

10 TIPS

FOR LIGHTING THE HOME WORKPLACE



INTRODUCTION

Now that people are increasingly working from home, it is important to pay more attention to the home workplace. Numerous advices are already given on ergonomic aspects with regard to seat height, desk height, work posture and regular exercise. If advices are being overlooked, RSI, back, neck and shoulder complaints are lurking. Good ventilation, a pleasant ambient room temperature, and plants in the room are also important.

Besides the previously mentioned aspects, lighting conditions are important to consider for the workplace. Lighting conditions can contribute to human health, performance, and wellbeing. That is why we suggest that the lighting conditions at the home workplace must also comply with the regulations and recommendations for working conditions.



10 TIPS

FOR LIGHTING THE HOME WORKPLACE

1.

Ensure enough light
on the workplace

2.

Care for
comfortable
brightness ratios



3.

Avoid direct
and indirect glare

4.

Taking into account
light directionality
and shadows.



5.

Consider lamps with
good color rendering
properties

6.

Choose a
pleasant light color



7.

Select suitable
luminaires for your
purpose

8.

Position the
workplace correctly

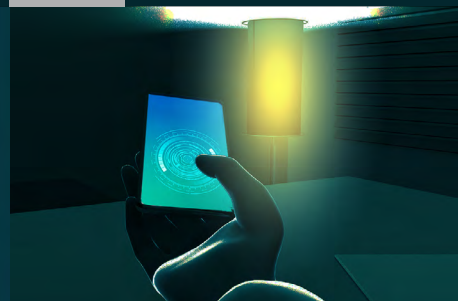


9.

Take into account
dimming possibilities
for electric lights

10.

Apply (smart) options
for controlling
the lights





ENSURE ENOUGH LIGHT ON THE WORKPLACE

Both from an energetic point of view and for a pleasant visual experience, it makes sense to use daylight as much as possible. However, in order to work properly, it is often necessary to use electric light as a supplement or replacement for daylight.

The amount of light that comes from daylight, electric light or a combination of both that falls on a certain surface, such as on the table or the floor, is called the illuminance and is expressed in lux. According to the European standard for indoor workplaces (EN 12464-1), at least 500 lux must be available for office work. For most people, this illuminance can only be measured with a suitable application on a smartphone or tablet. However, because the lens' main purpose is not to serve as a light measurement sensor, these apps give very rough measurement results.

In any case, make sure to provide enough light in the workplace so it remains pleasant to work there for a longer period of time. Also make sure that the light is distributed as evenly as possible over the work surface.



CARE FOR COMFORTABLE BRIGHTNESS RATIOS



Both the amount of daylight and electric light, differ throughout spaces. Moreover, not all surfaces and objects like furniture reflect light back to where it came from. This creates specific brightness ratios within the space. If these ratios become too large, they can be experienced as (often unconsciously) unpleasant and sometimes even as bothersome. This can be the case, for example, with direct sunlight, or with electric lighting that emits direct light.

In general, the brightness ratios are most pleasant in a room with light-colored surfaces (walls, ceiling and floor). The light distribution of the luminaires also plays a role. Good general lighting in combination with additional workplace lighting ensures pleasant brightness ratios.





AVOID DIRECT AND INDIRECT GLARE

Both when using daylight and electric light, light hindrance and certainly glare must be avoided. Sun shading can be realized both at the inside and at the outside of the window in various ways: lamellas, net curtains, curtains and blinds. The advantage of outdoor sun shading is that it keeps the heat outside in summer.

The luminance of a luminaire or the luminance of the lamp(s) directly (fluorescent lamps, spotlights or LEDs) can result in unpleasantly high brightness levels or can even cause glare in certain directions. It is therefore important to choose luminaires that only provide pleasant light in the desired viewing direction and are sufficiently shielded by, for example, slats or diffuse shielding in the other directions.

REFLECTION GLARE

Glare cannot only be caused directly, but also indirectly through reflections via walls, the floor, windows, screens, glass for works of art, photographs and other objects. Reflection glare can also occur from electric lighting that is emitting light on your computer screen. It is easy to check whether there is a risk for indirect glare via the computer screen by holding a small mirror in front of the screen facing off the screen. In case light sources (either daylight through windows or electric lighting) are visible, reflection glare may occur.

