EXOTIC HARDWOODS + VENEERS
ARCHITECTURAL WOOD PANELS

"FUMED VENEER" DATA SHEET

General:
The fuming of tannin-rich lumber, such as oak, with ammonia (NH_3) results in coloring the surface after a short time and coloring through the entire piece after a longer time. The unprotected lumber lightens a bit at first, but darkens afterwards. This effect becomes almost unnoticeable if the lumber is fumed to the heart over a period of 4 to 5 weeks. Then the color is, in contrast to Wenge and to many other woods, absolutely light-fast. In addition, the wood becomes more elastic as well as more friable and is easier to work on and process.

The fuming of oak furniture has been used for years to lessen color differences and to get a surface with a hazelnut to deep chocolate brown color with an elegant natural polish. Due to the slight variations in color, caused by differing tannin content in the wood, charming, beautiful light-and-shadow effects are formed, such as are normally only seen on antique oak furniture. The technique fell into disuse in recent years, first because of the decline in popularity of dark woods, secondly because chemical stains or plastic laminates have been widely used.

The fumed lumber does not contain health-endangering substances. The freshly fumed lumber merely needs enough time for any unreacted ammonia to evaporate (Heat accelerates this process, so the fumed lumber is run through a second kiln-drying schedule). The freshly fumed wood produces the characteristic aroma of ammonia, which can be detected even in very low concentrations (>5 ppm = 3.5 mg/m^3). This aroma quickly dissipates. Ammonia occurs commonly in nature (for example in urine). In the past furniture was placed in horse stables for fuming, as horse urine contains rather high concentrations of ammonia.

Fuming forms a new substance (a salt) in the wood that causes a very small (about 1%) increase in volume. Due to the presence of this salt, conventional moisture meters will not accurately read the moisture content of the wood accurately. The "oven drying method" is recommended as a substitute.

Care should be used in storing freshly fumed lumber as residual unreacted ammonia can cause discoloration of other lumber stored nearby. Commonly available glues and finishes may be used with fumed lumber but, as always, these materials should be tested with the wood before production.

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"Fumed Veneer" Characteristics

Unfortunately, since 1921 there have been no detailed academic studies of fuming lumber. This is largely due to the fact that until recently no procedure was known for fuming lumber to the core. Surface-fuming appears to change the characteristics of the wood only slightly. Lumber fumed through has, compared to natural wood, the following qualities. These are the result of the formation of light-fast complex organic salts formed from the reaction of ammonia with acids and resins in the wood during the fuming process.

Color:	In general darker, from honey-brown to deep black.
Texture:	As a result of the residual salts, greater flexibility and less brittleness. The lumber is smoother and more resilient. This is particularly noticeable with veneer.
Durability:	More resistant to fungal and insect infestation.
Processing:	Saws, planes and drills easily; holds screws and nails well; glues well, and takes finishes easily. NOTE: The unfinished lumber absorbs moisture more readily than untreated lumber due to the residual salts.
Use:	Veneers, flooring, turning, stairs, windows, doors, indoor and outdoor furniture, etc.

Environmental:
The ammonia treatment takes place in a closed system, based on a modified dry-kiln. After the treatment is completed the residual ammonia is pumped out into a scrubber, where it is neutralized. The resultant organic ammonium compounds can be recycled or used as fertilizer. The entire process meets or exceeds stringent EU environmental regulations.