



Successful in resisting temperatures of 1000 degrees Celsius for up to two hours, the fire-resistant glass meets current safety regulations | Photo source [Fraunhofer/Banczerowski](#)

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## NON-TOXIC, FIRE-RESISTANT GLASS PROTECTS FROM EXTREME HEAT



### The double-paned windows and doors can withstand up to 1000 degrees Celsius for up to two hours

**Spotted:** Already in production, the new fire-resistant glass not only improves on safety features but reduces the environmental impact of manufacture. Developed by a team from Germany's Fraunhofer Institute for Environmental, Safety, and Energy Technology UMSICHT, the glass uses a hydrogel-based liquid that eliminates traditional toxins. As a proprietary mix, the gel helps to cool the second pane of glass after the first pane breaks and the water in the liquid evaporates, leaving a heat-insulating layer of salt behind.

Successful in resisting temperatures of 1000 degrees Celsius for up to two hours, the fire-resistant glass meets current safety regulations. Produced by the Hörmann KG Glastechnik company and manufacturing facility, new production processes create almost 85 per cent less waste too. Now, each day of production of the new doors and windows creates only 20 kilograms of waste, a significant improvement on the 150 to 160 kilograms produced in the manufacture of previous versions of such glass.

The move from idea to production in the space of four years has contributed to the development team's win in the 2020 Joseph von Fraunhofer Prize for excellence in research.

Given the importance that windows and glass play in the modern construction of homes and offices, developments in sustainability have an appreciable impact on waste and pollution. Springwise has also spotted [gel-filled windows](#) that reduce heat, glare and energy use and windows that change colour to become [solar cells](#) when heated.

Written by: Keely Khoury

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Email: [info@umsicht.fraunhofer.de](mailto:info@umsicht.fraunhofer.de)

Website: [umsicht.fraunhofer.de/en.html](https://umsicht.fraunhofer.de/en.html)

## **Takeaway:**

As materials and processes develop to withstand more and more vigorous environments, using them to build natural disaster-resistant structures could help communities already fighting for survival due to climate change. From floating homes to offices on stilts, designers and architects are seeking creative solutions to life-changing environmental transformations. Forecasting these transformations is difficult, so one way to help future-proof structures is to ensure carbon-neutral construction and materials and biodegradability wherever possible.