

**Exolon® multi UV Hybrid-X**  
Daylight in a new dimension

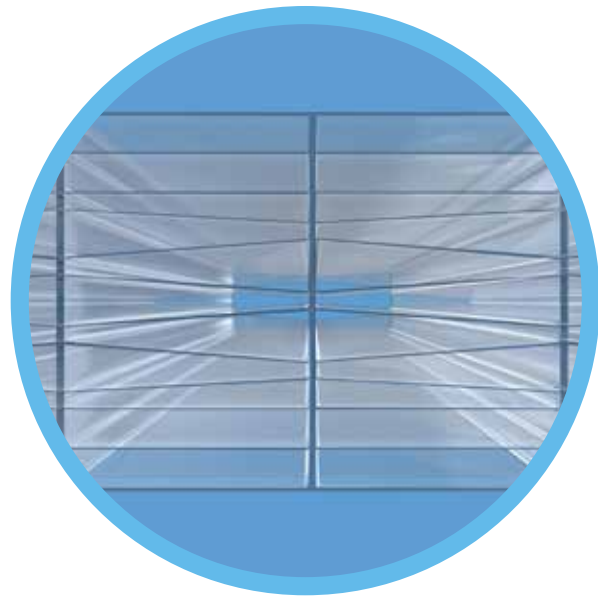
# More positive energy: daylight in buildings



The optimum use of daylight in buildings is increasingly becoming a standard requirement and a must for modern building architecture and interior design. After all, the interior is a living space ... and natural brightness significantly improves the atmosphere and comfort. Whether verandas, bright conservatories or bright roofs, whether a private comfort zone or a professional working environment: daylight provides positive energy in the best sense of the word. It has been shown to have a great impact on our wellbeing, improve our physical and mental health and release endorphins. No artificial light can do that!

This creates measurable advantages for the working world in particular. Decades of research shows that working all day in daylight can improve our mental function by 10% to 25% and increase our productivity up to 15%. In addition, considering that about 50% of the total electricity consumption in industrial buildings is accounted for by artificial lighting, the "energy gain" from daylight becomes even clearer.

The ecological requirements for buildings are high and will continue to increase. Building certifications for sustainable construction demand maximum energy savings. Optimum use of daylight – i.e. ensuring an adequate amount of natural light for a sufficient number of hours – helps to sustainably improve the overall energy balance of our living and working environment.



## The challenge: daylight and a stable indoor climate

From a thermal insulation point of view, conventional daylight systems can be a weak spot in the building shell, for example when you consider the high energy losses near glass windows. Of course, there are also complex or closed systems available that reduce losses. However, many of these solutions offer less daylight and/or result in higher costs. Another important challenge is safety. Here too, a daylight system can have major weaknesses, particularly in terms of load-bearing capacity and fire behaviour.

Ideally, a daylight system should be translucent, light, fire resistant and insulating. This can only be achieved by sophisticated products that combine all dimensions "under one roof".

## The solution: Exolon® multi UV Hybrid-X

Based on intensive research and development, we have engineered an innovative polycarbonate multiwall sheet for demanding applications: The new **Exolon® multi UV Hybrid-X** from the Exolon Group perfectly harmonises daylight use with high thermal insulation. Its unique geometry makes it the first choice when high performance in all key areas is required: safety, energy saving, light transmission and health.

|                           | Heat transfer coefficient<br>[W/m <sup>2</sup> K] EN10077-2 |
|---------------------------|---|
| Exolon® multi UV HX/25-32 | 1.3   |
| Exolon® multi UV HX/32-32 | 1.1   |
| Exolon® multi UV HX/40-32 | 1.0   |

Very good heat transfer coefficient (U<sub>g</sub>) achieved by Hybrid-X according to EN ISO 10077-2.

## Perfect heat insulation for a constant comfortable climate

Exolon® multi UV Hybrid-X is suitable for all private and industrial applications where high thermal insulation is required: verandas, canopies, conservatories, roofs, industrial halls and much more. This is ensured by the innovative geometry of Hybrid-X, a complex and equally effective combination of walls and air chambers. The insulation properties of the sheet are demonstrably maximised, whilst their lightness and their mechanical properties are preserved.

Thanks to the unique inner structure, the new hybrid-X sheet type actually offers the lowest heat transfer coefficient (U<sub>g</sub>) of all currently available sheet thicknesses. When it comes to reducing energy consumption whilst maintaining a constant temperature, Hybrid-X is the material of choice. It can be installed in many different applications and in all living and working environments.

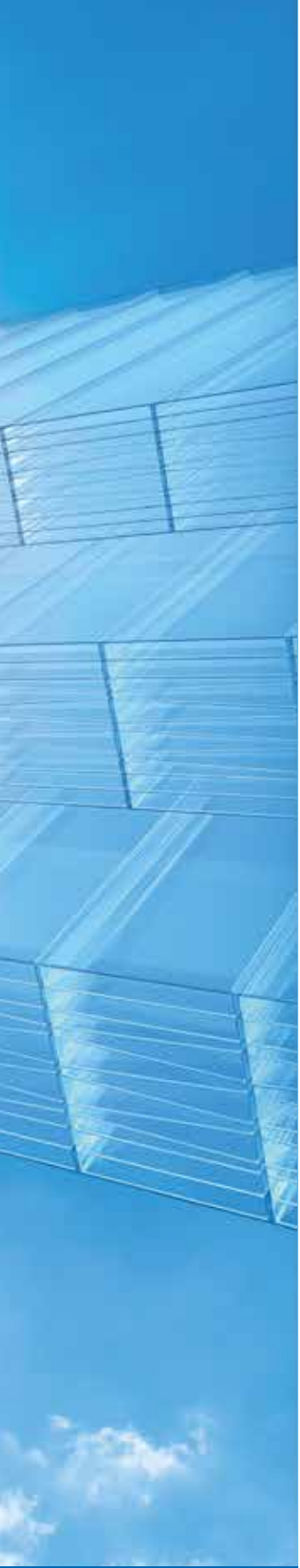
The Exolon® multi UV Hybrid-X product range is available in thicknesses of 25 mm, 32 mm and 40 mm and guarantees energy savings of more than 30% compared to conventional standard sheets. In practice, this means a saving of around 3 litres of heating oil or 2.5 cubic metres of natural gas per square metre per year.

