids, lecithin's, sunflower and linseed oil.

- Use either as calibration and/or quality control standards
- Designed specifically for use in ASTM analytical methods, and produced in accordance with ASTM D1500, D6045, D1209
- Traceable product certified by an independent laboratory
- Supplied in high quality, tamper-evident bottles

Description	Pk	Cat. No.
Gardner Colour Standard 2	500 ml	84815.260
Gardner Colour Standard 4	500 ml	84816.260
Gardner Colour Standard 6	500 ml	84817.260
Gardner Colour Standard 8	500 ml	84818.260
Gardner Colour Standard 10	500 ml	84819.260
Gardner Colour Standard 12	500 ml	84820.260
Gardner Colour Standard 14	500 ml	84821.260
Gardner Colour Standard 16	500 ml	84822.260



**VWR® PRIMARY COLOUR SOLUTIONS, REAG. PH. EUR.**

Complete range of reagents and standard solutions in Chapters 2 and 4 of the current European Pharmacopoeia.

All are manufactured and tested in compliance with the Ph. Eur. and are supplied with detailed Certificates of Analysis showing batch number, and expiry date.

- Available in 100 and 500 ml
- Supplied with detailed Certificate of Analysis

Description	Pk	Cat. No.
Primary solution yellow (1 ml solution contains 45,0 mg FeCl <sub>3</sub> ·6 H <sub>2</sub> O) Reag. Ph. Eur.	100 ml	85744.180
Primary solution yellow (1 ml solution contains 45,0 mg FeCl <sub>3</sub> ·6 H <sub>2</sub> O) Reag. Ph. Eur.	500 ml	85744.260
Primary solution red (1 ml solution contains 59,5 mg CoCl <sub>2</sub> ·6 H <sub>2</sub> O) Reag. Ph. Eur.	100 ml	85745.180
Primary solution red (1 ml solution contains 59,5 mg CoCl <sub>2</sub> ·6 H <sub>2</sub> O) Reag. Ph. Eur.	500 ml	85745.260
Primary solution blue (1 ml solution contains 62,4 mg CuSO <sub>4</sub> ·5 H <sub>2</sub> O) Reag. Ph. Eur.	100 ml	85746.180
Primary solution blue (1 ml solution contains 62,4 mg CuSO <sub>4</sub> ·5 H <sub>2</sub> O) Reag. Ph. Eur.	500 ml	85746.260



**VWR® COLOUR STANDARD SOLUTIONS, REAG. PH. EUR.**

Ready to use colour solutions according to Reag. Ph. Eur.

- Ready to use solutions
- Comprehensive Certificates of Analysis for all batches
- Labelled with minimum shelf life/batch number

Description	Pk	Cat. No.
Colour Reference Solution BY (brownish yellow) for testing the colour intensity acc. to Ph. Eur. BY1-BY7 Reag. Ph. Eur.	125 ml	85748.180
Colour Reference Solution GY (greenish yellow) for testing the colour intensity acc. to Ph. Eur. GY1-GY7 Reag. Ph. Eur.	125 ml	85750.180
Colour Reference Solution R (red) for testing the colour intensity acc. to Ph. Eur. R1-R7 Reag. Ph. Eur.	125 ml	85751.180
Colour Reference Solution Y (yellow) for testing the colour intensity acc. to Ph. Eur. Y1-Y7 Reag. Ph. Eur.	125 ml	85749.180

**VWR® COLOUR REFERENCE SOLUTIONS  
ACC. TO PH. EUR., READY TO USE**

These solutions are developed and produced according to chapter 2.2.2. «Degree of coloration of liquids» of the European Pharmacopeia. (brown, brow-yellow, green-yellow, red, yellow). These VWR® kits are ready to use, and are dedicated to help you save time and money because the preparation of these solutions is very complex.

- Easy to use kits
- Ready to use solutions
- Stable - shelf life of 36 months
- Certificate of Analysis provided with the kit

The kits are easy to use: Just add the sample into the empty vial provided with the kit and compare the colour with the reference solution in the rack.



Description	Pk	Cat. No.
Colour reference solutions B (B1 - B9)	1 KIT	85752.001
Colour reference solutions BY (BY1 - BY7)	1 KIT	85753.001
Colour reference solutions Y (Y1-Y7)	1 KIT	85754.001
Colour reference solutions GY (GY1 - GY7)	1 KIT	85755.001
Colour reference solutions R (R1 - R7)	1 KIT	85756.001

**STANDARDS FOR SPECTROPHOTOMETER CALIBRATION**

This calibration set consists of three grey glass filters for checking absorbance accuracy, and a holmium oxide glass filter for checking wavelength accuracy.

- Glass filters mounted in precision aluminium frames
- Set number engraved on each filter mount for identification purposes

They are designed for use with the standard 10 mm cell holder provided with spectrophotometers.

The absorbance values and/or peak position wavelengths of each filter are quoted in the accompanying DAkKS calibration certificate. A copy of the values for laboratory use can be found inside the case lid.

The set, along with an empty mount, is supplied in a sturdy carrying case.



Description	Pk	Cat. No.
Calibration set with 4 glass filters: F1, F2, F3, F4	1 SET	634-9691

Description	Pk	Cat. No.
<b>Individual filters</b>		
Solid wavelength calibration standard for spectrophotometers	1	634-9693



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