

GTEK™ FIRE PARTITION SYSTEMS

INTRODUCTION

GTEK™ fire-rated systems consist of single or multiple layers of GTEK™ Fire, screw-fixed to steel framing and nail or screw fixed to timber stud framing.

GTEK™ Fire is manufactured to the requirements of Australian Standards AS/NZS 2588 - "Gypsum plasterboard" and must be installed in accordance with the Australian Standards AS/NZS 2589 Gypsum linings - Application and Finishing.

GTEK™ fire rated systems have been tested according to AS/NZS 5637.1 and AS/NZS 1530.4, by NATA accredited testing laboratories.

GTEK™ Fire has a light-pink facing liner board and GTEK™ Fire & Wet Area has a blue/grey facing liner board for easy identification and is available in 13mm and 16mm thicknesses with recessed edges, ready for taping and jointing with proprietary jointing materials.

EARLY FIRE HAZARD INDICES

GTEK™ Fire complies with the National Construction Code (NCC) Material Group Number Classification and Deemed to Satisfy Provisions, as determined by AS/NZS 5637.1 tests:

- ▶ Material Classification: Group 1. (NCC) Specification A2.4)
- ▶ Suitability as Wall and Ceiling Lining In Fire-Isolated Exits, Public Corridors, Specified and Other Areas. (NCC Specification C1.10a Section 3(c) and Table 2: Wall and Ceiling Linings Material Groups Permitted.
- ▶ Warringtonfire Report Number FAS 210082.

APPLICATION

GTEK™ Fire systems are suitable for industrial, commercial and residential applications, both in the new construction and renovation sectors.

Load bearing, non-load bearing walls and partitions can be clad with single or multiple layers of GTEK™ Fire, with or without cavity infill insulation, to achieve the required results for fire resistance: FRL and acoustic properties: RW.

NON-LOAD BEARING WALLS

The maximum wall heights for non-load bearing fire rated walls, in this Installation Guide are for laterally loaded walls of 0.25 kPa and 0.35 kPa, as set out in the Rondo Tables on page 11.

The maximum stud height is based H/240 or 30mm maximum deflection, to comply with NCC 2004 Specification 1.8 Clause 3.4.

LOAD BEARING WALLS

Load bearing walls in this Installation Guide must be designed and constructed in accordance with AS 1684 and AS 1720, for timber construction and AS/NZS 4600 and AS 3623 for light-weight Cold-Formed-Steel (CFS) construction.

Load bearing walls must be designed and constructed to take all loads without any cladding or lining.

INSTALLATION

Installation is to be in accordance with AS/NZS 2589 Gypsum linings - Application and Finishing and as set out in this manual.

All fire rated plasterboard must be mechanically fastener fixed to steel or timber framing. Stud adhesive must not be used.

For multiple layered systems all joints must be staggered and butt joints in the outer layer may be reinforced with laminating screws.

The final layer in all Fire and Acoustic systems is required to be jointed and finished to a minimum level 3 finish to achieve the stated FRL. This includes boundary wall systems.

All perimeter gaps and penetrations must be fully sealed with an AS/NZS approved fire rated mastic sealant, to attain the required FRL and RW ratings.

FIRE RESISTANCE TERMS AND DEFINITIONS

FIRE RESISTANCE LEVEL (FRL)

The nominal grading period, in minutes, that is determined by subjecting a specimen to the standard time temperature curve regime as set out in AS1530.4.

This is to specify—

- (a) Structural adequacy
- (b) Integrity
- (c) Insulation

These are expressed in that order. Refer to the example below:

60/60/60. This indicates that it is a loadbearing system as it has a figure (60) in the first area (Structural adequacy)

-/60/60. This indicates that it is a non loadbearing system as it has no figure (-) in the first area (Structural adequacy)

The definitions as set out in the Standard are below:

STRUCTURAL ADEQUACY

The ability of a load-bearing element of construction to support a load when tested in accordance with AS1530.4.

Eg: 60/60/60

INTEGRITY

The ability of an element of construction to resist the passage of flames and hot gases from one space to another, when tested in accordance with AS1530.4.

Eg: 60/60/60

INSULATION

The ability of an element of construction to maintain a temperature on the surface that is not exposed to the furnace, below the limits specified, when tested in accordance with AS1530.4.

Eg: 60/60/60

This means that during a fire test, the system did not fail for 60 minutes for each of the criteria.

Ensure fasteners used to fix top and bottom track are appropriate for the Uniform Distributed Loads (UDL) on walls.