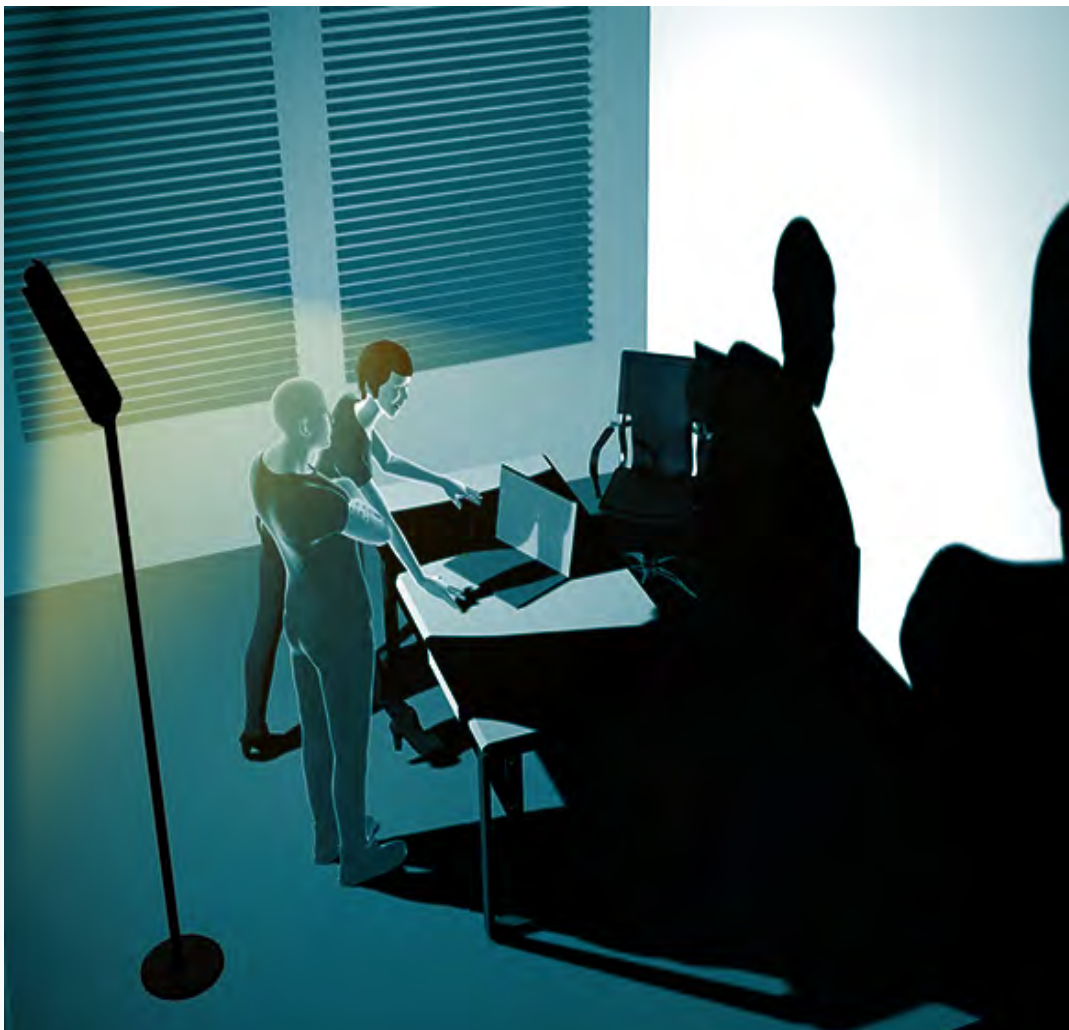


TAKE INTO ACCOUNT LIGHT DIRECTIONALITY AND SHADOWS



Especially with direct lighting and the illumination of objects, shadows occur. These shadows might be perceived as three-dimensional shapes. With diffuse light distributions, such as indirect luminaires and centrally placed luminaires, the shapes of these shadows are more flat and less expressive than with direct lighting.

Shadows can be bothersome. It is recommended to prevent shadows in the workplace as much as possible. This can be done by correctly positioning the workplace and the luminaires in relation to the workplace. In addition, make sure that daylight does not cause strong shadows by correctly positioning the workplace in relation to the window. For example, when working with a window behind you, you might cause shadows on your workplace yourself.





CONSIDER LAMPS WITH GOOD COLOR RENDERING PROPERTIES

The ability to perceive colors partly depends on the properties of the light source. Due to the spectral composition of daylight, all colors are equally visible under these conditions.

