

Eppendorf UVette®

Instructions for use

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U.S. Patent No. 6,249,345

1 Operating instructions

1.1 Using this manual

Before using the consumables for the first time, read these instructions for use and the operating manual of the device that you use the consumables with. You can find the current version of the operating manual on the Internet at www.eppendorf.com. These instructions for use do not replace the device operating manual.

2 Product description

2.1 Features

The Eppendorf UVette is a plastic cuvette for single use.

- For measurements in the UV/Vis range at wavelengths from 220 nm to 1 600 nm.
- For volumes of 50 µL or more.
- The funnel-shaped design prevents a capillary effect: liquid remains in the center of the measuring window, even with small volumes.
- 4 optical surfaces
- 2 optical path lengths in one cuvette: 2 mm and 10 mm.

The 10 mm optical path length is marked by an arrow. Rotating the cuvette 90° allows you to select between a path length of 10 mm or 2 mm.

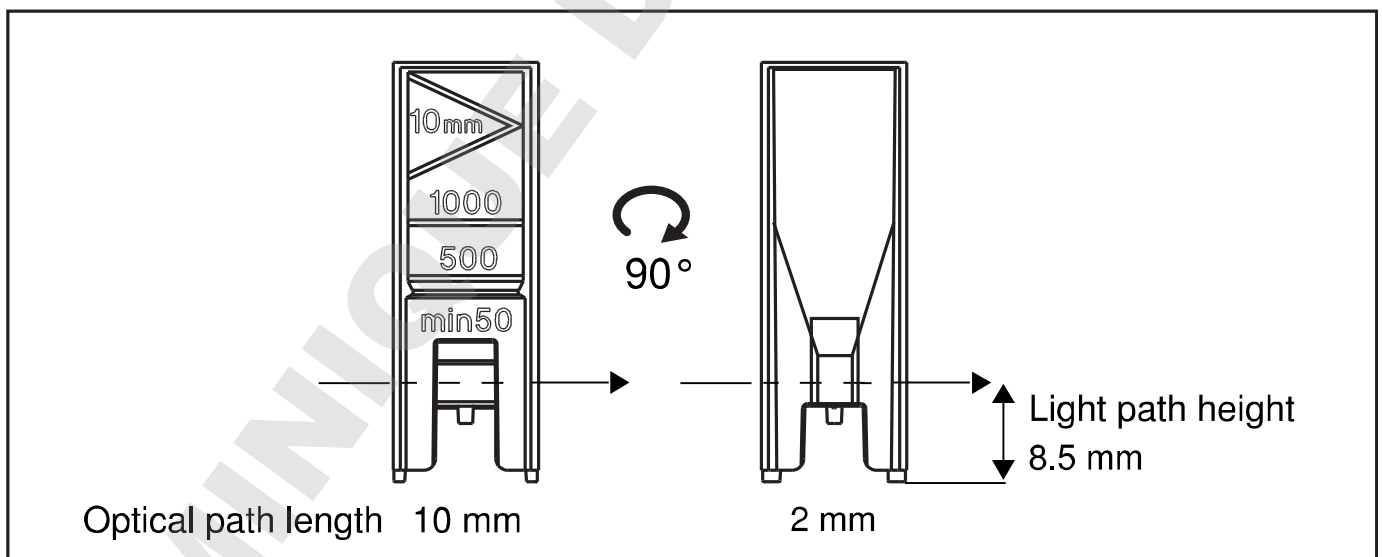


Fig. 1: Eppendorf UVette optical path lengths




Compatible photometer/spectrophotometer

- The Eppendorf UVette fits in the cuvette shaft of all Eppendorf BioPhotometers and Eppendorf BioSpectrometers.
- Adapters for various light path heights are available at Eppendorf for filter photometers and spectrophotometers from other manufacturers.

