Surface appearance and functional performance of optical diffraction gratings

ZEISS places great importance on the quality and reliability of its optical components. Every diffraction grating is produced and inspected according to defined technical requirements, with product release based on compliance with the specified optical performance.

Because of the unique manufacturing processes used for diffraction gratings, visible surface features can occur. These cosmetic features may include minor coating irregularities, isolated marks, or replication-related patterns. While such characteristics can affect the appearance of the component, they do not necessarily limit its suitability for use.

For this reason, the visual condition of a grating should not be considered the sole basis for quality assessment. In practical operation, the relevant criterion is whether the component fulfills the agreed optical specifications including efficiency, resolution, and stray-light behavior within the system context.

In certain cases, surface features may contribute to additional light scatter and can therefore influence the signal-to-noise ratio. ZEISS takes these aspects into account during qualification and verifies product conformity against the relevant specification limits.

In summary, a diffraction grating may show visible cosmetic features while still fully meeting its defined functional requirements. Evaluation should therefore be based on specified optical parameters and application performance rather than on visual appearance alone.

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