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What Makes Squash Courts Different – Part 4: Flooring, Glass Back Walls Lighting and Climate Control



In Part 4 of the SFN series, we explore four critical factors that shape the quality, safety, and sustainability of squash courts: flooring, glass back walls, lighting, heating and ventilation. These elements directly affect player performance, comfort, operational reliability, and long-term court durability.

1. Flooring: Safety and Performance from the Ground Up

The floor of a squash court isn't just a playing surface—it's the foundation of safety, performance, and durability. A properly designed and installed floor significantly reduces injury risks, enhances gameplay by ensuring consistent ball response, and supports athlete comfort. Understanding and meeting specific standards is crucial for providing players with an optimal and safe sporting environment.

The standard for floors globally

EN 14904 is the European benchmark for indoor sports flooring, closely mirrored by international standards like ASTM F2772 (North America), AS/NZS 4586 (Australia/New Zealand), and various Asian national norms. Despite regional variations, there is strong international alignment on core principles: performance, safety, and durability.

The standard tests several properties crucial for squash and other high-performance sports:

- **Ball Rebound** – Ensures predictable ball behavior across the surface.
- **Shock Absorption** – Reduces joint strain, minimizing injury risks.
- **Slip Resistance** – Provides sufficient grip without restricting movement.
- **Flatness** – Prevents erratic bounces by ensuring a level surface.
- **Surface Durability** – Confirms floor longevity under wear, impact, and moisture.

Squash flooring must meet the EN 14904 sports floor standard (Category A3/A4) or equivalent, ensuring optimal shock absorption, grip, ball response, and safety. Floors that do not comply—or only claim compliance without proper testing—pose increased injury risks.

Squash-Specific Surface Requirements:

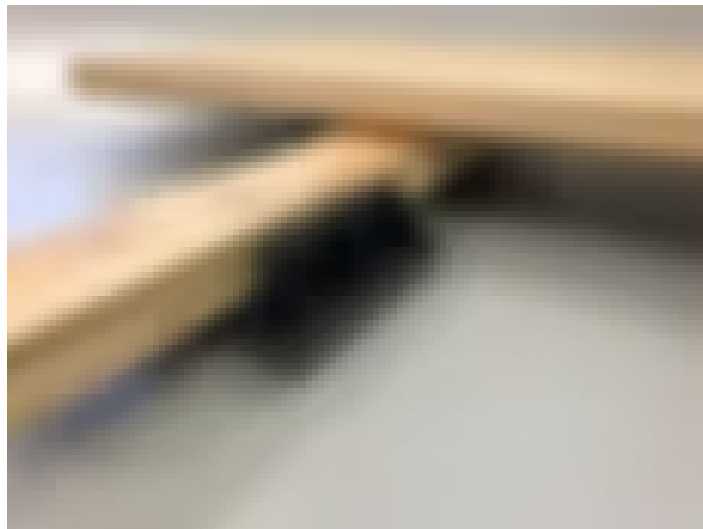
- The surface must be rough and unsealed, maintaining grip even under sweaty, intense play.
- This texture is achieved through sanding with coarse grit (40–50) and applying penetrating impregnation oil, not varnish or sealing lacquer.
- Glossy, sealed surfaces (used in basketball or volleyball) are unsafe for squash and must be avoided.
- As unsealed hardwood is porous, it strongly reacts to humidity. Adequate ventilation is essential to control moisture expansion and prevent floor deformation.

Planning and Installation

The total construction height of a squash floor—including substructure—varies between 60–90 mm (2.36–3.54 inches), depending on the manufacturer. This must be considered in planning to avoid mismatches or step edges. Often, a recessed concrete slab is recommended, ensuring the finished floor aligns flush with adjacent surfaces.

Squash floors require installation on a perfectly level base. Unfortunately, building subfloor tolerances frequently don't meet the requirements for squash. There are two main solutions:

1. **Levelling Screed** – Effective but costly, requiring extended drying time that can delay construction.
2. **Flooring Systems with Integrated Levelling Substructures** – Preferred for squash courts, allowing quick compensation for uneven surfaces.



Installation should begin only after the building is sealed and ideally when heating and ventilation systems are operational. Exposing porous wood to uncontrolled environments (rain or high humidity during construction) causes premature expansion, potentially resulting in joint gaps, cupping, or buckling if installed too early.

Practical Recommendations

- Use flooring systems with official EN 14904 (or equivalent) certification.
- Ensure a rough, properly sanded surface treated with squash-specific impregnation oil.
- Plan for levelling substructures or recessed slabs to achieve proper height alignment.
- Wait until the building is weather-tight and climate-controlled before installation.

2. Glass Walls: Safety and Design

Squash involves fast-moving players and balls; thus, the glass back wall must meet stringent safety standards. Glass walls are constructed from tempered safety glass, typically 12 mm (½ inch) thick, conforming to safety glazing standards like European EN 12600 or ANSI Z97.1 (USA).

Fittings and back wall designs prioritize safety and accessibility. The door is full-height and typically 914 mm (36 inches) wide, complying with international accessibility norms to accommodate wheelchairs.