2.2 Sales units

Eppendorf UVette, individually packaged	<ul style="list-style-type: none"> Individually blister-packaged Protection from contamination and dust For measurements with the highest cuvette purity standards Valuable samples can be recovered after the measurement
Eppendorf UVette, routine pack	<ul style="list-style-type: none"> For routine applications Fast, easy cuvette access Safe storage in a resealable box
Starter set	<ul style="list-style-type: none"> 80 individually packaged Eppendorf UVettes and one universal adapter for using the Eppendorf UVette in devices from other manufacturers

2.3 Eppendorf purity grades

	Eppendorf Quality	PCR clean	Protein-free
			

Batch testing (certified) for the following purity criteria

Free of human DNA		■	
DNase-free		■	
RNase-free		■	
Free of PCR inhibitors		■	
Protein-free			■

Eppendorf UVette

Eppendorf UVette, individually packaged		■	■
Eppendorf UVette, routine pack	■		
Starter set		■	■

3 Safety

3.1 Intended use

The Eppendorf UVette is a UV-transparent plastic cuvette for single use. It is used for photometric analysis of liquids in the UV range and the entire VIS range. The Eppendorf UVette is used in training, routine and research laboratories, and in the life sciences, industry, and chemistry.

In-vivo applications (in or on the human body) are not allowed

Operation requires skilled personnel who have been trained for the above mentioned areas.

3.2 Warnings for intended use



WARNING! Damages to health due to infectious liquids and pathogenic germs.

- ▶ When handling infectious liquids and pathogenic germs, observe the national regulations, the biological security level of your laboratory, the material safety data sheets, and the manufacturer's application notes.
- ▶ Wear personal protective equipment.
- ▶ For full instructions regarding the handling of germs or biological material of risk group II or higher, please refer to the "Laboratory Biosafety Manual" (Source: World Health Organization, current edition of the Laboratory Biosafety Manual).

4 Operation

4.1 Inserting the cuvette

Prerequisites

- The cuvette is free from contamination by dust or fingerprints and free from scratches.
- The measuring volume in the cuvette is sufficient. Ensure that the minimum measuring volume has been reached.
- The measuring solution is free of particles and bubbles.



NOTICE! Material damage due to improper handling

The cuvette may fall if it is not handled properly. Liquid may spray out.

- ▶ Store the cuvette in a cuvette stand.



- Do not touch the optical surfaces in the lower part of the Eppendorf UVette.
- Do not touch the corners of the cuvette (protective gloves may become damaged).

4.1.1 Eppendorf BioPhotometer/Eppendorf BioSpectrometer

1. Position the cuvette so the required optical path length points toward the light path.
2. When inserting the cuvette, press it completely to the bottom against the slight resistance.

4.1.2 Inserting the cuvette and adapter in photometers from other manufacturers

Function of the adapter

- Adjust the height of the light beam in the corresponding photometer.
- Diaphragm function:
 - Hides the light bundle on the cross-section of the Eppendorf UVette measuring window.
 - Reduces stray light

Like measurements with commercial, quartz glass ultra-micro cuvettes, hiding the light bundle reduces the upper limit of the photometric measuring range. Therefore, the usable, linear measuring range may be lower than the value specified for the photometer. To calculate the highest absorbance values that can be measured with the adapter/Eppendorf UVette, determine the measuring range by measuring a dilution series of the desired wavelength.

Additional information is available from the website www.eppendorf.com.



Precise and reproducible positioning of the adapter and cuvette in the cuvette holder is a decisive factor for the reproducibility of the measurement.

1. Select the adapter that matches the light path height of the device.
2. Insert the Eppendorf UVette in the adapter.
3. Insert the adapter and Eppendorf UVette in the cuvette holder of the photometer.
Firmly press the Eppendorf UVette downward.
The Eppendorf UVette and adapter must not have any lateral play in the cuvette shaft of the device.

4.2 Measuring blanks and samples



NOTICE! Faulty measured values due to incorrect orientation of the cuvette.

- ▶ Always insert the cuvette in the same direction in a series of measurements. Do not rotate the cuvette 180° during a measurement series.



NOTICE! Faulty measured values due to repeated use of the cuvette.

If the cuvette is used several times, material changes can lead to incorrect measured values.

- ▶ Each cuvette may only be used for a single measuring procedure with one blank value and one sample value.
- ▶ The cuvette blank must be determined again for each cuvette.



Limited tempering efficiency

The tempering efficiency is limited by the contour of the UVette.

- If temperature control is required, check to see if the UVette is suitable for your applications.

