

Starna®

Certified Reference Materials
for UV and Visible Spectroscopy



Absorbance/Transmission

For the measurement of this fundamental parameter, Starna® offers you the choice of either sealed cell, or filter materials. Please note that your selection process should not only include the wavelength(s) required, but also the spectral bandwidth (SBW) of your spectrophotometer. Use of the reference materials outside the SBW range detailed is not excluded, but variations from the certified values may be observed.

Potassium Dichromate – UV Absorbance and Linearity

Description: Potassium dichromate from NIST (SRM 935a) in 0.001M perchloric acid.

Primary Usage: Testing absorbance scale and linearity in the UV region.

Useable range: 235 nm to 350 nm, instruments with a SBW of 2 nm or less.

Physical Configuration: UV quartz cells that have been permanently heat sealed.



Potassium Dichromate – UV Absorbance and Linearity

Product Description:

The use of potassium dichromate solvated in dilute perchloric acid is an established and well recognised method for the validation of the absorbance scale and linearity of a spectrophotometer in the UV region.

When prepared in 0.001M perchloric acid, potassium dichromate gives a spectral scan containing characteristic peaks at 257 nm and 350 nm, and troughs at 235 nm and 313 nm. Within the concentration range 20-100 mg/l, if the absorbance scale of a narrow SBW (< 2 nm) spectrophotometer is linear, the apparent absorbances of a series of concentrations will be a linear function of concentration.

RM-0204060810 set:

Consists of one blank (0.001M perchloric acid) and five increasing concentrations, with nominal values of 20 mg/l, 40 mg/l, 60 mg/l, 80 mg/l, and 100 mg/l.

Typical values obtained:

	Wavelengths			
	235 nm	257 nm	313 nm	350 nm
20 mg/l	0.240	0.281	0.095	0.211
40 mg/l	0.477	0.556	0.186	0.415
60 mg/l	0.730	0.849	0.284	0.631
80 mg/l	0.988	1.149	0.384	0.852
100 mg/l	1.229	1.433	0.477	1.061

All Starna® potassium dichromate cells are prepared using the solid NIST primary material (SRM 935a), prepared at the solution concentrations described in NIST Special Publication 260-54. After filling under controlled conditions, the cells are then permanently sealed by heat fusion and the values certified by the procedure described below.

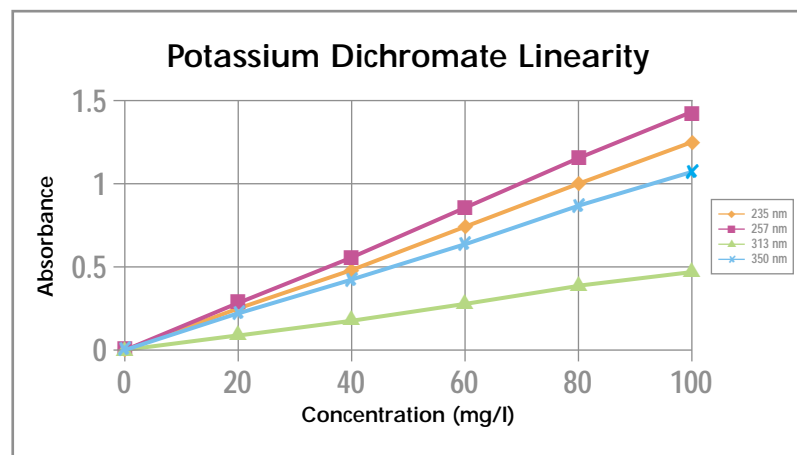
Calibration procedure:

Traceability:

- All Starna® potassium dichromate cells are prepared using the solid NIST primary material (SRM 935a), prepared at the solution concentrations described in "Certification and Use of Acidic Potassium Dichromate Solutions as an Ultraviolet Absorbance Standard – SRM 935" (NIST Special Publication 260-54).
 - Primary instrumental linearity is established using the Double Aperture method.
 - Additional traceability links to NIST primary materials are established using SRM 930e and SRM 1930 neutral density glass filters.

Use:

- All appropriate fundamental parameters and procedures relating to measurement, handling and storage are fully documented on the certificate supplied with each Certified Reference Material.



Neutral Density Filter – Visible Absorbance and Linearity

Product Description:

Schott NG-type glasses have been used for over thirty years for the validation of the absorbance scale and linearity of a spectrophotometer in the visible region.

When manufactured to a specific thickness, filters with a range of transmission and absorbance values can be produced. Whilst the spectral scan of these materials is essentially flat, NIST SRM 930e and SRM 1930 certify these glass filters at 440.0 nm, 465.0 nm, 546.1 nm, 590.0 nm, and 635.0 nm. These sets consist of three filters of varying transmission together with an empty aluminium holder, to be used as a blank.

RM-1N2N3N set:

Consists of one blank holder and three filters with nominal values of 10 %T, 20 %T, and 30 %T.

Typical values obtained:

	Wavelengths	440.0 nm	465.0 nm	546.1 nm	590.0 nm	635.0 nm
	SBW	2.2 nm	2.7 nm	4.0 nm	4.0 nm	4.0 nm
10% Filter	Absorbance (approx.)	1.1811	1.0975	1.1278	1.1746	1.1152
20% Filter	Absorbance (approx.)	0.7474	0.6940	0.7140	0.7459	0.7106
30% Filter	Absorbance (approx.)	0.5438	0.4963	0.5083	0.5386	0.5245

RM-N1N35N set:

Consists of one blank holder and three filters with nominal values of 1 %T, 3 %T, and 50 %T.

