Uncoated timber burns and cracks when exposed to fire while coated timber has a layer of char that is activated by fire, and protects the timber underneath, preventing the wood underneath from burning | Photo source NTU Singapore

AN INVISIBLE FILM MAKES WOOD FIRE-PROOF

PROPERTY & CONSTRUCTION

The coating turns timber into a fire resistant building material

Spotted: As the world economy teeters on the edge of recession, many people are looking for ways to save money on their construction projects. One material that is gaining popularity as a building material is timber. Wood is less expensive than concrete and steel, has a lower carbon footprint, and can be used to construct buildings quickly. However, wood is a highly flammable material, and in the wake of climate change making wildfires more common, there is increased demand for fire-resistant building materials.

One solution has been proposed by a group of scientists at Nanyang Technological University, Singapore (NTU Singapore). The invention, led by Associate Professor Aravind Dasari, is an invisible fire-resistant coating for wood. The coating is a mere 0.075 millimetres thick and unlike other products on the market, it is completely transparent and doesn't obscure the wood.

When heated by a hot flame, the coating expands to more than 30 times its original thickness. During this process, the coating becomes a char. When tested at a third-party accreditation laboratory, the char prevented the fire from combusting the wood underneath and achieved the highest class protection possible. They also found that the coating didn't produce a lot of smoke and was able to prevent the flames from spreading.

The team is now working on commercialising the technology, which has potential applications in the construction and furniture industries. So far, the coating has received 250,000 Singaporean dollars (around €180,000) in funding through the NTUitive Gap Fund.

In the context of extreme weather conditions and increasing wildfires, Springwise has spotted a number of innovations looking at making buildings more resilient. These include a weather-proof home concept design in Australia and a cross-laminated timber that remains stable during earthquakes.

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Takeaway:

Timber buildings are seeing a resurgence in popularity. In the UK, for example, a study from MTW Research has found that timber frame housebuilding is expected to see a £70 million (around €82 million) increase in 2022. Timber offers a number of sustainability benefits such as carbon storage and reduced waste. However, climate change is leading to an increased risk of fire in many regions around the world. Innovations such as the NTU team's coating will therefore be crucial if timber building is to become more popular.