LEDs, as well as energy-saving lamps and fluorescent lamps, can make certain colors appear differently compared to as they would appear under daylight conditions. This can be explained by the fact that certain colors of the spectrum are to a lesser extent present in these light sources. An indication of the extent to which colors are displayed realistically is provided by the color rendering index, denoted by R_a or CRI.

If there is a color rendering index of $R_a \geq 80$ on the packaging of a light source, the color rendering is considered sufficient, but some colors may be perceived as unnatural. With a color rendering index $R_a \geq 90$, less colors will be perceived unnatural and the color rendering is therefore better. A high color rendering index is essential if color assessment is considered important. For comparison, it can be stated that the color rendering index R_a of daylight, but also of incandescent lamps and halogen lamps is 100.



CHOOSE A PLEASANT LIGHT COLOR



The light color also determines the atmosphere in a room. The light color is how we perceive the color of light; for example, warm white and cool white. This is called the correlated color temperature and it is expressed in Kelvin (K). When it is dark outside, a warm white light color (± 2700 K) is excellent in most rooms in the house. If more light is desired in a room, especially in a light-colored room, a slightly cooler light color (± 3000 K) will appear more natural and fresh. Daylight has a much higher correlated color temperature (> 5000 K). Lamps with a correlated color temperature of 4000 K are generally experienced as pleasant when combined with daylight. A general guideline for the light color cannot be given, as it is also a matter of personal taste.

LED technology provides more possibilities to adjust the correlated colour temperature compared to conventional light sources.



SELECT SUITABLE LUMINAIRES FOR YOUR PURPOSE

The amount of electric light that enters the workplace via the luminaires depends on the installed luminaires and their positions in the room. For luminaires in which different light sources can be placed, the amount of emitted light is partly determined by the light output of the lamp(s).

Luminaires are available in many versions:

- Luminaires that emit light all around
- Luminaires that emit light mainly downwards
- Luminaires that emit light both upwards and downwards
- Luminaires that emit light very directly (for accent and decorative lighting)

In small spaces, one luminaire for general lighting (on the ceiling or on pendants) would usually be sufficient. In larger rooms, it is often necessary to provide additional lighting locally by applying a standing luminaire next to the workplace or a desk luminaire. Keep in mind that not only the workplace must be sufficiently lit but also the rest of the room.

As already indicated in tip 2, general lighting in combination with additional lighting at the workplace is usually the best solution.

This can be achieved with:

- Ceiling luminaires or pendant luminaires (upper two figures)
- Standing luminaires or desk luminaires (lower two figures)



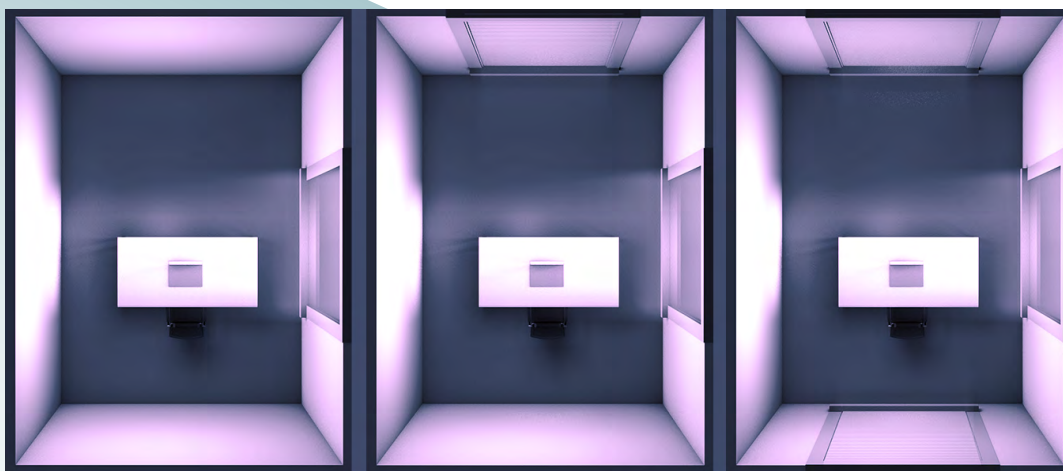
POSITION THE WORKPLACE CORRECTLY

The amount of daylight in the workplace is determined, amongst others, by the orientation of the window (for example, whether it is facing North or South). It is important to check whether the workplace is optimally situated in relation to windows and luminaires that are at a fixed location. This of course depends on the available space. In most cases, the best place for the desk is often parallel to the window to limit direct hindrance from daylight and sunlight as much as possible. Any disturbance from daylight or direct sunlight entering through the window can be avoided by applying sun shading. Preferably the sun shading is adjustable in order to maintain a view to the outside.

