Resene Construction Systems

Central Barrier Intertenancy walling system

Resene Construction Systems ROCKCOTE®

Plaster Systems™

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Central Barrier Intertenancy

Wall Systems are designed to separate tenancies from Fire & Noise.

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Two key factors to consider when specifying

a central barrier Intertenancy Wall system

Sound & Fire

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- Must be Sound rated ***above 55 STC***
- Must be fire rated to a ***minimum of 30*** and ***maximum 120 minutes*** *depending on requirements*
- Must maintain ***structural integrity***

  Have the ability for one side to fall away during a fire without affecting the adjoining space.

Acoustics

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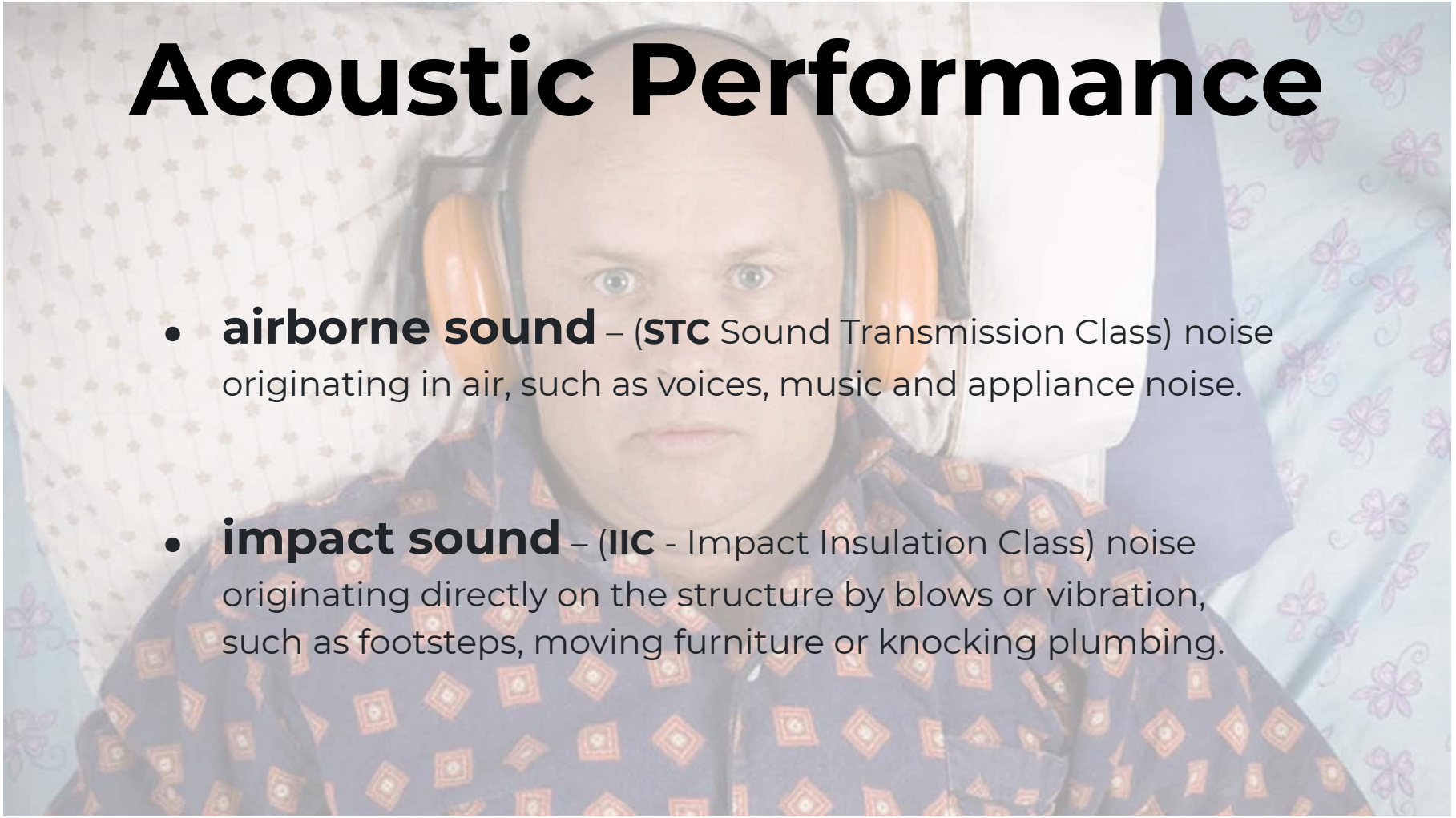
Acoustics

New Zealand Building Code clause G6 Airborne and impact sound sets minimum sound insulation requirements for intertenancy walls and floors of connected dwellings.

