

## 16.6 Plywood Performance

Table 16.2 provides the most recent available data on **early fire hazard** test data for both **untreated and fire retardant treated plywood**. To obtain **current information** on this topic the designer is referred to companies involved in **fire retardant treatment** or contact **EWPA**.

**(A) PLYWOOD (UNTREATED)**

Common Name	Botanical Name	Ignitability Index (0-20)	Spread of Flame Index (0-10)	Heat Evolved Index (0-10)	Some Developed Index (0-10)	Report Reference
Face veneer of:						
Australian Red Cedar	Toona australis	13	9	9	9	E.B.S. 5/10/76 E.4248
Australian Red Cedar (grooved)	Toona australis	13	8	7	2	E.B.S. 5/10/78 E.4250
Blackbean	Castanospermum australe	13	9	10	3	E.B.S. 5/10/78 E.4238
Coachwood	Ceratopetalum apetalum	15	8	8	2	E.B.S. 5/10/78 E.4235
Hickory Ash (grooved)	Flindersia ifflaiana	13	8	9	3	E.B.S. 5/10/78 E.4249
Klinkii pine	Aurancaria hunsteinii	15	8	10	4	E.B.S. 5/10/78 E.4245
Lauan	Parashorea Spp. Shorea Spp.	14	8	10	3	E.B.S. 5/10/78 E.4244
Meranti	Shorea Spp.	14	8	10	2	E.B.S. 5/10/78 E.4240
Pacific Maple	Shorea Spp.	14	8	10	2	E.B.S. 5/10/78 E.4240
Queensland Maple	Flindersia brayleyana	13	8	8	2	E.B.S. 5/10/78 E.4239
Queensland Walnut	Endiandra palmerstoni	14	8	10	3	E.B.S. 5/10/78 E.4241
Radiata Pine	Pinus radiata	14	8	9	2	E.B.S. 5/10/78 E.4237
Radiata Pine (scorched and brushed surface)	Pinus radiata	14	7	7	2	E.B.S. 5/10/78 E.4246
Sapele	Entandrophragma cylindricum	13	8	8	2	E.B.S. 5/10/78 E.4243
Silver Ash	Flindersia bourjotiana	13	8	9	3	E.B.S. 5/10/78 E.4242
Tasmanian Oak	Mixture of: Euc. obliqua Euc. delegatensis Euc. regnans	14	8	8	2	E.B.S. 5/10/78 E.4236
Teak	Tectona grandis	14	8	10	3	E.B.S. 5/10/78 E.4247
Victorian Ash	Mixture of: Euc. regnans Euc. delegatensis	14	8	8	2	E.B.S. 5/10/78

**(B) TIMBERS AND PLYWOODS TREATED WITH FIRE RETARDANTS:**

Timber Species	Treatment	Ignitability Index (0-20)	Spread of Flame Index (0-10)	Heat Evolved Index (0-10)	Some Developed Index (0-10)	Report Reference
Hoop Pine	Retardant Impregnated	0	0	0	2	(a) E.B.S.
Redwood	1 coat of fire Retardant	14	0	4	5	23/2/79 E.4362
		14	8	6	4	E.B.S. 23/2/79 E.4361
Western Red Cedar	Surface Coated with: 3 coats of fire retardant	14	0	5	4	E.B.S. 23/2/79 E.4360
		15	8	86	4	E.B.S. 23/2/79
Yellow Walnut	1 coat of fire retardant Retardant impregnated	0	0	0	1	(a)

REFERENCES: (a) \*Early Burning Properties of Australian Building Timber\*, J. Beesley, J.J. Keogh, A.W. Moulen, Division of Building Research Technical Paper No. 6 24 pages published by C.S.I.R.O. 1974

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TABLE 16.2 : Gives Early Fire Hazard data for untreated and fire retardant treated plywood

Table 16.3 provides comparative data for fire resistance levels for **structural stability** between **Douglas fir plywood** as published in the Fire Protection Handbook published by the National Fire Protection Association, USA and **radiata pine plywood** as published by Carter Holt Harvey in their Technical Note 95/3/14, March, 1995.

Rating (Minutes)	Plywood thickness for:		
	Douglas fir (USA) (mm)	Comparable CHH Radiata Pine (mm)	Recommended CHH Radiata Pine (mm)
10	6.4	7	12
15	9.5	12	12
20	12.7	15	17
25	15.9	17	21
30	19	19	25

**TABLE 16.3 : Fire resistance level for structural stability for non-load bearing plywood**

The **thicker radiata pine panels** are based on a char rate of 0.8mm per minute as opposed to the comparable thicknesses to the Douglas fir plywood having a char rate of 0.65mm per minute.

Table 16.4 gives **early fire hazard properties** for 12mm thick Carter Holt Harvey radiata pine plywood in various conditions.

The early fire hazard properties of the untreated, uncoated plywood align closely with those obtained in **Australian Laboratories** for untreated radiata pine plywood.

The **variable values** given for the plywood coated with an intumescent coating results from performance depending on spread rates. These coatings are **water sensitive** and cannot be used for exterior use and must be applied in accordance with their manufacturer's instructions.

Plywood Condition	Ignitability Index I <sub>g</sub>	Spread of Flame Index SFI	Heat Evolved Index HEI	Smoke Developed Index SDI
Untreated Uncoated Ecoply Clearline	14	7	7	3
H3 CCA treated, Ecoply Structural Plywood	14	6	4	3
Fire retardant treated plywood	Paint or fire retardant coating cannot be used to make a surface comply with the requirements			
Plywood coated with intumescent coating				

**TABLE 16.4 : Early fire hazard properties of 12mm thick Ecoply plywood**