FIRE HAZARD REQUIREMENTS FOR VENEERS

The Building Code of Australia (BCA) volume 1 specifies fire hazard requirements for wall and ceiling linings in Class 2 to 9 buildings: refer Specification C1.10 *Fire Hazard Properties,* clauses 4 to 7*.*

This data sheet attempts to 'demystify' some of the terms used as well as provide a summary of current data. It is important to note that tests are ongoing and regular checking for the latest results is recommended.

The BCA is clear on what it requires: it calls for wall and ceiling linings in Class 2 to 9 buildings (ie. all buildings except the family home, and auxiliary structures such as sheds and carports) to comply with Specification C1.10.

In BCA terms, "Clauses" state which Specification to refer to, and the "Specifications" set out the required performance levels.

The BCA exempts certain items such as timber-framed windows, timber handrails, skirtings, door skins, cupboards, shelving or similar. The BCA also exempts paint, varnish, lacquer (other than nitro-cellulose lacquer) and adhesives.

Wall and Ceiling Linings (including Timber Veneers)

Specification C1.10 divides materials into four Material Groups according to their *fire hazard properties*, with Material Group 1 being the most 'fire resistant' and Material Group 4 the least 'fire resistant' when tested in accordance with AS ISO 9705 "Fire tests – Full-scale room test for surface products" or by prediction after testing in accordance with AS/NZS 3838 "Method of test for heat and smoke release rates for materials and products using an oxygen consumption calorimeter."

Untreated timber and timber veneered board products generally fall into Material Group 3. Fire retardant treatment of the substrate is required for timber veneered products to achieve Material Group 1 or 2.

Wall and ceiling linings must meet different requirements according to the building type, location within the building, and according to whether the building is sprinklered or not. Wall or ceiling linings in buildings not fitted with a sprinkler system must be of Material Group 1, 2 or 3, depending on the Class of building and the location within the building. Linings must have a Smoke Growth Rate (SMOGRA) not more than 100, or an average specific extinction area less than 250 m^2/kg.

Exova Warringtonfire has issued the following opinion (Report RIR 45982.9): "Timber veneers 0.5mm to 0.85mm thickness, and density greater than 500 kg/m^3, may be applied to each side of particleboard substrates having a dry density of nominally 700 kg/m^3, and MDF having a dry density of 560 kg/m^3 to 740 kg/m^3, without detrimentally affecting the Material Group Number or Average Specific Extinction Area". Minimum thickness of the particleboard or MDF substrate must be 6mm.

The table below is a guide to veneer species that comply with the density requirement of 500 kg/m^3. However, in light of the above opinion, any veneer species with a density of 500 kg/m^3 or more, as determined from an authoritative reference, can be deemed to have a Material Group Number of 3 and an Average Specific Extinction Area less than 250 m^2/kg.

Veneer species with a density less than 500 kg/m^3, but included in the table below, have been individually tested to ensure their compliance. Authoritative references for determining species densities include *Wood in Australia* by K.R. Bootle and Australian Standard 1720.2 *Timber Properties*.

Group 1 or 2 Materials

Generally, materials in Group 1 or 2 are required in areas such as public corridors and lifts; while only Group 1 materials are permitted in more critical areas such as fire-isolated exits.

All the veneer species listed in the table below meet the BCA's Group 2 requirements when applied to a fire retardant treated MDF substrate. Tests have been carried out to Australian Standard requirements on behalf of the TVAA, and also by individual TVAA members.

Some veneer species have been tested to Group 1 level, and more species are expected to be included in this group as further tests are conducted. Check availability with your TVAA member before specifying.

List of species which qualify for Material Group 3

Alder, Euro	530 kg/m³	Maple, Qld	580 kg/m³
Anegre	510/570 kg/m³	Maple, Rock	730 kg/m³
Ash, Euro/White	700 kg/m³	Meranti, Red	550/640 kg/m³
Ash, Silver	620 kg/m³	Myrtle, Southern	560 kg/m³
Ash, Vic	680 kg/m³	Myrtle, Tas	580 kg/m³
Beech, Euro	700 kg/m³	Nyatoh	600/700 kg/m³
Birch, American	670 kg/m³	Oak, Silky	550 kg/m³
Birch, European	670 kg/m³	Oak, White	700/750 kg/m³
Blackbean	770 kg/m³	Oregon (D.Fir)	530 kg/m³
Blackbutt	900 kg/m³	Padauk	650/800 kg/m³
Blackbutt, WA	850 kg/m³	Palisander, Santos	860 kg/m³
Blackwood, Tasmanian	640 kg/m³	Pearwood	700 kg/m³
Brushbox	900 kg/m³	Pine, Baltic	510 kg/m³
Bubinga	800/960 kg/m³	Pine, Celery Top	650 kg/m³
Cedar, western red	350 kg/m^3	Pine, Hoop	530 kg/m³
Cherry, American	580 kg/m³	Pine, Radiata	500 kg/m³
Cherry, Queensland	600 kg/m³	Pine. Kauri	550 kg/m³
Ebony	900/1100 kg/m³	Poplar	450 kg/m³
Elm	560 kg/m³	Rimu	600 kg/m³
Gum, Forest Red	1050 kg/m³	Rosewood, Indian	850 kg/m³
Gum, Rose	620 kg/m³	Rosewood, New Guinea	650 kg/m³
Gum, Southern Blue	900 kg/m³	Sapele	650 kg/m³
Gum, Spotted	950 kg/m³	Sassafras,Golden	630 kg/m³
Gum, Sydney Blue	850 kg/m³	Sen	560 kg/m³
Hickory	800 kg/m³	Stringybark	900 kg/m³
Ironbark, Grey	1120 kg/m³	Sycamore	600 kg/m³
Jarrah	820 kg/m³	Tawa	720 kg/m³
Kalantas (red cedar)	480 kg/m³	Teak	550/670 kg/m³
Karri	900 kg/m³	Turpentine	930 kg/m³

Khaya	570 kg/m³	Walnut, American	600 kg/m³
Koto	600 kg/m³	Walnut, N.G.	540 kg/m³
Kwila	850 kg/m³	Walnut, Queensland	690 kg/m³
Larch	590 kg/m³	Wattle, Silver	680 kg/m³
Mahogany, Brazil	550 kg/m³	Wenge	880 kg/m³
Makore	650 kg/m³	Zebrano	650/800 kg/m³