Acoustic Performance



- **airborne sound** – (**STC** Sound Transmission Class) noise originating in air, such as voices, music and appliance noise.

- **impact sound** – (**IIC** - Impact Insulation Class) noise originating directly on the structure by blows or vibration, such as footsteps, moving furniture or knocking plumbing.

Acoustic Performance

- activities of other residents, such as loud conversations
- televisions and loud music (particularly bass)
- plumbing systems
- doors banging
- appliance noise, such as washing machines.

- *heating, air-conditioning and ventilation (HVAC) systems*
- *building services, such as lifts and vertical drainage pipes*
- *exterior pedestrian and vehicle traffic*
- *foot noise from the floor above, adjacent walkways or stairways*

STC ‘Sound Transmission Class’

A single number system for quantifying the transmission loss through a building element. ie **STC 64**

STC is based upon typical speech and domestic noises, and thus is most applicable to these areas.

STC of a building element is measured in approved testing laboratories under ideal conditions. **Our system was tested at Auckland University Acoustics laboratory**

Rw Weighted Sound Reduction Index

A single number rating of the sound insulation performance of a specific building element.

Rw is measured in a laboratory.

Rw is commonly used by manufacturers to describe the sound insulation performance of building elements such as plasterboard and concrete.

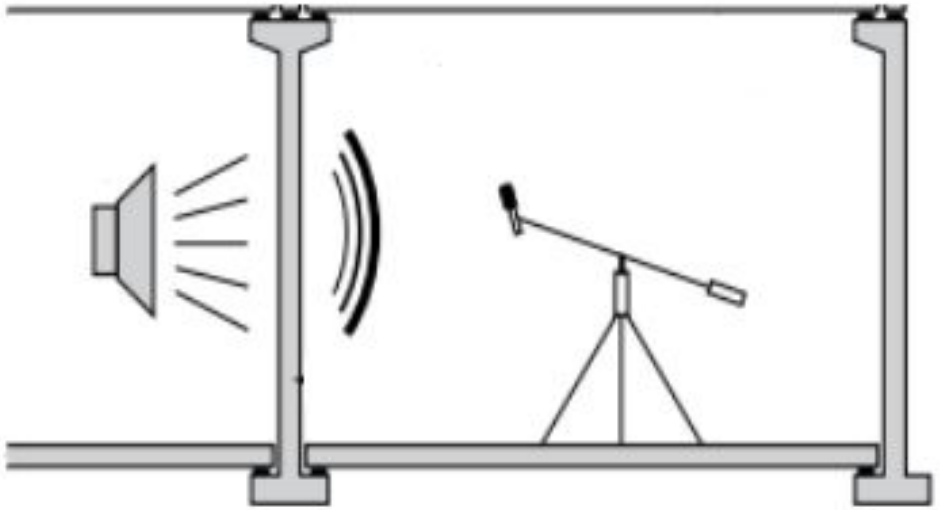
Flanking Transmission

Transmission of sound energy through paths adjacent to the building element being considered.

For example, sound may be transmitted around a wall by travelling up into the ceiling space and then down into the adjacent room.

Field Testing

The Building Code allows a 5-point leeway to take into account on-site issues such as flanking and build quality, so MDH buildings must meet a field sound transmission class (FSTC) of ≥50.



