PK JOINERY



Glazing, Acoustic & Thermal Performance

Understanding performance requirements, ratings and specification considerations

Glazing, Acoustic & Thermal Performance

Modern timber joinery plays an important role in the overall performance of a building.

The choice of glazing can influence thermal comfort, energy efficiency, condensation management and acoustic performance. In multi-unit developments, heritage buildings and architectural homes, these considerations often form an important part of the design and specification process.

Understanding the terminology and performance measures commonly used throughout the industry can help homeowners, builders, architects and designers make more informed decisions.

Understanding Thermal Performance

Thermal performance refers to how effectively a building element resists the transfer of heat.

In practical terms, thermal performance influences:

+ Indoor comfort
+ Energy efficiency
+ Condensation management
+ Heating and cooling requirements

Windows and doors typically represent some of the largest openings within the building envelope, making glazing selection particularly important.

Factors influencing thermal performance include:

+ Single or double glazing
+ Low-E coatings
+ Spacer systems
+ Frame design
+ Building orientation
+ Window size and configuration

Understanding Acoustic Performance

Acoustic performance relates to the ability of building elements to reduce the transmission of unwanted sound.

This can be particularly important for:

+ Medium-density housing
+ Urban environments
+ Buildings near busy roads
+ Schools and commercial areas
+ Buildings beneath flight paths

Acoustic performance should be considered early in the design process, alongside structure, fire protection and thermal performance.

How Sound Travels

Sound generally reaches occupants in two ways.

Airborne Sound and Impact Sound

Airborne sound travels through the air and includes:

+ Speech
+ Music
+ Television
+ Traffic noise
+ Aircraft noise
+ Impact Sound

Impact sound is generated through physical contact with the building structure and includes:

+ Footsteps
+ Doors closing
+ Furniture movement
+ Plumbing noise

Different construction systems and glazing solutions respond differently to each type of sound.

Acoustic Design Considerations

Achieving good acoustic performance involves more than selecting a particular glazing unit.

Performance is influenced by:

+ Glazing specification
+ Window and door seals
+ Wall construction
+ Floor construction
+ Building layout
+ Mechanical services
+ Construction quality

Early consideration generally delivers better outcomes than attempting to resolve acoustic issues later in the project.

Acoustic Glazing

Acoustic glazing is commonly used where additional sound reduction is required.

Solutions may include:

+ Laminated glass
+ Differing glass thicknesses
+ Increased cavity widths
+ Specialised glazing systems

The most suitable approach depends on the type and frequency of the noise being managed.

Glazing & Timber Joinery

The performance of a glazing system depends on both the glass and the joinery supporting it.

Correct glazing procedures contribute to:

+ Weather tightness
+ Structural performance
+ Thermal performance
+ Longevity of the glazing system

Industry standards such as NZS 4211 establish requirements for the glazing of timber windows and doors.

Correct installation, drainage, ventilation and support systems remain essential to long-term performance.

Thermal Improvement Options

Depending on project requirements, thermal performance may be enhanced through:

+ Double glazing (Standard or Argon-filled)
+ Low-E glass
+ Thermally improved glazing systems
+ Improved weather sealing
+ Appropriate frame design

The most effective solution will depend on the building, climate and project objectives.

Specification Considerations

When specifying glazing systems, it is worth considering:

- [ ] Thermal performance objectives
- [ ] Acoustic performance objectives
- [ ] Heritage requirements
- [ ] Building Code requirements
- [ ] Site conditions
- [ ] Orientation and solar gain
- [ ] Condensation management
- [ ] Long-term maintenance requirements

Thermal and acoustic performance are increasingly important considerations in modern building design.

While glazing plays a significant role, the best outcomes are achieved when windows, doors, glazing, building design and construction methods are considered together.

Early planning and clear performance objectives help ensure the selected joinery and glazing systems support the long-term comfort, durability and performance of the building.