1. Set the parameter for the cuvette path length in the device.
2. Determine the blank value of the cuvette.

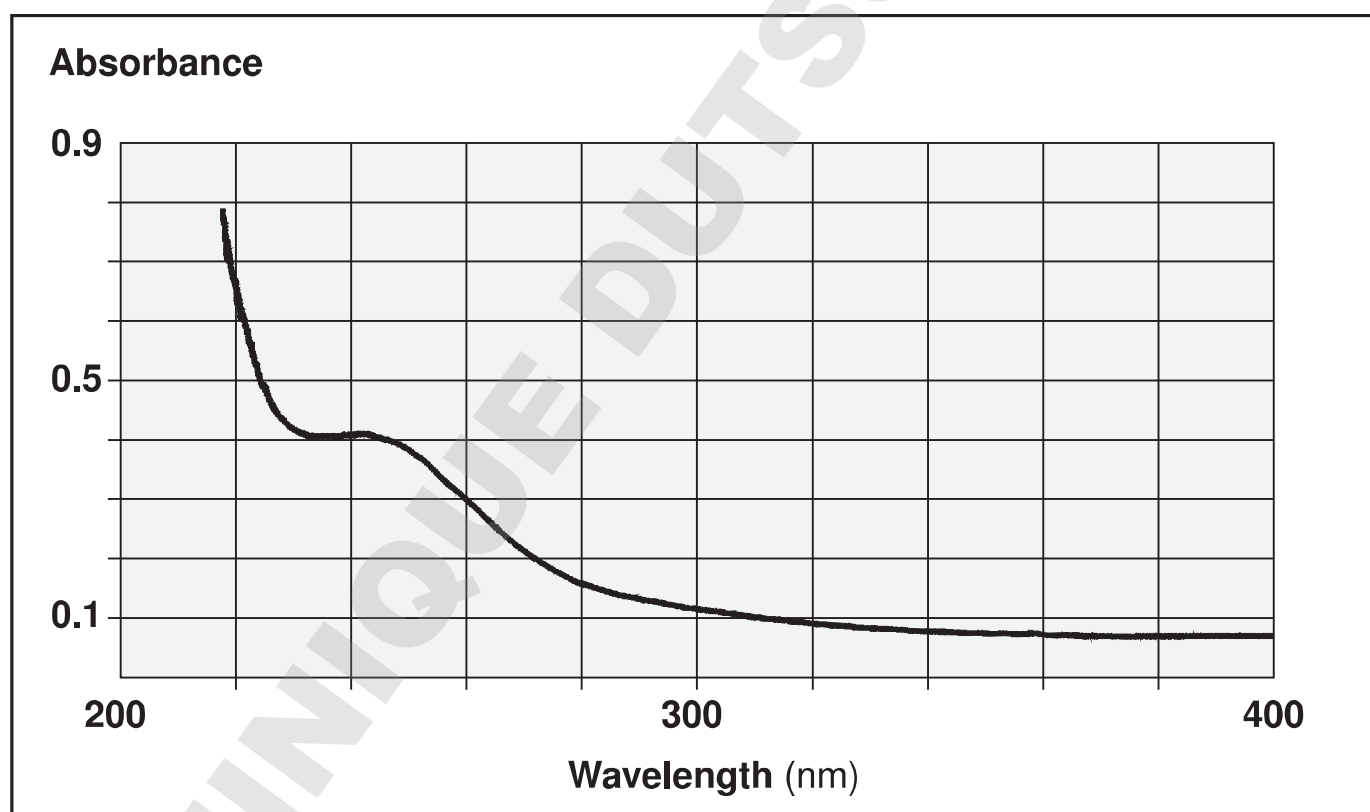


Fig. 2: Absorption of the water-filled Eppendorf UVette

3. Fill the cuvette with the sample.
Make sure that liquid does not spray out when solutions are mixed in the cuvette.
4. Measure the sample.
Do not use the cuvette at wavelengths below 220 nm or above 1600 nm.

