

WEATHERTEX[®] AND FIRE STATEMENT

Weathertex is made from hardwood timbers and has similar fire resistance properties to most common timbers used in the building industry.

The measurement of the fire performance of building materials is covered in Australian Standard AS1530, Parts 3 and 4. This standard is referenced in the Building Code of Australia (BCA).

EARLY FIRE HAZARD (EFH)

AS1530, Part 3 describes the measurement of Early Fire Hazard of Properties of building materials. These are reported as 4 numbers. Explanation of these numbers is given in Appendix 1 below. The properties of Weathertex have been measured as:

Ignitability Index	14
Spread of Flame Index	7
Heat Evolved Index	6
Smoke Developed Index	4

This is similar to most common timbers. Incombustible materials e.g. a metal or cement rendered surface will have indices of 0,0,0,0.

Case studies have shown that most house fires start and are spread within the house contents i.e. curtains, soft furnishings etc. The cladding has little effect and a brick veneer or fibre cement clad house can be destroyed by fire just as easily as a Weathertex clad one.

FIRE RESISTANCE LEVEL (FRL)

AS1530, Part 4 describes the measurement of the FRL of elements of construction e.g. a wall, floor, door assembly etc. FRL cannot be determined on an individual building material. FRL is expressed as 3 numbers representing the structural adequacy, integrity and insulation in minutes e.g. 60/60/60, under standard test conditions. Explanation of these numbers is given in Appendix 2 below.

Weathertex can be used in conjunction with fire resistant plasterboard to construct timber framed walls with 60/60/60 and 90/90/90 FRL. Details are given in Appendix 3 below.

BUSHFIRES

Australian Standard AS 3959-1999 "Construction of Buildings in Bushfire Prone Areas" gives comprehensive recommendations for house design in bushfire prone areas. This Standard is a Primary Referenced Standard in the Building Code of Australia (BCA).

AS3959-1999 describes two levels of construction:

Level 1 construction For the category of medium bushfire attack.

Level 2 construction For the category of high bushfire attack.

Level 3 construction For the category of extreme bushfire attack.

Your local council, in consultation with your state bushfire authority, determines the category of bushfire attack and the level of construction required in any particular area.

Weathertex Weatherboards can be used as wall cladding in Level 1 construction provided that the following requirements are met:

1. Breather-type sarking with flammability index not more than 5 must be installed behind the Weathertex.
2. Where the Weathertex is less than 400mm above finished ground, it must be protected up to the 400mm level with a non-combustible material, or made fire retardant up to the 400mm level by treating with an approved fire-retardant paint.

APPENDIX 1: Additional Explanation of Early Fire Hazard

Australian Standard AS1530.3 describes the test for Early Fire Hazard (EFH) of building materials.

The test involves placing the building material in front of a radiant panel, similar to a domestic gas heater, and gradually moving the material closer to the radiant panel until the material ignites. The time to ignite, the rate that the flame spreads after ignition, the total heat given off during the test and the total smoke generated during the test are all measured by the instruments in the test apparatus.

The results are expressed as four index numbers:

- **Ignitability Index (range 0 to 20)** - a measure of the tendency of the material to ignite. An index of 0 indicates that the material did not ignite during the 20 minutes that the test takes. An index of 20 indicates that the material ignited in the first minute. The Weathertex index of 14 indicates that it took 6 minutes to ignite.
- **Spread of Flame Index (range 0 to 10)** - a measure of the tendency of the material to spread flame. An index of 0 indicates that either the material did not ignite or that after ignition the flame did not spread more than the minimum level defined in the standard. An index of 10 indicates that after ignition the flame spreads rapidly. The Weathertex index of 7 indicates that it took about a minute for flame to spread to the defined level.
- **Heat Evolved Index (range 0 to 10)** - a measure of the total heat given off during the 2-minute period after ignition. An index of 0 indicates that the material did not ignite. An index of 10 indicates considerable heat given off. The Weathertex index of 6 indicates an intermediate value. It is difficult to relate this index to common experience.
- **Smoke Developed Index (range 0 to 10)** - a measure of the tendency of the material to produce smoke. An index of 0 indicates no significant smoke produced and an index of 10 indicates very dense smoke produced. The Weathertex index of 4 is a relatively low smoke density. It is difficult to relate this index to common experience.

Use of the above indices

The Building Code of Australia (BCA) only uses the Spread of Flame Index and the Smoke Developed Index in its specifications. There are no limits specified for Class 1 buildings (single dwellings and small boarding houses etc) or Class 10 (non-habitable buildings).

