

Reference values for Holmium Oxide other than 1 nm – Tech Information

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What If My Reference Wavelength (nm) Isn't Listed as a Bandwidth?

When working with reference values in nanometers that aren't explicitly listed as bandwidths, you have two practical options:

1. Interpolation

You can interpolate between the listed values to estimate the value you need. This is especially helpful when you require a more precise reference point within a known range. Interpolation is a scientifically valid method and often used in analytical chemistry when exact values aren't available.

2. Use the Next Higher Value

Alternatively, you can simply use the next higher listed value as an approximation. This is often sufficient because:

- The official reference values typically differ only in the third or fourth significant figure.
- Most instruments have a wavelength accuracy of $\pm 1\text{--}2$ nm, so these small differences are not detectable in practice.

Table 1. SRM 2034 Certified Wavelengths (nm) of Minimum Transmittance and Uncertainties^(a) for 14 Bands at Six Spectral Bandwidths, Referenced to Air

Band No.	0.1 nm	0.3 nm	0.5 nm	1 nm	2 nm	3 nm
1	240.97 ± 0.05	240.98 ± 0.05	241.02 ± 0.05	241.12 ± 0.05	241.12 ± 0.05	241.04 ± 0.05
2	249.78 ± 0.05	249.79 ± 0.05	249.81 ± 0.05	249.89 ± 0.05	250.03 ± 0.05	250.07 ± 0.05
3	278.15 ± 0.05	278.15 ± 0.05	278.15 ± 0.05	278.13 ± 0.05	278.10 ± 0.05	278.05 ± 0.05
4	287.03 ± 0.05	287.04 ± 0.05	287.08 ± 0.05	287.22 ± 0.05	287.52 ± 0.05	287.57 ± 0.05
5	333.48 ± 0.04	333.47 ± 0.05	333.47 ± 0.05	333.48 ± 0.05	333.47 ± 0.05	333.47 ± 0.05
6	345.46 ± 0.05	345.45 ± 0.05	345.43 ± 0.05	345.38 ± 0.05	345.42 ± 0.05	345.53 ± 0.05
7	361.27 ± 0.05	361.27 ± 0.05	361.27 ± 0.05	361.25 ± 0.05	361.12 ± 0.05	361.11 ± 0.05
8	385.36 ± 0.05	385.39 ± 0.04	385.45 ± 0.04	385.61 ± 0.04	385.80 ± 0.04	386.00 ± 0.04
9	416.02 ± 0.05	416.04 ± 0.05	416.07 ± 0.05	416.25 ± 0.05	416.57 ± 0.05	416.89 ± 0.05
10	----- ^(b)	----- ^(b)	----- ^(b)	451.45 ± 0.05	451.32 ± 0.04	451.36 ± 0.04
11	467.78 ± 0.04	467.79 ± 0.04	467.80 ± 0.04	467.82 ± 0.04	467.90 ± 0.04	468.11 ± 0.04
12	485.20 ± 0.04	485.21 ± 0.04	485.21 ± 0.04	485.23 ± 0.04	485.25 ± 0.04	485.21 ± 0.04
13	536.42 ± 0.04	536.43 ± 0.04	536.45 ± 0.04	536.56 ± 0.04	536.86 ± 0.04	537.21 ± 0.04
14	640.41 ± 0.04	640.41 ± 0.04	640.43 ± 0.04	640.50 ± 0.04	640.79 ± 0.04	641.15 ± 0.04

^(a) The uncertainties represent U_{95} , the expanded uncertainty calculated in accordance with reference 1.
^(b) The wavelengths for the three narrowest spectral bandwidths for Band No. 10 are not given because this band resolves into two transmittance minima for spectral bandwidths of nominally less than 1 nm.

 **Summary:** If your reference wavelength isn't listed:

- Interpolate for precision.
- Use the next higher value for convenience.
- Either approach is valid, and the difference is negligible given typical instrument tolerances.

For Information Only

- Cell Path Length: 1.0 cm
- Reference Material: H₂O

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