5 Troubleshooting

5.1 Error search

Symptom/ message	Cause	Remedy
Measured values are imprecise.	<ul style="list-style-type: none"> The blank value and sample value have been measured in different cuvettes. 	<ul style="list-style-type: none"> ▶ Measure the blank value and sample value in the same Eppendorf UVette.
	<ul style="list-style-type: none"> The position of the Eppendorf UVette in the device is not correct. Eppendorf UVette was inserted incorrectly. 	<ul style="list-style-type: none"> ▶ Press the Eppendorf UVette firmly onto the base of the cuvette shaft or adapter. ▶ The Eppendorf UVette must be inserted into the device in the same direction for the blank measurement and sample measurement. The Eppendorf UVette may not be rotated 180°.
	<ul style="list-style-type: none"> The Eppendorf UVette was used for more than one measurement. 	<ul style="list-style-type: none"> ▶ Each Eppendorf UVette may only be used for one measurement (blank measurement or sample measurement).
Measured values are not plausible.	<ul style="list-style-type: none"> The light path height of the Eppendorf UVette does not match the light path height of the device. 	<ul style="list-style-type: none"> ▶ Use the adapter (not with the Eppendorf BioPhotometer or Eppendorf BioSpectrometer). ▶ The adapter may only be used with the light path height that matches the photometer.
	<ul style="list-style-type: none"> The optical path length of the Eppendorf UVette does not match the value set in the device. 	<ul style="list-style-type: none"> ▶ Insert the Eppendorf UVette in the device so the required optical path length (2 mm/10 mm) is penetrated. ▶ If the optical path length has been changed, the blank value also needs to be updated. ▶ Set the optical path length parameter in the device (2 mm/10 mm).
	<ul style="list-style-type: none"> The wavelength is below 220 nm or above 1600 nm. 	<ul style="list-style-type: none"> ▶ The Eppendorf UVette may only be used for wavelengths from 220 nm to 1600 nm.

6 Technical data

Tab. 1: Dimensions

Width	12,5 mm (0.49 in)
Depth	12,5 mm (0.49 in)
Height	36,0 mm (1.42 in)
Filling volume	50 µL – 2000 µL

Tab. 2: Photometric properties

Path length	2 mm, 10 mm
Light path height	8,5 mm
Wavelength range	220 nm – 1600 nm
Cuvette blank	≤ 0,5 A at 260 nm (absorbance of the water-filled cuvette against air)
Cuvette blank scattering	s ≤ 0,015 A at 260 nm

Tab. 3: Shelf life and storage

Storage before use	Protect from sunlight and UV rays. Store dry at room temperature.
Shelf life	5 years

The Eppendorf UVette is resistant to

Acids	Acetic acid 96% Perchloric acid 10% Nitric acid 65% Hydrochloric acid 36% Sulfuric acid 40% Trichloroacetic acid 40%
Alkaline solutions	Ammonia solution 25% Sodium hydroxide solution 50%
Alcohols	Ethanol Isopropanol Methanol
Other reagents	Acetone Acetonitrile DMSO 10% Formaldehyde 40% Water-saturated phenol

The Eppendorf UVette is not resistant to

Non-polar solvents	Fuel Chloroform Diethyl ether Heptane Hexane Oleic acid n-pentane Petroleum ether Carbon tetrachloride Toluol
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All substances were tested for a period of 24 hours at an ambient temperature of 23°C ±2°C.

7 Ordering information

Order no. (International)	Order no. (North America)	Description
0030 106.300	952010051	Eppendorf UVette 220 nm – 1 600 nm Original Eppendorf plastic cuvette, PCR clean, Protein-free 50 - 2 000 µL, 80 pieces, individually packaged
0030 106.318	952010069	Eppendorf UVette routine pack 220 nm – 1 600 nm Eppendorf Quality 50 - 2 000 µL, 200 pieces, reclosable box
4308 078.006	940001102	Cuvette stand for 16 cuvettes
4099 001.009	952010107	Adapter for photometers/spectrophotometer with light path height 8.5 mm
4099 002.005	952010123	10 mm
4099 003.001	952010115	15 mm
4099 005.004	4099005004	20 mm
4099 100.007	952010077	Eppendorf UVette starter set 80 pieces of UVette, 1 universal adapter for light path height 15 mm, convertible to 8,5 mm

Information on additional adapters can be found online at: www.eppendorf.com.

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