If there is an additional window in another facade, a choice must then be made to have the second window in front of or behind the workplace. Incident daylight from behind is more likely to create unpleasant shadows (see tip 4). For such windows, permanent light protection or adjustable sun protection (slats), is usually very desirable. This also applies to the third situation, where daylight can enter from three sides.

The following images shows three different situations as discussed:

- Window on the right side of the desk
- Window on the right side and window in front of you
- Window on the right side, window in front of you and window behind you



It should be noted that regarding the creation of shadows, it might be better to turn the desk 180° for left handed people.



POSITION THE WORKPLACE CORRECTLY

Daylight control is even more important if the only option in a small space is to locate the workplace in front of the window. The advantage is that during video calls the light falls directly on the face. The disadvantage is that, depending on the orientation of the facade, sun shading is often required earlier. The shadow of the sun shading can also be annoying.

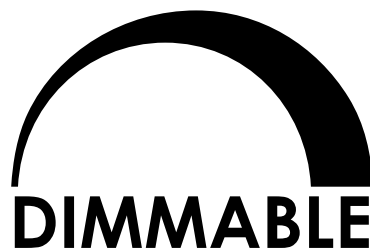
So both setups (window located in front of the desk or behind the desk) have their advantages and disadvantages. Optometrists indicated that, in order to prevent myopia (the quality of being short-sighted), one should occasionally look at different distances to ensure regular accommodation of the eye. This can be done by placing the desk directly in front of the window, or otherwise by regularly rotating your head and looking outside.



TAKE INTO ACCOUNT DIMMING POSSIBILITIES FOR ELECTRIC LIGHTS



Dimmers for incandescent and halogen lamps are generally not suitable for LED lamps. In addition, not all LED lamps are dimmable. Whether or not they are dimmable must be stated on the packaging, in text or, for example, with the symbol below.



A difference in dimming LED lamps compared to incandescent and halogen lamps is that the light color does not change. Dimmable LED lamps can be dimmed in various ways. The manufacturer must indicate which LED lamps are suitable for a particular dimming possibility.

It should be noted that flickering can occur with LED lamps when dimming to the minimum output value. This depends on the brand and type of the dimmer. Another thing to consider is the minimum and maximum power to be connected. The lower limit for incandescent and halogen lamp dimmers is often so high that no LED lamp can be connected to it.

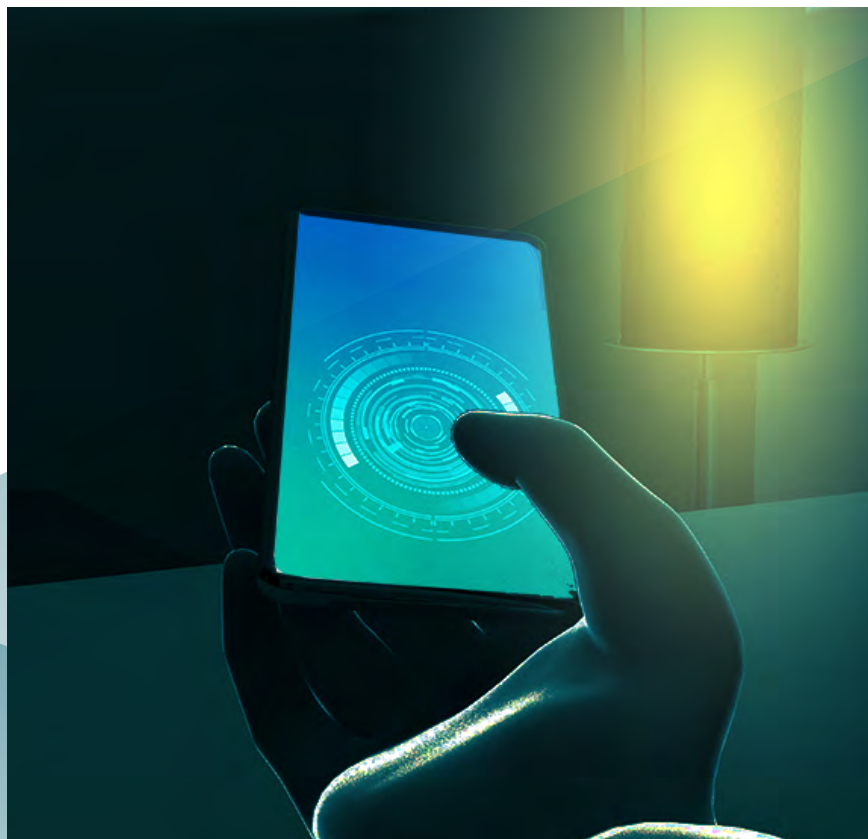
When changing from incandescent and halogen lamps to LED lamps, a new dimmer is therefore almost always required. This applies to all versions, so not only for those in or on the wall, but also for floor and cord dimmers.