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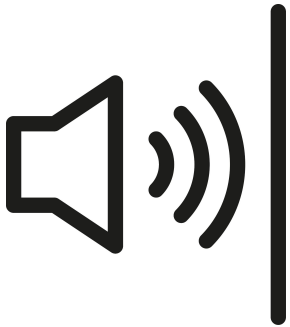
Testing

Acoustic



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Testing

Auckland University
acoustic chamber

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Walling System is built, separating the acoustic chamber

One chamber sends sound with the other receiving

Various frequencies are sent and measured

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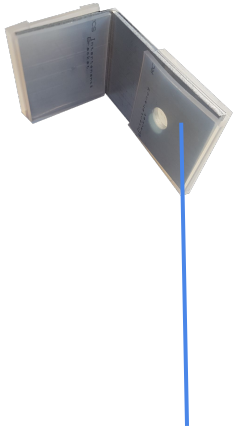
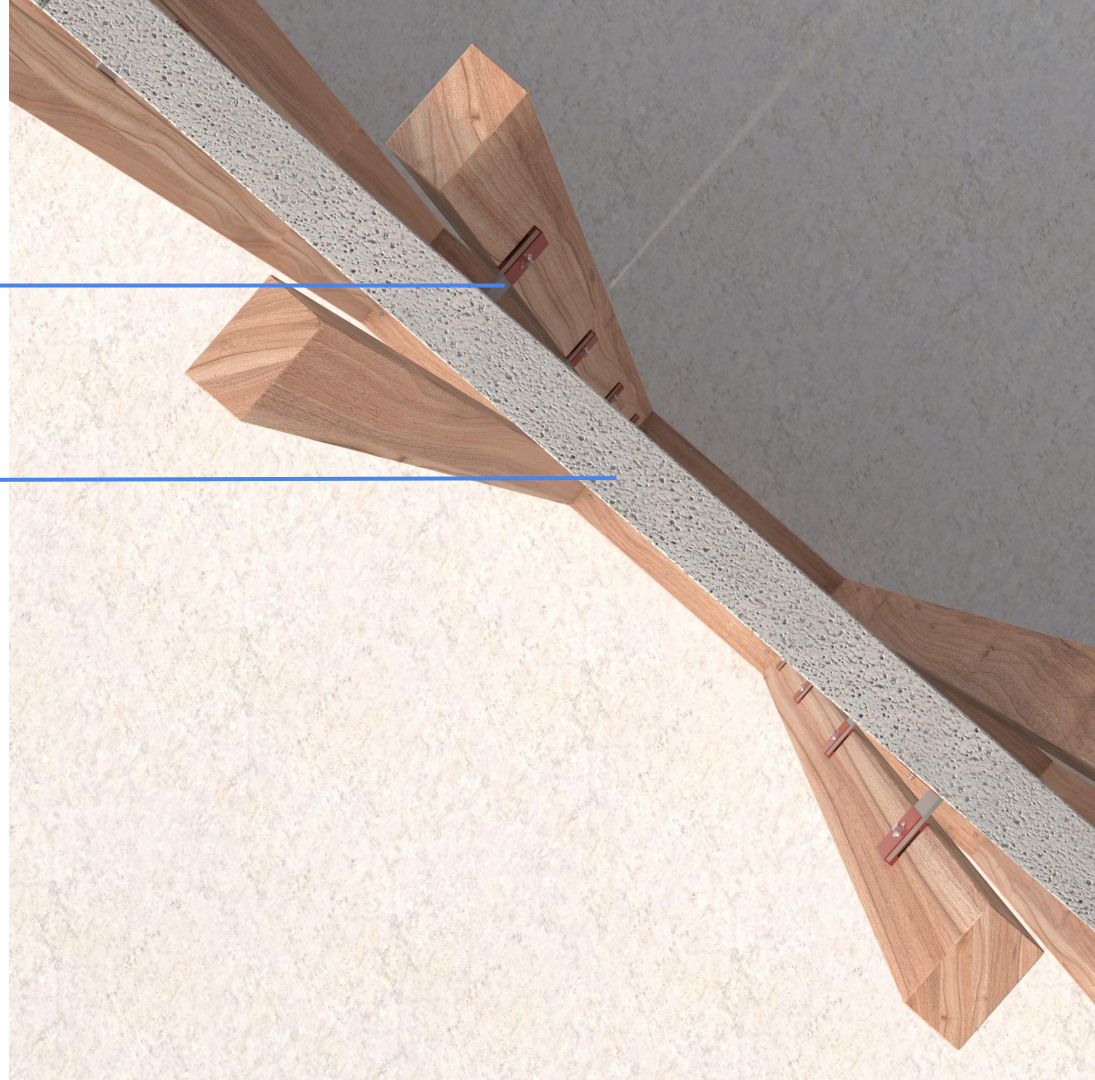


