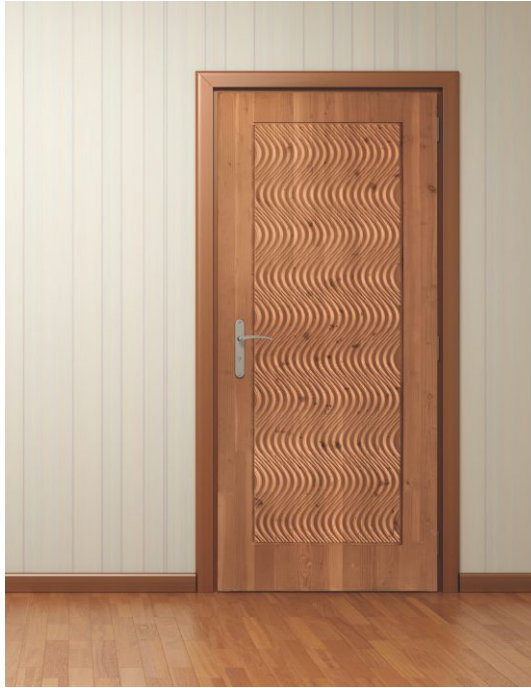


# BRITISH COLUMBIA WOOD SPECIES SUITABILITY FOR INDIAN DOOR AND WINDOW MANUFACTURING



Manufacturers of doors and windows require products that perform in terms of both high quality appearance and stable long term performance. High quality wood products like those sourced from British Columbia (B.C.), are ideal for use in flush doors, and solid wood doors.

Wood species used for window and exterior door applications need to meet very demanding conditions as opposed to woods that are used in interior applications. Woods used for exterior products have to be moderately to very durable and must provide excellent dimensional stability as expressed by having a low tangential to radial shrinkage (T/R) ratio. A low T/R value makes these wood species less prone to shrinking and swelling when in service.

**Western red cedar, Yellow cedar, Douglas fir and Western hemlock** from B.C. Canada, are all able to meet the demands of discerning customers in India and are suited to a variety of interior and exterior door and window applications. These wood species produce stable lumber with consistent straight grain with a high occurrence of vertical or edge grain present on the wide face of the lumber.

Western hemlock is noted for its tight grain and as a result it is an especially stable species. This attribute reduces the chance of warp developing and allows for superior coating adherence and ultimately better performance over the longer term.

As all four species have low to moderate density values they are easy to face laminate, edge glue and/or finger-joint thereby permitting the manufacturing of warp free engineered, large or small cross-sectional window and door elements. Finally, these species are capable of being painted and coated with clear finishes that will adhere well to the wood surface.

Western red cedar, Yellow cedar are especially durable species and are well suited for external applications. Western Hemlock is very well suited for interior doors, though for exterior doors, this species would have to be treated with a preservative treatment such as borate. As with all wood species, the application of an appropriate coating will increase the lifespan of the wood product and enhance its natural beauty.

# COMPARATIVE PHYSICAL, WORKING AND OTHER PROPERTIES OF WOOD SPECIES FOR USE IN DOOR AND WINDOW MANUFACTURING

|                | BRITISH COLUMBIA WOOD SPECIES |                   |                            |                    | TROPICAL WOOD SPECIES |
|----------------|-------------------------------|-------------------|----------------------------|--------------------|-----------------------|
| TRADE NAME     | Douglas fir                   | Western red cedar | Yellow cedar               | Western hemlock    | Teak                  |
| BOTANICAL NAME | Pseudotsuga menziesii         | Thuja plicata     | Chamaecyparis nootkatensis | Tsuga heterophylla | Tectona grandis       |

## PHYSICAL PROPERTIES

|  |                   |       |      |       |       |       |
|--|-------------------|-------|------|-------|-------|-------|
| STIFFNESS / MOE <sup>1</sup> (AIR DRY) | Mpa               | 13600 | 8200 | 10200 | 12300 | 10700 |
| STRENGTH / MOR <sup>2</sup> (AIR DRY)  | Mpa               | 88    | 54   | 80    | 81    | 100.7 |
| DENSITY (AIR DRY)                      | kg/m <sup>3</sup> | 487   | 339  | 431   | 429   | 650   |
| HARDNESS (SIDE GRAIN)                  | N                 | 2990  | 1470 | 2510  | 2740  | 4600  |
| STABILITY (SHRINKAGE-OVEN DRY)         | Tang. % (T)       | 7.4   | 4.5  | 6.0   | 8.5   | 5.8   |
|  | Radial % (R)      | 4.8   | 2.1  | 3.7   | 5.4   | 2.5   |
|  | T/R ratio         | 1.5   | 2.1  | 1.6   | 1.6   | 2.3   |

## WORKING PROPERTIES Ratings are based on a scale from 10 (excellent) to 1 (poor)

|               |    |   |    |   |   |
|---------------|----|---|----|---|---|
| PLANING       | 8  | 7 | 10 | 7 | 8 |
| SCREW HOLDING | 9  | 5 | 7  | 7 | 8 |
| STAINING      | 10 | 9 | 7  | 8 | 9 |

## OTHER PROPERTIES

|              |      |           |           |      |           |
|--------------|------|-----------|-----------|------|-----------|
| DURABILITY   | Fair | Good      | Good      | Poor | Good      |
| TREATABILITY | Fair | Difficult | Difficult | Good | Difficult |

<sup>1</sup> MOE refers to the Modulus of Elasticity which is commonly used to measure the relative stiffness and degree of deflection of the material when force is applied and then released.

<sup>2</sup> MOR refers to the Modulus of Rupture which is commonly used to measure the relative strength of the material under pressure. This is often referred to as bending strength, as it measures how much the material will bend before it breaks from the force applied.

For more information please contact: [info@canadianwood.in](mailto:info@canadianwood.in)

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