At 600mm fastener centres and a UDL of 0.25kPa, the fasteners must withstand a shear load of 0.75kN.

At 600mm fastener centres and a UDL of 0.35kPa, the fasteners must withstand a shear load of 1.1kN.

Below is the standard time vs temperature table which is represented in the **STANDARD TIME VS TEMPERATURE CURVE**.

This shows the rise in temperature vs the associated time.

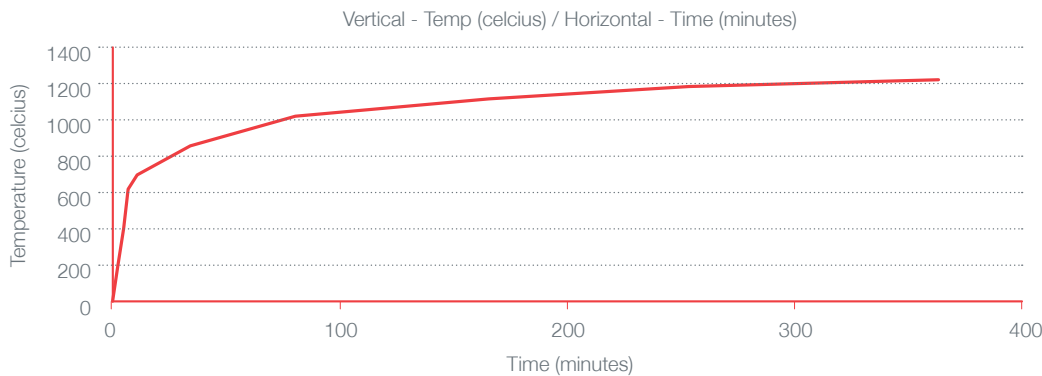
As indicated, in 5 minutes the temperature in the test facility has risen to 576 degrees Celsius, in 15 minutes 738 degrees Celsius and 90 minutes over 1,000 degrees Celsius and so on.

Where a wall or ceiling is required to meet the various requirements under the BCA it is the job of the Fireboard and the framing to prevent the flames, smoke and temperature from getting through to the other side.

For example, where there is a wall required to achieve a -/120/120 system number SO21 shows 2 layers of 13mm GTEK™ Fire both sides of a metal stud. Effectively overall there is 52mm of fire rated plasterboard and framing to stop a peak of over 1,000 degrees of heat reaching through to the other side for a period of 2 hours.

RISF Resistance to the incipient spread of fire (in respect of a ceiling membrane)

The ability of the membrane to insulate the space between the ceiling and roof, or ceiling and floor above, so as to limit the temperature rise of materials in this space to a level that will not permit the rapid and general spread of fire throughout the space to adjoining fire compartments.



Time Mins	0	5	10	15	30	60	90	120	180	240	360
Temp Celsius	20	576	679	738	841	945	1006	1049	1110	1153	1213

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CONTROL JOINTS

A joint between or within discrete elements of construction, which allows for relative movement of the elements.

Control joints can allow for a degree of building movement which can result from such things as moisture, loads, structural movement and foundation settlement etc. Cracks in plasterboard and plasterboard joints should be eliminated by using control joints and the correct installation techniques. Control joints must be installed in plasterboard walls and ceilings at:

- ▶ Maximum 12 metre intervals
- ▶ Control joints in the structure
- ▶ Any change in the substrate material
- ▶ Junctions of dissimilar structural products
- ▶ When long runs of plasterboard meet at right angle (change of direction)

Distance between control joints may need to be minimised to less than 12 metres due to on site conditions such as humidity or temperature variations or where ever excessive structural movement is likely to occur.

ACCEPTABLE VARIATIONS TO FIRE RATED SYSTEMS

Fire rated systems must be built according to GTEK™ installation instructions. However, there are some variations allowed that will not degrade the performance of the system:

- ▶ Increasing the width of the cavity (between stud walls in a double stud wall system)
- ▶ Increasing the stud size or the metal thickness
- ▶ Adding noggings to support fixtures or services
- ▶ Decreasing stud spacing (increasing amount of studs)
- ▶ Additional fasteners

MODIFICATIONS TO FIRE RATED SYSTEMS

Fire rated systems may be modified by the installation of the following examples but not limited to these:

- ▶ Fire rated inspection hatches
- ▶ Fire rated power points
- ▶ Fire rated light fittings
- ▶ Fire rated doors

It is the responsibility of the manufacturer of additional components in a fire system to ensure that the fire and acoustic properties of the plasterboard system are maintained. Any modification not covered in this manual must be according to the relevant manufacturer's instructions.

