
The Products

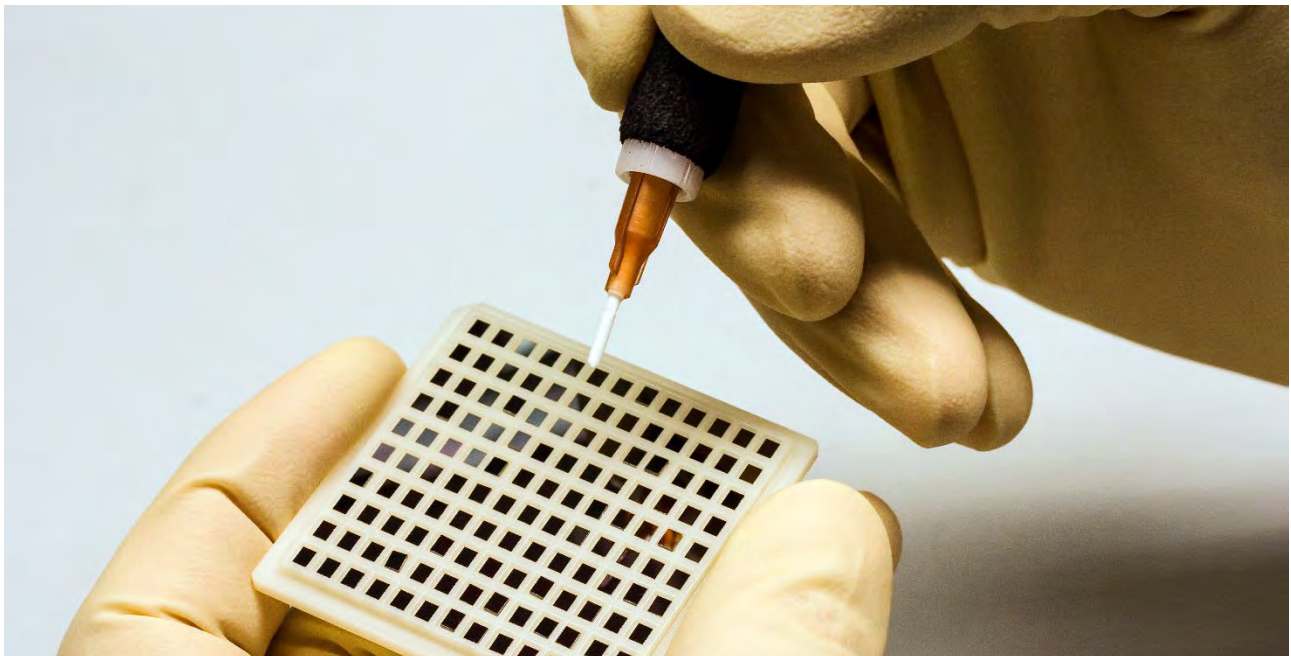
2.4.6 Thermal and Geometric Influences on the Spectral Parameters

The centre wavelength of the bandpass is also dependent on the angle of incidence of the incident radiation as well as on the ambient temperature and is normally specified for parallel radiation with an angle of incidence (AOI) of 0° at a temperature of 23 °C. The CWL shifts to higher wavelengths at higher ambient temperatures. If the angle of incidence is increased, however, the CWL shifts to shorter wavelengths. Both influencing factors affect the transmission and half power bandwidth to varying degrees. The shift of the CWL due to change of temperature is approximately linear, so that this can be characterised by a temperature coefficient (TC). The dependency on the angular drift of the CWL is more complex, however. Thus, only the difference for angles of incidence of 15° and 0° is specified in most cases.

The filter design is usually optimised for one of the two parameters. Due to the strong influence of the angle of incidence on the CWL, most InfraTec standard filters are offered in the low-angular-shift design. At low angles of incidence but fluctuating ambient temperature, a low-TC design can make more sense, however. For this reason, customer-specific filters are normally available both in the low-angular-shift and the low-TC design.

Classification of the InfraTec Standard Filter

Design	Standard filter code	CWL shift for AOI = 15°	CWL shift by temperature change
Low angular shift ³	B, C, E, F, H, I, K, L, M, N, R, T, U, W, Z	8 ... 20 nm	> 0.4 nm / K
Low TC ⁴	D, G	> 30 nm	0.2 ... 0.3 nm / K



³ Low angular shift = low CWL deviation at non-perpendicular incidence of radiation