Proprietary bracket connection system

50mm INTEGRA aac lightweight concrete

Silicone Acoustic Dampeners



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Insulation is installed

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Linings are installed and acoustic sealant applied to the perimeter of acoustic chamber

We test with single layer plasterboard then re-test with a second layer to get the various STC ratings

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Result

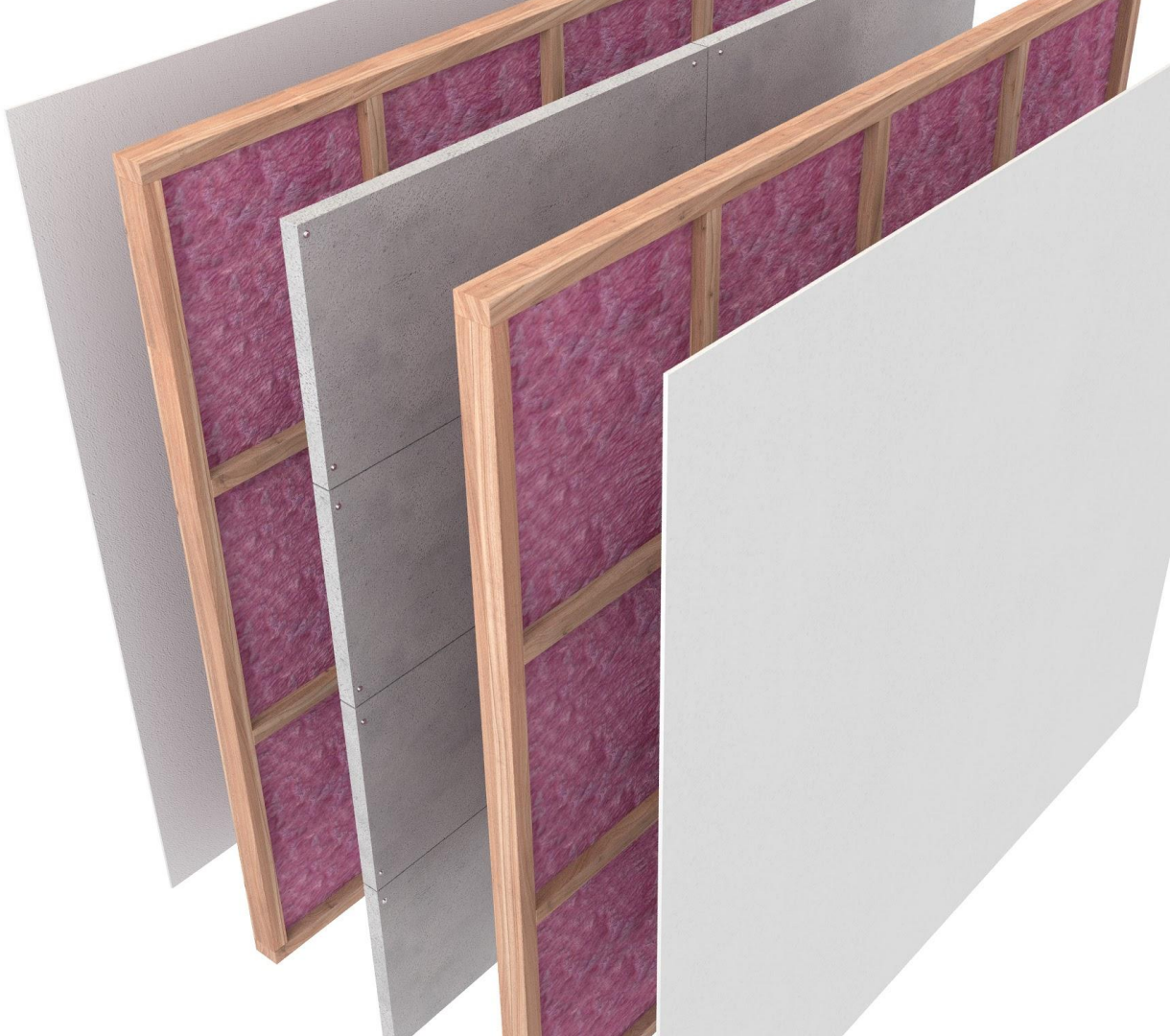
67 STC

with **2** layers

of 10mm standard GIB

64 STC with **1** layer

of 10mm standard GIB




Fire

Fire

New Zealand Building Code clauses C1–C6 *Protection from fire* give the minimum fire safety requirements. The Building Code objectives are to:

- **safeguard people from an unacceptable risk of injury or illness caused by fire**
- **protect other property from damage caused by fire**
- **facilitate fire-fighting and rescue operations.**