Typical values obtained:

	Wavelengths	440.0 nm	465.0 nm	546.1 nm	590.0 nm	635.0 nm
	SBW	2.2 nm	2.7 nm	4.0 nm	4.0 nm	4.0 nm
1% Filter	Absorbance (approx.)	2.1610	2.0210	2.0620	2.0930	1.9730
3% Filter	Absorbance (approx.)	1.5930	1.4770	1.5040	1.5350	1.4410
50% Filter	Absorbance (approx.)	0.3010	0.2720	0.2770	0.3000	0.3080

All Starna® neutral density filters are manufactured and certified in accordance with the "Technical Specification for Certification of Spectrophotometric NTRMs" (NIST Special Publication 260-140).

Filters in the range.

92%T-0.1%T (0.035-3.0A) are available on request. These are held in stock at 17 discrete values across this range.

Calibration procedure:

Traceability:

- Primary instrumental linearity is established using the Double Aperture method.
- Fundamental traceability links to NIST primary materials are established using SRM 930e and SRM 1930 neutral density glass filters as appropriate.

Use:

- All appropriate fundamental parameters and procedures relating to measurement, handling and storage are fully documented on the certificate supplied with each Certified Reference Material.

Neutral Density Filter – Visible Absorbance and Linearity

Description: Neutral Density Filter Set.

Primary Usage: Routine verification of the visible photometric scale.

Useable range: 440 nm to 635 nm, instruments with SBW of less than 6.5 nm.

Physical Configuration: Glass filters 'stress free' mounted in anodised aluminium holder.



Far UV Absorbance/Transmission

For the measurement of this fundamental parameter, Starna® offers you the choice of sealed cell materials. Please note that your selection process should not only include the wavelength(s) required, but also the spectral bandwidth (SBW) of your spectrophotometer. Use of the reference materials outside the SBW range detailed is not excluded, but variations from the certified values may be observed.

Nicotinic Acid – UV Absorbance and Linearity

Description: Nicotinic acid in 0.1M hydrochloric acid.

Primary Usage: Testing absorbance scale and linearity in the UV region.

Useable range: 210nm to 270nm, instruments with a SBW of 2 nm or less.

Physical Configuration: UV quartz cells that have been permanently heat sealed.

Nicotinic acid – UV Absorbance and Linearity

Product Description:

The use of nicotinic acid solvated in dilute hydrochloric acid is a well documented method for the validation of the absorbance scale and linearity of a spectrophotometer in the Far UV region.

When prepared in 0.1M hydrochloric acid, nicotinic acid gives a spectral scan containing characteristic peaks at approx. 210nm and 260nm. Within the concentration range 5-25 mg/l, if the absorbance scale of a narrow SBW (≥ 2 nm) spectrophotometer is linear, the apparent absorbances of a series of concentrations will be a linear function of concentration, at a specified SBW.

RM-UVA (1A2A3A4A) set:

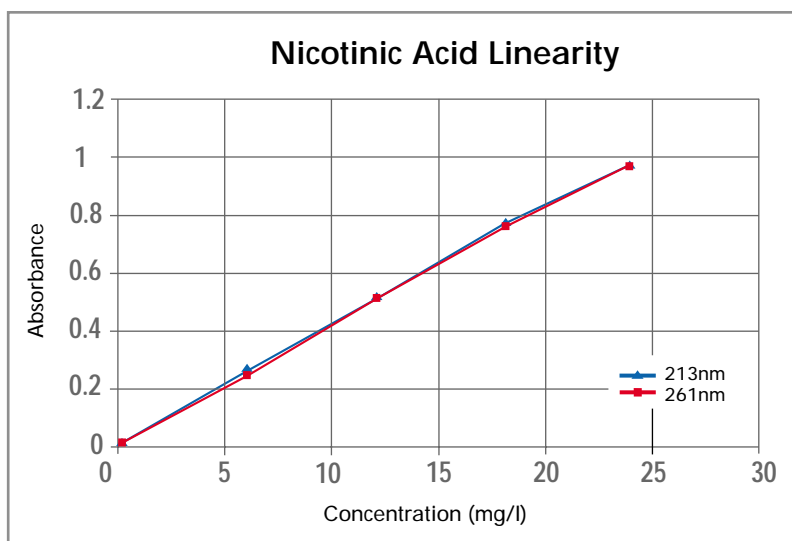
Consists of one blank (0.1M hydrochloric acid) and four increasing concentrations, with nominal values of 6mg/l, 12mg/l, 18mg/l and 24mg/l.

Typical values obtained:

	Wavelengths	
	213nm	261nm
6mg/l	0.244	0.240
12mg/l	0.489	0.482
18mg/l	0.728	0.717
24mg/l	0.969	0.954



All Starna® nicotinic cells are prepared using AR grade chemicals. After filling under controlled conditions, the cells are then permanently sealed by heat fusion and the values certified by the procedure described below, at the specified SBW. (1.0nm as default)



Calibration procedure:

Traceability:

- Primary instrumental linearity is established using the Double Aperture method.
- Additional traceability links to NIST primary materials are established using SRM 935a potassium dichromate, SRM 930e and SRM 1930 neutral density glass filters.

Use:

- All appropriate fundamental parameters and procedures relating to measurement, handling and storage are fully documented on the certificate supplied with each Certified Reference Material.



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