

# What is UGR 19 Office Lighting?

*UGR 19 stands for Unified Glare Rating of 19 or less, which is a measure of how bright a luminaire is in a stated room layout. The higher the UGR number the higher the glare from the luminaire and the increased discomfort for room occupants. There are many misunderstandings about UGR ratings, so it is important to understand the principles.*

## UGR IN A NUTSHELL

UGR is a parameter used to calculate the level of glare in a specific interior workspace. Design standards for glare in workspaces specify the UGR at an appropriate level for the space concerned, facilitating visual comfort and a productive environment for users. When a luminaire is described as 'UGR Compliant' this is only relevant for the room conditions stated. Therefore a UGR rating is the result of a range of contributory factors, including the luminaire and its programmed settings, the room dimensions and surface reflectances.

## WHAT IS OFFICE LIGHTING GLARE?

Glare is a visual effect that occurs when competing light sources are present in a human visual horizon and can be direct or indirect. Direct glare is caused by a dominant light source such as looking at a luminaire, whereas indirect glare is caused by reflection or contrast. Discomfort glare is where excessive brightness results in the human reaction to look away, with a feeling of discomfort. Disability



glare is where human vision is impaired, preventing viewing of a subject. Excessive glare often results in occupant fatigue, eye strain and migraines. Discomfort glare is the type most common in office lighting, often resulting from factors such as light behind a computer screen, or high-glare overhead lighting.

## UGR CALCULATION

Luminaire photometric data will contain UGR figures that relate to different applications. These figures state the glare generated by the luminaire in relation to the size and surface reflectance values of a given workspace. AS/NZS 1680.1:2006 Interior Workplace Lighting specifies the target UGR values for typical environments. For office tasks, a UGR of less than 19 (UGR <19) is the target. Lighting designers use specialised software to calculate the light levels, quantity of luminaires and mounting positions for each space. The area, mounting height and surface reflectances will influence the calculated UGR value.

## LUMINAIRES FOR LOW UGR

Luminaires with sophisticated optics that reduce glare are now readily available and these low glare products help support UGR 19 compliant lighting schemes. Lighting designers are increasingly specifying UGR 19 compliance, not only to minimise glare, but to also save the energy that would have otherwise been wasted as glare creating high-angle spill light.

*Lighting Council New Zealand is the industry association for lighting manufacturing, importing, and distribution companies in New Zealand, and associated lighting industry participants. [www.lightingcouncil.org.nz](http://www.lightingcouncil.org.nz)*

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