Manual of UV/VIS Kit 1 and 1a article 1.08160.0001/1.04660.0001

Qualification of a UV/VIS spectrometer – parameter "absorbance"

Suitable Cells:

Clean and dust-free quartz glass cells (e.g. Ord. No. 1.00784.0001) with a path length of 10 ± 0.01 mm must be used when checking UV-VIS spectrometers. The same sample and reference cell should be used for any one test procedure. Prior to measurement, the cell should be conditioned (rinsed) with the respective standard solution.

Opening and emptying the ampoule:

The ampoule should be opened by simply breaking off the neck (do not use a glass cutter). The opened ampoule should be used immediately. Always pour the standard solution directly into the cell- we recommend not to use pipettes, syringes, beakers, etc. If necessary, tap the bottom of the ampoule to ensure that it is properly emptied.

Conditioning and filling the cell:

Each ampoule contains sufficient liquid for rinsing (conditioning) the cell twice and subsequently filling it. To condition a cell, half-fill it with solution, invert it so that the inside is completely wetted and empty completely. Repeat the procedure.

Do not attempt to dry the inside of the cell. For measurement fill it immediately after conditioning. Prior to measurement, wipe the outside of the cell with a disposable paper tissue moistened in ethanol (for the purpose, please use residue-free absolute ethanol of spectroscopic quality, e.g. Uvasol®, Cat. No. 1.00980). Never touch the optical windows of the cell.

Step 1: Baseline correction:

Prior to measurement, the baseline should be corrected for the wavelength range used. Fill the sample cell and the reference cell (only for dual-beam spectrometer) with the sulfuric acid reference solution.

Baseline correction	**Fill the reference cell with sulfuric acid (only for dual-beam spectrometer)**	**1 ampoule H_2SO_4**
	Fill the sample cell with sulfuric acid	**1 ampoule H_2SO_4**

Step 2: Measurement of the standard:

Completely empty the sample cell, condition and fill with potassium dichromate solution for measurement. (Measure against the sulfuric acid in the reference cell for dual-beam spectrometer). Ensure that the same cell is used as for baseline correction and that the same window is facing the same direction in the cell holder.

Measurement of absorbance	**Fill the sample cell with potassium dichromate**	**1 ampoule $K_2Cr_2O_7$**

Step 3: Checking the Baseline:

If necessary check the baseline stability with an additional reference solution (i.e. without repeating baseline correction). To carry out this operation, empty the sample cell, condition and fill it with reference solution (sulfuric acid) from a fresh ampoule. Any deviation of the measured spectrum of the photometric values obtained from 100% T should be within the specification given by the manufacturer of the UV-VIS spectrophotometer. Should there be significant deviations; the test should be repeated using a new standard solution.

Checking of baseline	**Fill the sample cell with sulfuric acid**	**1 ampoule H_2SO_4**

Information and minimum shelf life:

If stored protected from light and at room temperature (15-25°C), closed ampoules can be used for up to 24 months (see minimum shelf life on the label).

One package covers two qualifications

Qualification of a dual-beam spectrometer	with checking the baseline (step 3) without checking the baseline	3 ampoules H_2SO_4 and 1 ampoule $K_2Cr_2O_7$ 2 ampoules $H_2SO_4$and 1 ampoule $K_2Cr_2O_7$
Qualification of a single-beam spectrometer	with checking the baseline (step 3) without checking the baseline	2 ampoules H_2SO_4 and 1 ampoule $K_2Cr_2O_7$ 1 ampoule H_2SO_4 and 1 ampoule $K_2Cr_2O_7$