Fire Resistance Rating - FRR

The FRR is the ability of a building element to withstand a fire under test conditions for a certain ***period of time*** and consists of the three criteria listed below;

ie - 30/30/30. These, in order, are:
Stability – the ability of the element to carry an applied load

Integrity – the ability to prevent fire spread by flaming on the non-fire side or the creation of gaps to allow the passage of hot gases

Insulation – the ability to limit the temperature rise on the non-fire side.

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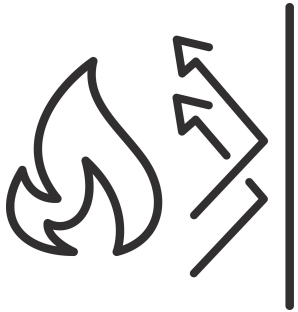
Testing

Fire



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Location - BRANZ Fire testing facility

Full scale wall constructed in the fire chamber

We also added polyester insulation rather than fibreglass

Fire

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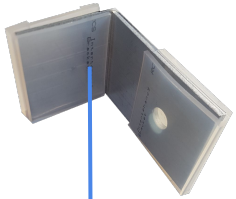
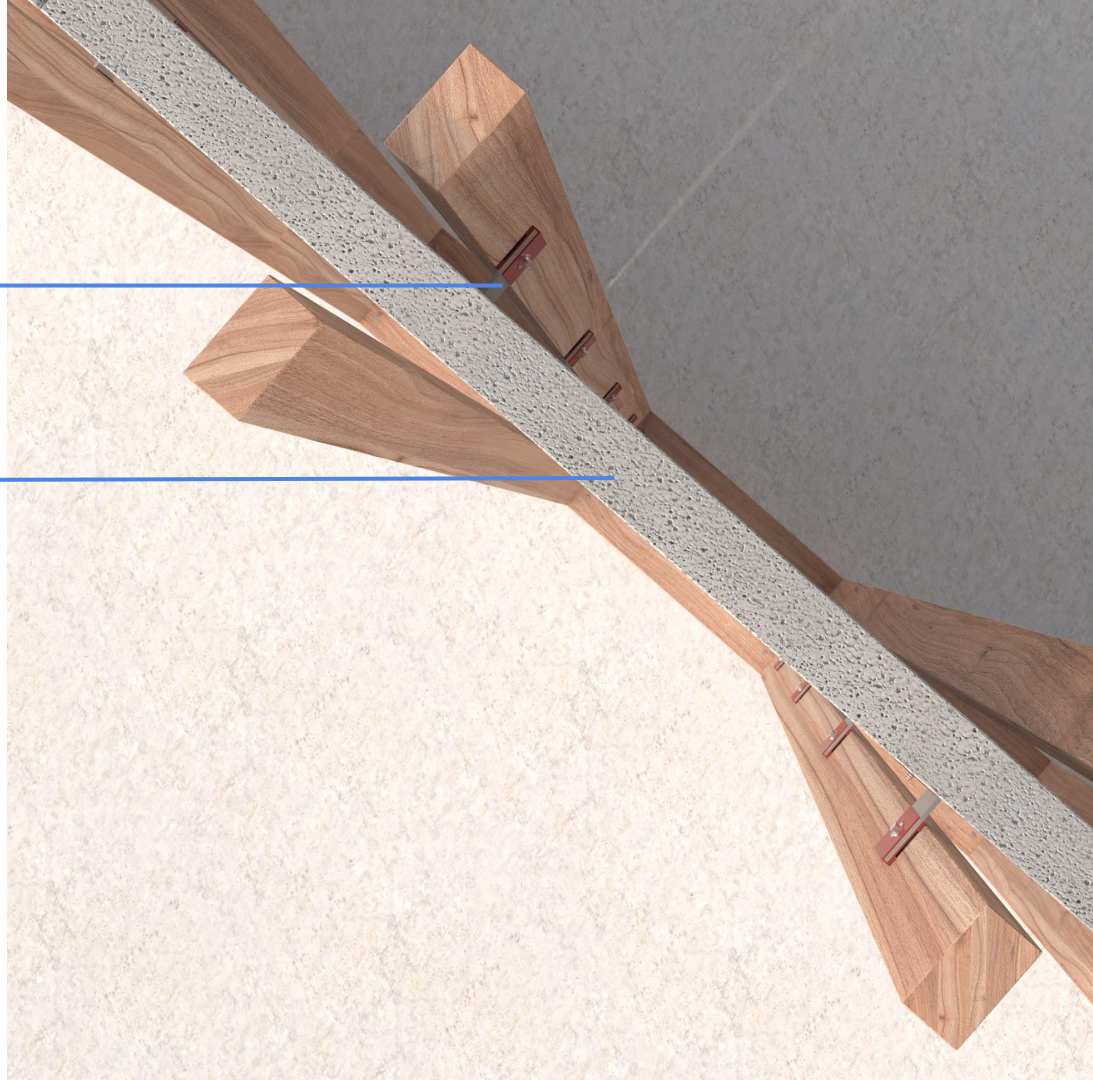


