## For Internal Use only by Kebony Employees and Sales Representatives

| Kebony | Accoya | Thermal Mod. | Comments |
|---|---|---|---|
| **Furfurylated wood** uses the grafting method of wood modification. It is produced by treating wood with furfuryl alcohol (FA), a bio-waste derived from the by-products of crops like sugar and corn. The parent wood is impregnated with FA under moderate pressure, and a catalyzation process with heat causes the absorbed FA to form an inert solid inside the wood. The process is irreversible and leaves the wood in a permanently swollen state. Water absorption capacity is reduced, and "bulking" of the wood tissue improves the wood's durability.<br><br>Technology video: https://us.kebony.com/modified-wood-technology/the-process/ | **Acetylated wood** uses the substitution method of wood modification and is produced by treating wood with the organic liquid acetic anhydride. The impregnation causes a chemical reaction that changes free hydroxyls within the wood into acetyl groups. The acetyl groups do not attract water and hinder water absorption in the wood's cells.<br><br>Technology video: https://youtu.be/Efhlko4qWvM | **Thermally Modified wood** technology enhances wood's properties by using heat and steam in a controlled process. The process involves heating the wood to high temperatures, altering its cellular structure and making it less susceptible to moisture-related issues like warping and swelling. This process is reversible and can result in deterioration of performance over time. | Kebony and Accoya both maintain an ICC ESR listing for their decking products with span and load ratings, validating the safety of their use. To our knowledge, Accoya continues not to follow the labeling criteria required to maintain code compliance.<br><br>There is currently no Thermally Modified wood on the US market that has obtained an ICC ESR, which is required to assure building code compliance.<br><br>Furthermore, there is published academic evidence that Thermally Modified wood should not be used for structural applications such as decking. |
| Technology: Furfurylation (Furan polymer grafting) | Technology: Acetylation | Technology: Advanced dry kiln process | TM wood is NOT standard kiln-dried wood. People often have this misconception. |
| Dimensional Stability: ** | Dimensional Stability: *** | Dimensional Stability: ** | All three technologies are much more stable than virtually all natural woods, save for a few. |
| Appearance: Brown, graying on weathering unless a color maintenance program is implemented. | Appearance: Pale, good color stability upon weathering, but vulnerable to staining fungi. Color Grey: Homogeneous gray throughout the board. Can go through a green-tinted phase | Appearance: Brown, graying on weathering unless a color maintenance program is implemented. | |
| Hardness: *** Janka: 1618 lb | Hardness: Unknown for surface. Only end and side data published. | Hardness: * | |
| Fastener holding strength: *** | Fastener holding strength: ** | Fastener holding strength: * | |
| Durability/ decay resistance: *** | Durability/ decay resistance: *** | Durability/ decay resistance: ** | |
| Strength Parameters: Improved hardness and stiffness | Strength Parameters: Improved strength, same bending strength | Strength Parameters: Reduced bending strength | |
| ASTM E84 Fire Rating: Class B<br>Smoke Developed: 250 Flame Spread: 45 | ASTM E84 Fire Rating: Class C<br>Smoke Developed: 155 Flame Spread: 95 | ASTM E84 Fire Rating: Class B<br>Smoke Developed: 125 Flame Spread: 65 | Thermally Modified E84 data for Ash from Arbor Wood. Kebony is closest to a Class A (see below) |

**Surface Burning Characteristics - ASTM E84**

| Class | Flame Spread Index (FSI) | Smoke Developed Index (SDI) |
|---|---|---|
| Class A | 0-25 | 450 max. |
| Class B | 26-75 | 450 max. |
| Class C | 76-200 | 450 max. |

What is modified wood? Modified wood is wood that has been treated with chemical, physical, or biological methods to enhance its properties, such as dimensional stability, durability, and resistance to decay and insects. This treatment alters the wood's structure and composition, making it more suitable for various applications, particularly in exterior or demanding environments. The physical and mechanical properties are altered.