⁴ Low TC = low temperature coefficient of the CWL

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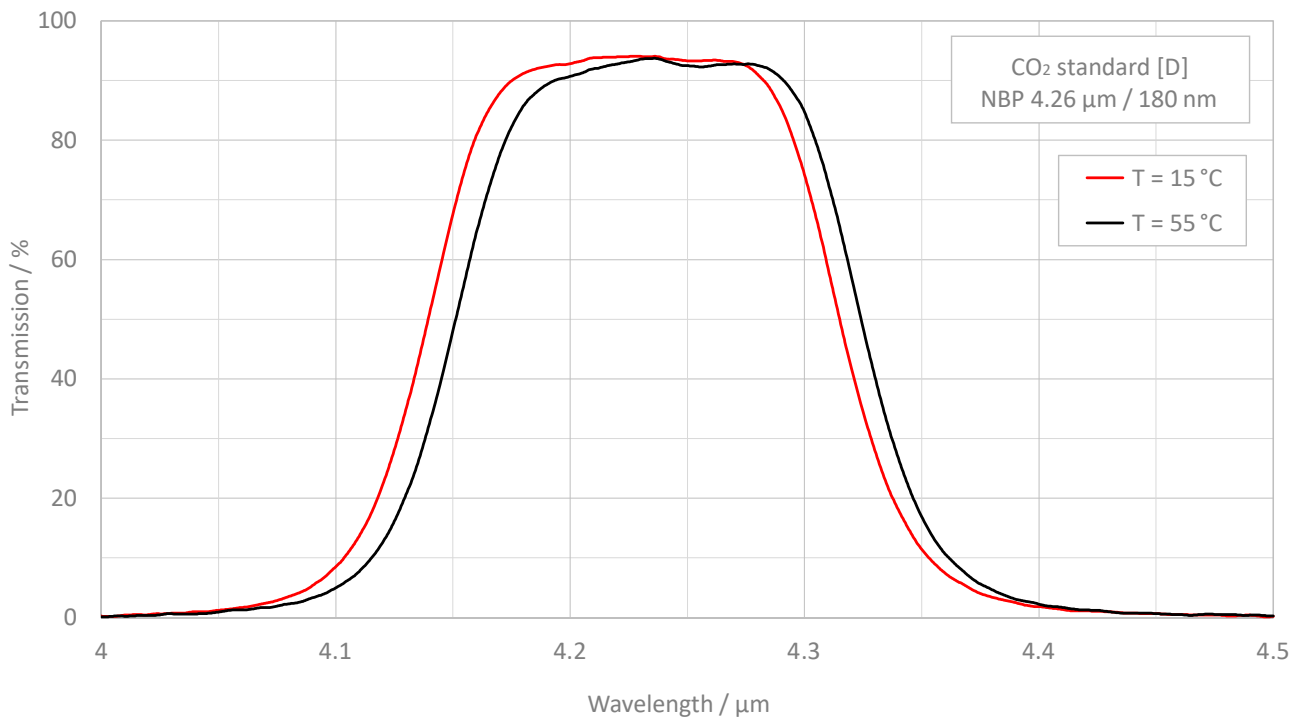


Diagram 3: Influence of the temperature increase on CWL

The influence of the angular and temperature drift is illustrated in the spectra presented here based on the example of the InfraTec D filter (low-TC design). In this case, the influence on the CWL by a temperature increase of 40 K is less (diagram 3) than by a change in the angle of incidence from 0° to 15° (diagram 4).

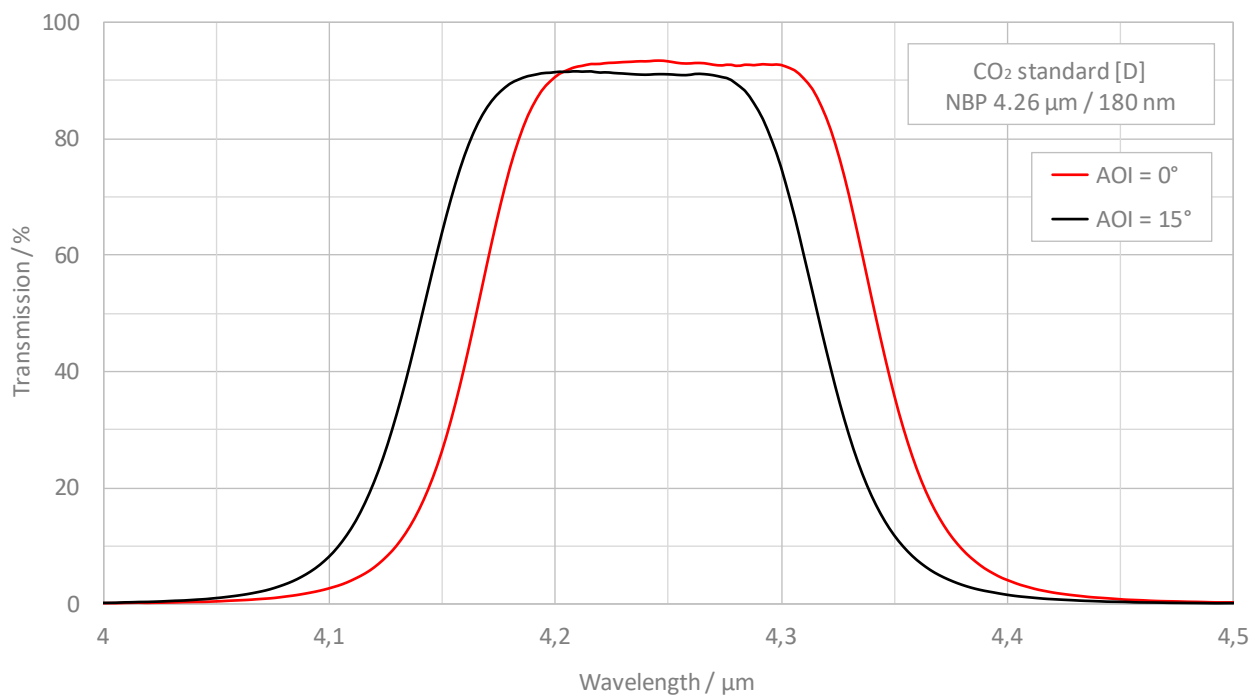


Diagram 4: Impact of changes of the angle of incidence on CWL