Proprietary bracket connection system

INTEGRA aac lightweight concrete

Aluminium brackets
Melt point 660.3 °C



Fire

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INTEGRA aac lightweight concrete panel that is exposed to the furnace

Fire

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Outside face of intertenancy walling that is not exposed to the furnace

Thermocouples measuring temperature across the wall system

Fire

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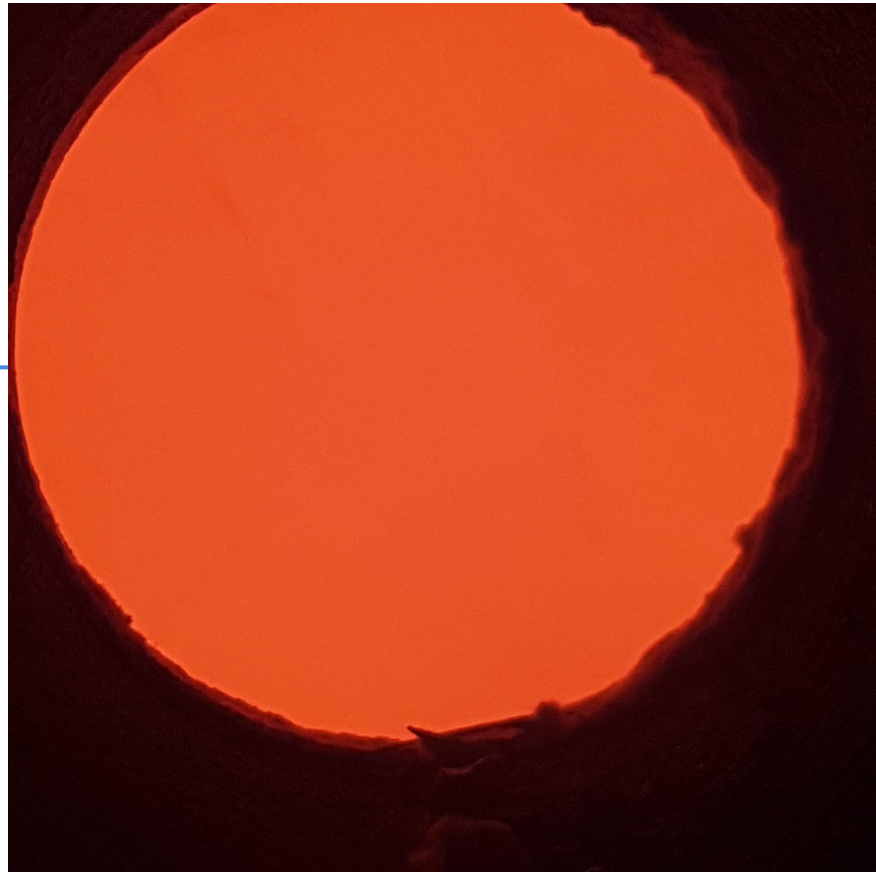
Viewing port into the furnace

This is what 1000°C looks like.



