

Shou-Sugi-Ban

Ancient method of charring wood has vast appeal for clients seeking an authentic and versatile surface

Tom Kilian



Shou-Sugi-Ban. Various profiles.



Edge combustion.

The appeal of charred wood is being rediscovered around the world. It's a technique that creates harmony between construction and destruction. The surface has an extremely unique look that interests designers and architects, and rewards clients with an environment like no other.

History

The Japanese technique of Shou-Sugi-Ban is best translated as burnt “Sugi,” or Japanese cedar. The origin of charring Sugi (*Cryptomeria japonica*) is unknown, however, it has been practiced by residential craftsmen since the 1700s. Shou-Sugi-Ban became a lost technique when modern materials gave rise to more western designs and the wood supply in Japan began to diminish.

As the name indicates, Japanese cedar is indigenous to Japan, and craftsmen and artisans producing Shou-Sugi-Ban today have struggled to find an equivalent species that would help them achieve their target result. Many craftsmen have used both open and closed cell woods in a trial and error approach that has yielded varied results. While some manufacturers settle for braising to create

a stain-like effect, other producers adhere more closely to the traditional techniques, mindful of the depth of combustion and the cellular structure of the wood. Most contemporary craftsmen have their own signature process that they guard closely.

Shou-Sugi-Ban can be created by vertically stacking lumber, securing it with bail wire and igniting the bottom of the boards. This results in uneven charring on one side of the board. Boards can also be dry stacked with newspaper sandwiched between the layers of wood. Some craftsmen use propane torches and electric elements to produce the charred effect.

A craftsman's technical approach to production and fabrication will affect product longevity and authenticity.



Nenshou – Combustion stage.



Wani Kawa – Alligator skin stage.

Properties

Authentic Shou-Sugi-Ban is best achieved on open cell species that have a moisture content of 12 to 17 per cent. Simply burning a piece of wood will not result in a suitable surface. Both fire resistance and even appearance can be achieved when cell structure, moisture content and environmental humidity are considered in the process. To achieve fire resistance, only the outermost cellulose must be burned off, leaving the blackened lignin of the wood behind. This is the same reason charred firewood is difficult to reignite once it has been exposed to a flame. Close celled wood has little cellulose and does not result in a suitable patina.

The wood must have a good balance of moisture before the burn to ensure the "Alligator Skin" or Wani Kawa effect. This is because there are 4,000 times more oxygen molecules in a cubic meter of wood moisture compared to a cubic meter of air. The extremely concentrated oxygen in wood had been observed as early as 1896 when *Nature*, a weekly illustrated science journal published a study on wood combustion. The study stated, "When properly heated to redness, liquid oxygen that is absorbed in wood can yield combustion with explosive violence." In other words, the oxygen con-

tained in the water reduces the combustion level and raises the flash point. This combustion rapidly consumes the cellulose of the wood while dispersing heat to prevent heat transfer to the rest of the board. This prevents the warping, buckling and blistering that can occur when wood has less moisture content. For this reason, Carolina Cypress is a preferred substitute, as is the moist environment of the Carolinas. Cypress also contains essential oils that create the iridescent patina found in authentic Shou-Sugi-Ban.

Carolina Cypress has longitudinal growth rings that produce a 90-degree cellulose break that is indicative of the Alligator Skin of authentic Shou-Sugi-Ban even though most of this feature is often wire brushed off to reduce wear and tear (as the char will otherwise rub off).

Most manufacturers wire brush the surface prior to shipping and a few will seal the surface with natural oils that will enhance the longevity of the product and reduce scuffing and abrasion during installation.


Application, Installation and Fabrication

Shou-Sugi-Ban is suitable for interior and exterior surface applications and can be applied using traditional siding methods and fasteners. While some manufacturers offer Shou-Sugi-Ban flooring, durability is a concern on surfaces subject to heavy wear and use in this application is generally not recommended. Working with the supplier to receive the product already cut to size will greatly reduce site work since cutting on site will produce open edges that will require application of a natural sealant mixed with pigment. Stainless No. 7 trim head (black tipped) screws placed every two feet and no less than 7/8" from edge is preferred. Since pre-drilling is not required with self piloting screws, hardware selection can reduce installation time. Stainless steel trim nails can be used in applications that don't require hidden fasteners. Both board and batten, and solid ply substrates are used. Ship lap is preferred as tongue and groove profiles are consumed during the burning process.

Maintenance


Natural oil should be applied every five to seven years and can be put on with a brush or agricultural sprayer. Linseed Oil or Australian Timber Oil works best. For cut edges and touch-ups, a mixture of 12 ounces of black, oil-based pigment per gallon of Australian Timber Oil can be made and applied to match the rest of the patina. 📌

Tom Kilian is the woodwright and product designer for www.TravisCreekwoodproducts.com, a supplier of Carolina Shou-Sugi-Ban. He can be reached at tom@tomkilian.com.




SFS intec


New Data Sheets
Now available



WT System


The WT System is the ideal solution for timber/timber joints in numerous applications in the field of structural timberwork. It is especially suitable for economical and durable joints, such as main and secondary purlin connections, lateral tensile and compression reinforcements.






WS System


The WS System is used for multiple-shear steel/timber joints. Working time is saved with the self-drilling dowels, and fitting accuracy is unmatched. Low tool costs also make this system interesting for small and medium-sized businesses.






WB System


The WB System is used for lateral tensile reinforcements in engineering timberwork. It is especially suitable for inclined and curved laminated timber purlins. Timber/timber joints are also possible. The system includes a drilling system and insertion sleeves for countersinking in timber.





VB System

The VB System offers major advantages in producing timber/concrete composite ceilings. The fasteners are self-drilling. The aesthetic aspects of a timber ceiling are complemented by concrete's structural engineering and sound insulation advantages for an efficient ceiling bearing structure.



SFS intec

www.sfsintec.ca

40 Innovation Dr, Dundas, ON, L9H 7P3

Toll Free: 1 866 847 5400