APPLY (SMART) OPTIONS FOR CONTROLLING THE LIGHTS

REMOTE CONTROL FOR DIMMING AND SWITCHING

One of the reasons for using a remote control is comfort, as has long been customary for the operation of audio equipment and televisions, for example. Another reason may be the visibility of wires; when for example the desired switches and wires cannot be concealed in an existing wall.

Fairly commonly used systems work with infrared emitters and receivers. The receivers can be easily mounted on the wall or ceiling. One can also use luminaires or lamps that include a receiver themselves. With infrared technology, in principle, only the lighting can be switched or dimmed in the room in which the relevant receivers are placed. It can also happen that large cupboards or other furniture prevent operation at certain places in a room. In case this is bothersome, remote control systems based on ultrasonic wave signals can also be used. In contrast to infrared signals, these can penetrate all kinds of architectural elements, walls, cupboards, etc. However, they are only very limited available for use in homes.



APPLY (SMART) OPTIONS FOR CONTROLLING THE LIGHTS

10.

“SMART” CONTROL, ALSO FOR OTHER EQUIPMENT

It is also possible to combine remote switching and dimming via other electrical equipment (a PC, smartphone or tablet via an application). Controlling the lights is even possible by means of spoken word.

LIGHTSCENES

If the room is used for different tasks (for example: working alone and for face to face or online meetings), it is also possible to choose a predetermined light scene for each of these tasks. These luminaires are switched on and possibly also dimmed according to the atmosphere (light color and/or the amount of light) appropriate to the use of the space.

Each desired light scene at that time can then be selected with a button on a control panel, remote control, tablet or smartphone via a suitable app. The different light scenes can be programmed in advance.

With advanced light switching and control systems, a combination is even possible with, for example, the operation of other electrical equipment, heating, sun blinds or a security installation. Moreover, using such systems can limit the energy consumption for various situations.

SHIELDING SMART EQUIPMENT AGAINST UNWANTED INFLUENCES FROM OTHERS

Smart equipment in the home could make it easy for hackers, but also large tech companies to control them or make use of certain data. This applies, for example, to unsafe networks with which, amongst others, lighting is also controlled via a smartphone, tablet or spoken word. This can deteriorate security and privacy, despite reassuring messages from for example Google and Apple.

Therefore, choose a reputable brand, because unbranded products cannot always be trusted and make sure that your important data is protected via a password. Also ensure timely updates of the applicable apps.



EXTRA

EXTRA TIP FOR PEOPLE WITH VISUAL DEFICIENCIES

For people with visual deficiencies due to eye disorders or in regular for the aging eye, it may be necessary to provide specific lighting conditions. This can be done by applying more or less light than usual. It may also be necessary to adjust the color spectrum of the emitted light in case of color deficiencies. This can then, for example, improve the visibility of boundaries of a space.

It is also important to pay even more attention than usual to the prevention of glare and the brightness ratios. It is recommended to contact an organization for blind and visually impaired people for specific advice.

GENERAL EXTRA TIP

Make sure you get exposed to bright light for at least 15 minutes in the morning.

This publication has been developed for and with:



VZW Groen Licht Vlaanderen

Head Office:

Brouwerijstraat 49
B-9920 Lievegem
Belgium

RPR-Business Court Gent
BE 0672.504.562

Tel: +32 (0)9 265 87 13
info@groenlichtvlaanderen.be
www.groenlichtvlaanderen.be



Belgisch Instituut voor Verlichtingskunde VZW

Jozef II straat 40/6
1000 BRUSSEL
Belgium

RPR Business Court Brussel
BE 0406.676.359

Tel: +32 (0)9 265 87 18
info@ibe-biv.be
www.ibe-biv.be



Kenniscentrum licht

Horaplantsoen 18
6717 LT EDE
The Netherlands

Tel: +31 (0)318 69 53 94
info@nsvv.nl
www.nsvv.nl