Fire

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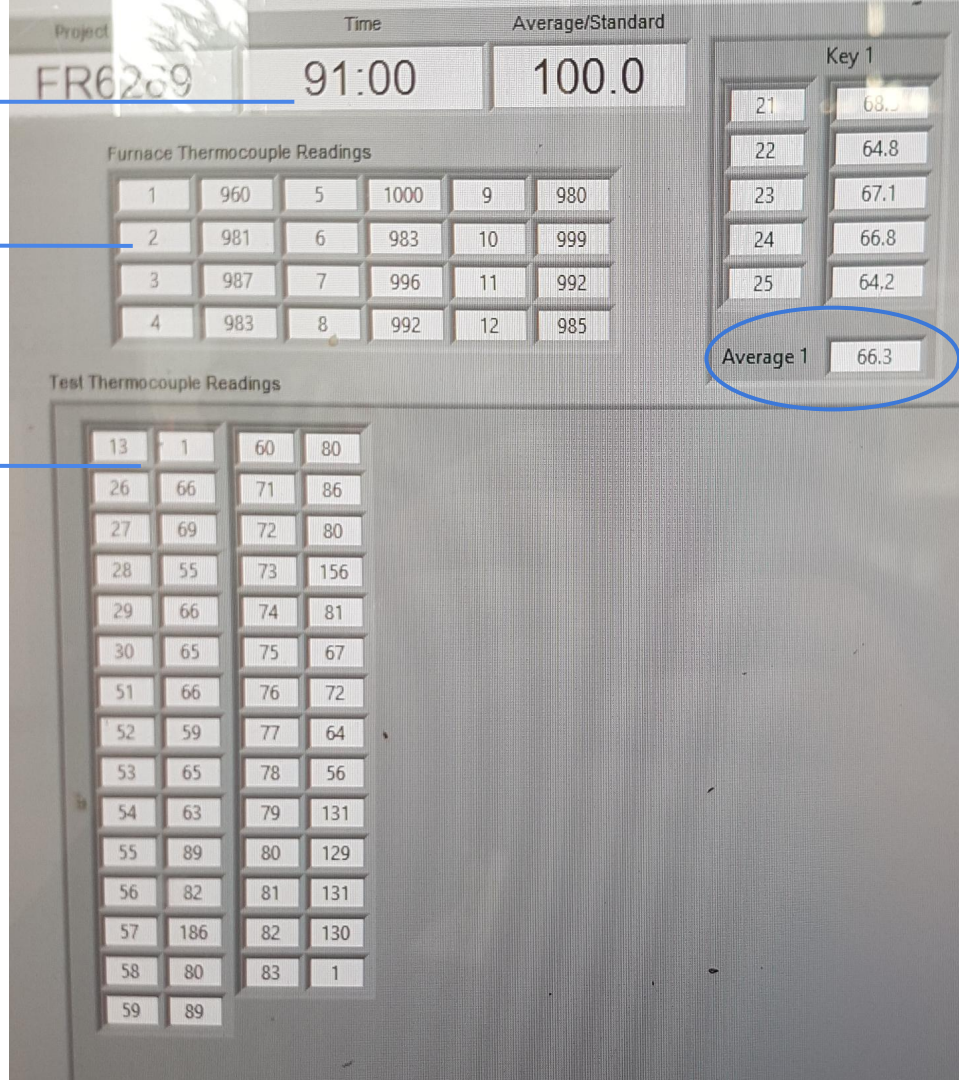
Time frame

Thermocouple data log of temperatures inside the furnace

Thermocouple data log of temperatures -

- Back of INTEGRA aac panel
- Fixing brackets
- Inside & Outside face of Plasterboard wall lining
- Brackets & fixings



