

When visitors step inside CSK Architects' cork and timber pavilions at the RHS Chelsea Flower Show next month, the first thing they might notice is a sweet, smoky aroma exuding from the walls. And the chatter from surrounding show goers will be softened to a low hum.

These shelters will be part of the multisensory National Autistic Society Garden, a collaboration with landscape designer Sophie Parmenter. They will be made with blocks of expanded cork from the Portuguese company Corticeira Amorim.

For CSK Architects, the pavilions are a chance to show off the perks of a material — and one that is increasingly popular with designers. "There's something cocooning and protective about cork, and it's very tactile," says co-director Dido Milne, who collaborated

Cork is a wonder material. Even if it gets deformed, it can reshape itself. But it does have limitations'

with Matthew Barnett Howland and Oliver Wilton on Cork House, the 2019 Manser Medal-winning home in Eton, Berkshire.

Ground cork will also be used for mulch in the garden. "We want people to think about where our building blocks come from and where they go at the end of their life," says Milne.

The material derives from the cork oak tree (*Quercus Suber*), indigenous to the Mediterranean Basin. The oaks are stripped of their bark every nine years in a process a bit like shearing a sheep, causing minimal disruption.

Today you are most likely to encounter cork when opening a wine bottle, but it lined stone towers in Sardinia during the Nuragic civilisation (c1700-600BC) and was adopted by Modernist architects including Le Corbusier, Marcel Breuer and Frank Lloyd Wright. In the following decades, however, it was little seen except as flooring, acoustic wall-coverings and insulation.

But cork has been making a resurgence as architects push towards renewable materials. The Portugal Pavilion for Expo 2000 in Hanover, by architects Álvaro Siza and Eduardo Souto de Moura, was the first building to use



A corking construction

Architecture | The renewable material has been embraced as cladding and insulation in homes, writes *Malaika Byng*

expanded corkboard — made by compressing and cooking cork to release suberin, a natural binder — on the exterior of a building.

Cork has gone on to make a comeback in private homes. Spanish architecture co-operative Gurea recently clad a prefab dwelling in Navajeda, Cantabria, in two layers of expanded cork for thermal and acoustic insulation. The Italian practice LCA Architetti has wrapped a home in Porto Ceresio in cork with a subtle geometric pattern.

In the UK, Delse Architects has used cork cladding to create "a quiet, calm and mindful space" when extending a

family home in Camberwell, south London. "We first saw cork used for a temporary outdoor play installation for children," says co-founder Alex Raher, noting its softness and ability to minimise bumps and bruises. "We were immediately excited by it, both aesthetically and materially."

In June, Corticeira Amorim will make the case for cork with City Cortex, its research programme and exhibition in Lisbon. There, Swiss-born designer Yves Béhar is taking cues from a 16th-century fortified defence to create an agglomerated cork gateway, while New York's Leong Leong is building a soft

urban playground in the Belém area from expanded cork. In Trafaria, Gabriel Calatrava has designed a community structure with an undulating agglomerated cork composite roof and Corkeon flooring (typically used for playgrounds), which will sweep up to become sculptural furniture.

"Cork is one of those wonder materials," Calatrava says. "Even if it gets deformed, it can reshape itself... but it does have limitations. It doesn't have structural rigidity, so its elasticity will start working against you at some point."

Cork's pitfalls are part of the reason it is largely reserved for cladding and insulation, though CSK Architects put its structural capacity to the test with the single-storey Cork House. Its pyramid-like volumes were built with stacked blocks, without any mortars or steel frames — "plant-based Lego," as they describe it.

(Clockwise from main) A rendering of CSK Architects' Chelsea Garden Show project made with blocks of expanded cork; the award-winning Cork House, in Eton, Berkshire, by CSK Architects; home wrapped in cork by LCA Architetti in Porto Ceresio, Italy



"It was mostly driven by a disgust for everything that we build with today: the layers of concrete blocks, cement-based mortars, gypsum plaster and membranes that make up a typical home," says CSK Architects co-director Barnett Howland. "We thought to ourselves, could we go further than just using cork for insulation and use it for the entire wall?"

It turns out they could. But Barnett Howland is also clear about its shortcomings. "Cork does 'creep' when compressed under load," he says, and though the house has aged well over the past five years, he points out that "it's not the most robust material — a cat has had a good go in one or two places."

Cork House was "like a concept car — it wasn't really destined for reality on a broad scale, it was more about what spins off from it," he says, recalling the flood of inquiries it prompted from more than 200 architects and builders. "A timber-framed structure with cork infill would be a more viable approach for multistorey buildings."

Indeed, ideas for Cork House II are now percolating. "Each time we work with cork we try to develop the system slightly differently," he adds. "At Chelsea we're using cork blocks that haven't had their rugged suberin surface trimmed off, meaning less waste and more character."

But will cork become widely used? "It is certainly one of the most sustainable solutions," says chair and chief executive of Corticeira Amorim, António Rios de Amorim. "But it can't be the only one. Our goal is to simply get it on the agenda of key architects, designers and engineers."

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