## Optimised daylight for the perfect feel-good atmosphere

Hybrid X multiwall sheets are designed to also optimise light transmission and diffusion. For comparison: Standard X or M structures tend to deflect light when it hits the sheet, reducing light transmission. The unique Hybrid-X geometry minimizes light distortion and ensures good diffusion and pleasant natural light, at all times.

|                           | Light transmission [%] |            |          |
|---------------------------|------------------------|------------|----------|
|                           | clear                  | opal white | IQ-Relax |
| Exolon® multi UV HX/25-32 | 46                     | 38         | 31       |
| Exolon® multi UV HX/32-32 | 45                     | 36         | 29       |
| Exolon® multi UV HX/40-32 | 44                     | 34         | 26       |

Optimised light transmission (%) for Hybrid-X in thicknesses 25 mm, 32 mm and 40 mm.



## Performance

All sheets used in roofing and other applications must comply with the strictest requirements for load resistance. Here, the use of multiwall sheets with improved mechanical properties in terms of load distribution not only offers advantages for safety, but also enables larger spans and a weight reduction of the carrier system. This leads to cost savings in the substructure and, last but not least, to increased daylight comfort – thanks to the expansion of translucent surfaces.

**Hybrid-X** is designed to maximize mechanical properties without adding weight. The unique interior structure has 10-20% stronger interior walls with the same area weight.

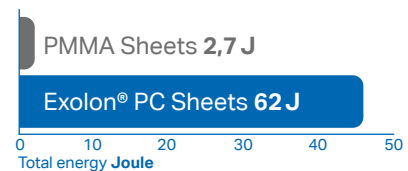
## Safety

All Exolon® multi UV sheets naturally meet the strict quality standards for fire protection in many different countries. In realistic large-scale fire tests, Exolon® multi UV multiwall sheets were classified as flame-retardant building materials (B-s1 d0 in accordance with EN 13501-1).

Polycarbonate sheets are also virtually unbreakable. Impact tests (ASTM D3763) show that polycarbonate sheets are about 25 times more resistant than PMMA and about 100 times more resistant than glass.

**Hybrid-X** sheets are the first choice for safety. They comply with all applicable fire protection standards and are highly resistant.

### Impact resistance\*



\* At 3 mm thickness

## Quality

A co-extruded UV protective layer ensures that Exolon® multi UV multiwall sheets are extremely durable. Delamination of the layer is not possible even after years of weathering or cold bending of the sheet. Exolon® sheet material is extensively tested in both artificial and natural weathering under extreme climatic conditions. Strict quality control of the raw materials used, CE marking according to EN 16153 and our quality management system certified according to DIN ISO 9001 ensure that we can offer you a high-quality product.

**Hybrid-X** sheets come with a 10-year weather and hail resistance warranty as standard; the warranty can be extended on a customer specific basis.







### Manufacturing quality

Exolon Group multiwall sheets combine high mechanical stability with low weight. This makes them easy to handle and install. The material can be cut very well and adapted to different shapes without affecting the structural properties.



**Hybrid-X** is the perfect combination of properties to optimize the performance of a multiwall sheet. The unique geometry gives Hybrid-X sufficient rigidity to prevent bending, e.g. due to snow load. This is an important safety aspect in demanding roofing applications in both private applications as well as in office and industrial buildings. The stable outer surfaces of the Hybrid-X sheets ensure improved resistance – a benefit for all planners, processors and builders.

### Climate-optimised – with the IQ-Relax variant

The opal-white IQ-Relax sheet type has a built-in "intelligent" system that automatically adapts to the climate. On sunny days, the sheets have a drastically heat-reducing effect with high light transmission. Practical tests in unventilated conservatories have shown a remarkable heat reduction of up to 13°C compared to standard sheets. In winter, the sheet adapts to the climatic conditions and the thermal insulation properties come into play. IQ-Relax thus ensures comfortable room temperatures in all weathers at all times.



**Hybrid-X** stands for the Exolon Group's new cutting-edge technology in the field of multiwall sheets. The unique geometry is the result of our intensive research and development: **Hybrid X** combines outstanding thermal insulation with improved light diffusion and strong mechanical properties with optimised weight. With this outstanding performance, **Hybrid X** supplements the Exolon® multi UV multiwall sheets range with another innovative and intelligent solution for sophisticated architecture – and thus "daylight in a new dimension".

- ✓ **Excellent thermal insulation properties**
- ✓ **Maximised load-bearing capacity**
- ✓ **High light transmission/ -diffusion**
- ✓ **CE Certified according to EN 16153**
- ✓ **Fire classification B-s1 d0**

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