Fire

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Steam from building materials as they are force dried releasing at the top of the furnace

Fire

Final test time

125:22 min

No failure

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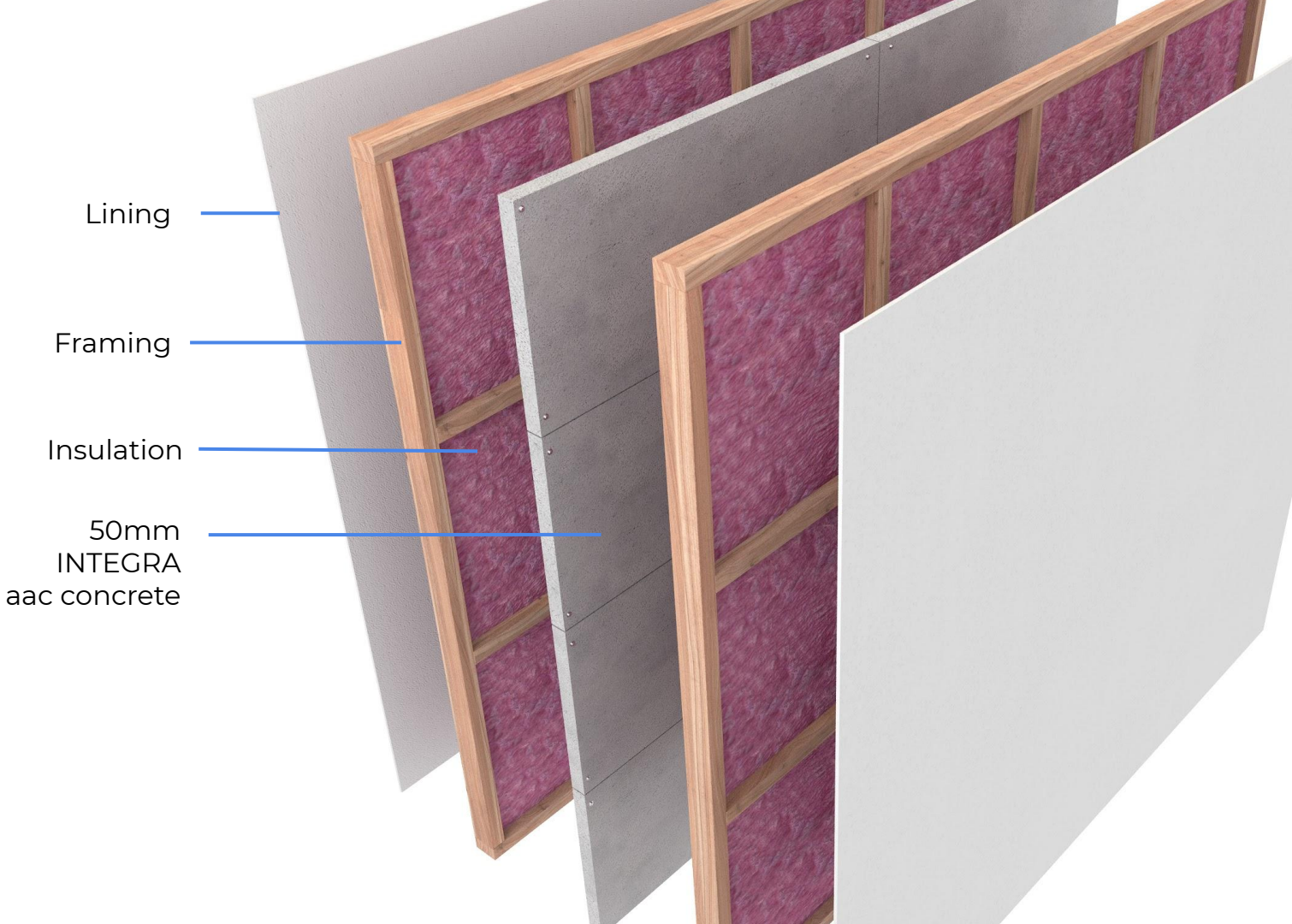
Result

FRR 120



Fire

Questions