

# Innovative technology for optimum daylight

## How daylight redirection technology works

BASF's daylight redirection film, made up of encapsulated micromirrors, is laminated into the window.

### Fitting within an insulated glass unit (IGU)

The film is always applied within an insulated glass unit (IGU). It can either be inserted in the cavity of the IGU on the inner surface of the outer pane or laminated between two panes of glass with polyvinyl butyral (PVB) or another standard laminating material.



Cross-section of an insulated glass unit (IGU) with daylight redirection film

### Visual properties

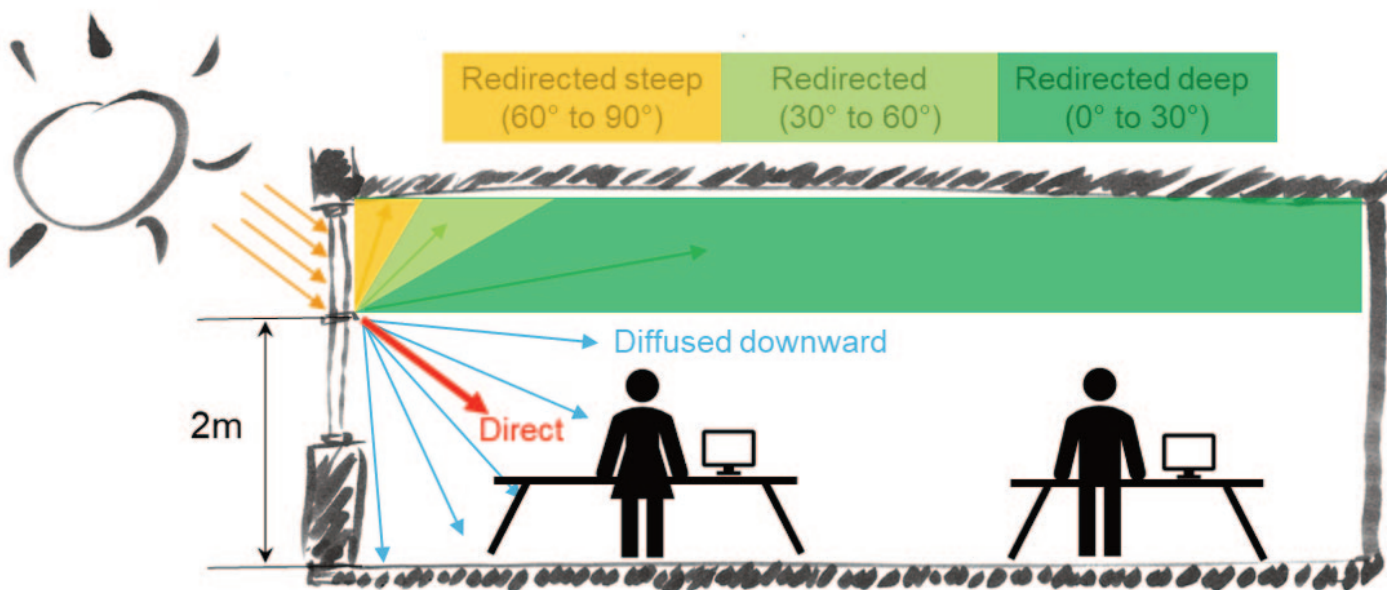
The daylight redirection film only changes the distribution of the visible light of the insulated glass unit (IGU). When installed within the glazing, the glass's general properties remain similar, and the light redirection function is added on top of the other IGU properties. Insulating properties ( $U_g$ ), solar heat gain coefficient (SHGC, g value), and the level of light and energy transmission ( $\tau_v$  and  $\tau_e$ ) are only slightly affected.

	Conventional optical glazing properties (Values at 0°)			
	$U_g$	SHGC	$\tau_e$	$\tau_v$
<b>all-season IGU</b>	1.35	0.461	33.6%	70.7%
<b>all-season IGU + DRF</b>	1.35	0.495	36.0%	71.9%

Visual properties

## Daylight redirection properties

The distribution of the penetrating daylight is measured to assess the performance of the technology with regard to sun protection and light redirection.



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Incident light direction	Visible Transmittance	Direct (%)	Diffused downward (%)	Redirected deep (%)	Redirected (%)	Redirected steep (%)
Yearly average Lausanne (all directions)	58	18	28	21	29	4
20° (view direction looking from inside)	77.8	82.8	7.1	8.8	0.7	0.5
40° (sun position noon spring / autumn)	63.6	43.2	5.2	42.3	8.5	0.7
60° (sun position noon summer)	47.9	2.8	4.6	15.7	75.1	1.8

Simulated values given for an IGU with film in Lausanne (in 1st line) and measured values for a DRF film on a single glass pane for specific directions.

## Daylight simulation in Lausanne

The foundations of daylight redirection technology were developed at the Solar Energy and Building Physics Laboratory (LESO) at the École Polytechnique Fédérale de Lausanne (EPFL). BASF has industrialized the technology, advancing it to pilot scale. Work on stepping it up to industrial scale is now in progress.

If you have any questions or want to find out more, please e-mail our BASF experts at: [nest@basf.com](mailto:nest@basf.com)



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