The general requirements for Class 2 to 9 buildings are Spread of Flame Index not more than 9, and Smoke Developed Index not more than 5 if the Spread of Flame Index is greater than 8. Weathertex™ is well within these limits.

However there are tighter limits for fire-isolated stairs and passageways and some special purpose buildings, for which Weathertex™ is not suitable. Builders should confirm the latest regulations with their architect or local council.

APPENDIX 2: Additional explanation of Fire Resistance Level (FRL)

Australian Standard AS1530.4 describes the test for Fire Resistance of elements of building construction.

The test involves inserting a specimen of the building element in the wall of a furnace and subjecting it to heat under controlled conditions to a specified time temperature curve. Visual and instrumental observations are made on the performance of the specimen and the elapsed time at which various failures occur are recorded.

The particular performance aspects that form the FRL are:

- **Structural adequacy.** Failures in this category include excessive deflection on the commencement of heating, dislodgment or detachment of any part, or collapse of the element.
- **Integrity.** Failures in this category include cracks, fissures or other openings through which flames or hot gases can pass.
- **Insulation.** Failure is deemed to occur when the average temperature of the unexposed face rises more than 140°C or individual points rise more than 180°C above the initial temperature.

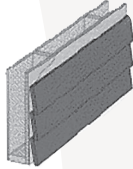
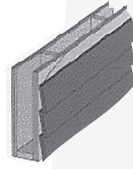
Use of FRL in building codes

The BCA has a quite complex set of FRL requirements for Class 2 to 9 buildings, which is beyond the scope of these notes.

For Class 1 and 10 buildings a FRL is specified for external walls that are within 1 metre of some boundaries, walls within 2 metres of another building on the same allotment, and common walls separating sole occupancy units.

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APPENDIX 3: Certified Timber Wall Systems

TABLE 1: TIMBER STUD WALL - LIGHTWEIGHT CLADDING			
FRL	STC	DESCRIPTION	
<p>60/60/60 & -/60/60 Report/Opinion CSIRO FCO-0626</p>	<p>38 without cavity insulation</p> <p>41 with cavity insulation</p> <p>Estimate Peter Knowland & Associates</p>	<p>Loadbearing timber stud wall, studs at 600mm max centres. Noggings at 1200mm maximum centres. 1 layer 16mm Gyprock Fyrchek plasterboard to inside face. 1 layer 16mm Moisture Resistant Gyprock Fyrchek plasterboard to outside face. Steel strap or sheet bracing to structural requirements. Bradford R1.5 Wall Batt insulation to inside face for higher nominated STC rating or higher thermal performance.</p> <p>External cladding of Weathertex</p> <p><i>Non-loadbearing walls – refer to Table 2 for timber size and maximum wall height.</i></p> <p><i>Loadbearing walls – contact 1800 040 080 for further information on timber stud size, timber grade and maximum wall height.</i></p>	
<p>90/90/90 & -/90/90 Report/Opinion CSIRO FCO-0965</p>	<p>44 without cavity insulation</p> <p>Estimate Peter Knowland & Associates</p>	<p>Loadbearing timber stud wall, studs at 600mm max centres. Noggings at 1200mm maximum centres. 2 layer 13mm Gyprock Fyrchek plasterboard to inside face. 2 layer 13mm Moisture Resistant Gyprock Fyrchek plasterboard to outside face. Steel strap or sheet bracing to structural requirements. Bradford R1.5 Wall Batt insulation to inside face for higher nominated STC rating or higher thermal performance.</p> <p>External cladding of Weathertex</p> <p><i>Non-loadbearing walls – refer to Table 2 for timber size and maximum wall height.</i></p> <p><i>Loadbearing walls – contact 1800 040 080 for further information on timber stud size, timber grade and maximum wall height.</i></p>	

* Bradford, Fyrchek and Gyprock are trademarks of CSR Limited

TABLE 2: NON-LOADBEARING WALLS	
STUD SIZE AND MAXIMUM WALL HEIGHT	
Data Based on Char Factor 11	
WALL STUD TIMBER SIZE (mm x mm)	MAXIMUM UNRESTRAINED WALL HEIGHT (m)
70 x 35	3.6
70 x 45	4.3
90 x 35	5.3
90 x 45	6.0
120 x 35	6.0
120 x 45	6.0
140 x 35	6.0
140 x 45	6.0

Disclaimer: The information in this Fact Sheet is offered as guidance to the use of Weathertex. Every effort has been made to ensure that the information is correct at the time of printing but the advice given should not be construed as approval for any particular method of construction. Standards and building regulations are subject to constant change and users should check with their local building authority before undertaking building design or construction.

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For further information on Weathertex, please call the Weathertex Customer Service Centre **1800 040 080**
www.weathertex.com.au