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# Lightfastness

## Introduction

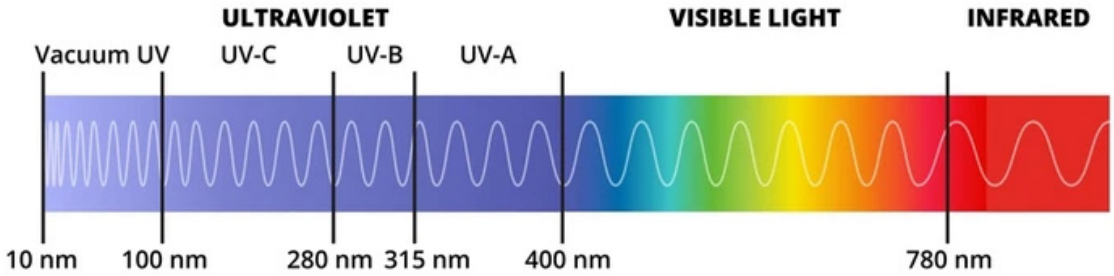
Plastics are exposed to many stresses during a life cycle.
These stresses may be

**Mechanical:** Vibration, impact, tension, pressure, shear
**Chemical:** Oils, surfactants, air pollutants
**Biological:** Bacteria, fungi, plants, animals
**Natural environmental influences:** Air, humidity, water, earth temperature, light
and cause the material to age.

Ageing affects not only the mechanical properties, such as loss of strength and stress cracks, but also the appearance of the plastic due to fading and colour change.

## Lightfastness

Ultra-violet radiation, whose wavelengths are shorter than 380 nm, is mainly responsible for the change in colour. This is UV-A, UV-B or UV-C radiation. The shorter the wavelength, the higher the energy of the radiation. Short-wave UV radiation leads to accelerated colour change.




Lightfastness describes the resistance of colours in plastics to prolonged irradiation, especially sunlight with a high UV light content. The UV radiation is absorbed by the plastic and triggers a chemical process that leads to colour change (yellowing). All materials that are exposed to light change colour over time. Complete lightfastness, therefore, does not exist [1]. Depending on the type of plastic and the colour, a visible colour change occurs faster or slower. Especially with light colours, this change becomes noticeable more quickly. Dark colours behave much more favourably with regard to yellowing. PP and PMMA have good UV resistance, while ABS has lower UV resistance.

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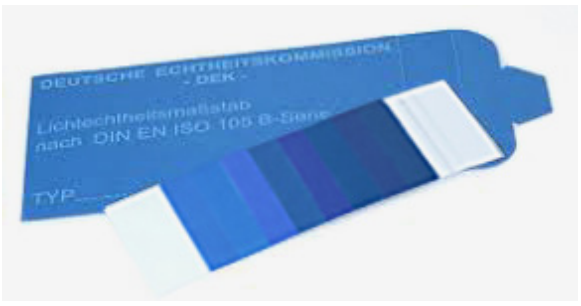
## Wool colour scale

The lightfastness of a colour can be assessed differently. The most common method of assessment is by means of a wool colour scale. The colour scale consists of different blue wool colours, which are subdivided from 1 to 8, whereby level 1 corresponds to a low lightfastness and level 8 to a high lightfastness.
All SURTECO ABS edgebands have a lightfastness level ≥ 6. Our PP and PMMA edges have a lightfastness level ≥ 7.

Blue wool types 1-8 [2]




Scale type 1-8, ready glued [2]

## Conclusion

Plastic edgebands generally have good resistance to external factors. They are very well suited for indoor use. However, since all furniture edges are exposed to different conditions (light, temperature, climate), an exact prediction of the lightfastness of individual edges cannot be made.

## Sources:

(1) Fachgruppe, pro-K. Zur grundsätzlichen Erläuterung der Begriffe Lichtechtheit, Wetterechtheit, UV- Beständigkeit. pro-kunststoff.de.
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(2) German Colour Fastness Committee - farbechtheit.info.
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https://www.farbechtheit.info/pdfs/gmbh/dek_produktflyer_a4_en_web.pdf