There are two primary structural designs for squash glass back walls:

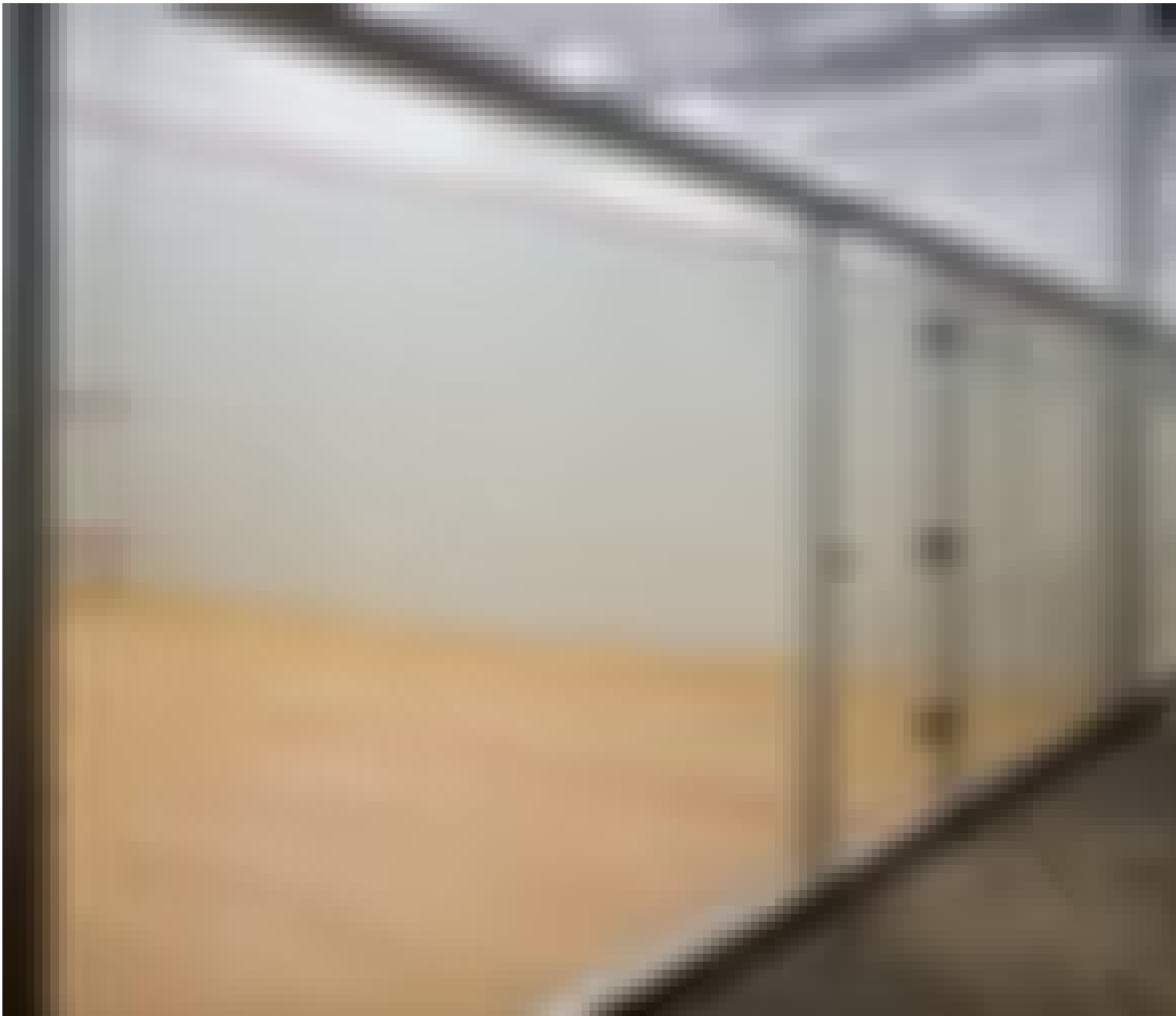
Fin-Supported Glass Back Walls

Fin-supported walls use additional glass panels ("fins") as supports, traditionally preferred for courts with spectator galleries. The glass fins typically measure around 300 mm (12 inches) deep, necessitating larger installation footprints behind the court. More glass pieces and connections slightly increase risks of breakage.



Frame-Supported Glass Back Walls

Frame-supported walls use structural frames—usually aluminum or steel profiles—instead of fins, offering space-efficient installation. Frames allow sealing gaps or adding panels above the standard back-wall height (2.13 m / 7 feet), improving climate control, sound isolation, and security.



Practical Recommendations

- **Fin-Supported Walls:** Suitable for facilities emphasizing spectator experience, tournaments, or with ample space behind courts.
- **Frame-Supported Walls:** Ideal for facilities with space constraints, seeking practical, low-maintenance solutions for daily use.
- Regular inspections and maintenance are essential for safety regardless of the system chosen.

3. Heating and Ventilation: Playing Conditions Matter

Squash is intense and high-sweat. Players can release up to 1 liter (approximately 0.26 gallons) of moisture per hour, rapidly increasing humidity in confined spaces. Without proper ventilation, this leads to:

- Poor air quality and odors,
- Condensation on walls/glass,
- Wood floor expansion and buckling, making courts potentially unplayable.

Ideal Playing Environment

A stable indoor temperature of approximately $18 \pm 2^{\circ}\text{C}$ ($64.4 \pm 3.6^{\circ}\text{F}$) is optimal, ensuring peak player performance and comfort. Squash balls perform best at about 18°C (64.4°F), delivering consistent rebound and responsiveness.

Many facilities target a temperature range between $16\text{--}20^{\circ}\text{C}$ ($60.8\text{--}68^{\circ}\text{F}$), balancing comfort, ball dynamics, and safety.

Humidity and Ventilation

To manage humidity, ventilation systems should deliver at least 4 air changes per hour (ACH) during court use. This ensures continuous removal of moist air and introduction of fresh air without drafts affecting gameplay.

Effective systems use high-level extraction and low-level intake to create vertical airflow without noticeable drafts at player height.

Functional Requirements for HVAC Systems:

- HVAC components must be impact-protected against squash balls.
- Units, ducts, and fixtures should not trap or unpredictably deflect balls.
- Ceilings must remain clear, compliant with squash regulations. Nets or meshes are not practical long-term solutions.
- Use flush-mounted or recessed units with protective covers.

Practical Recommendations

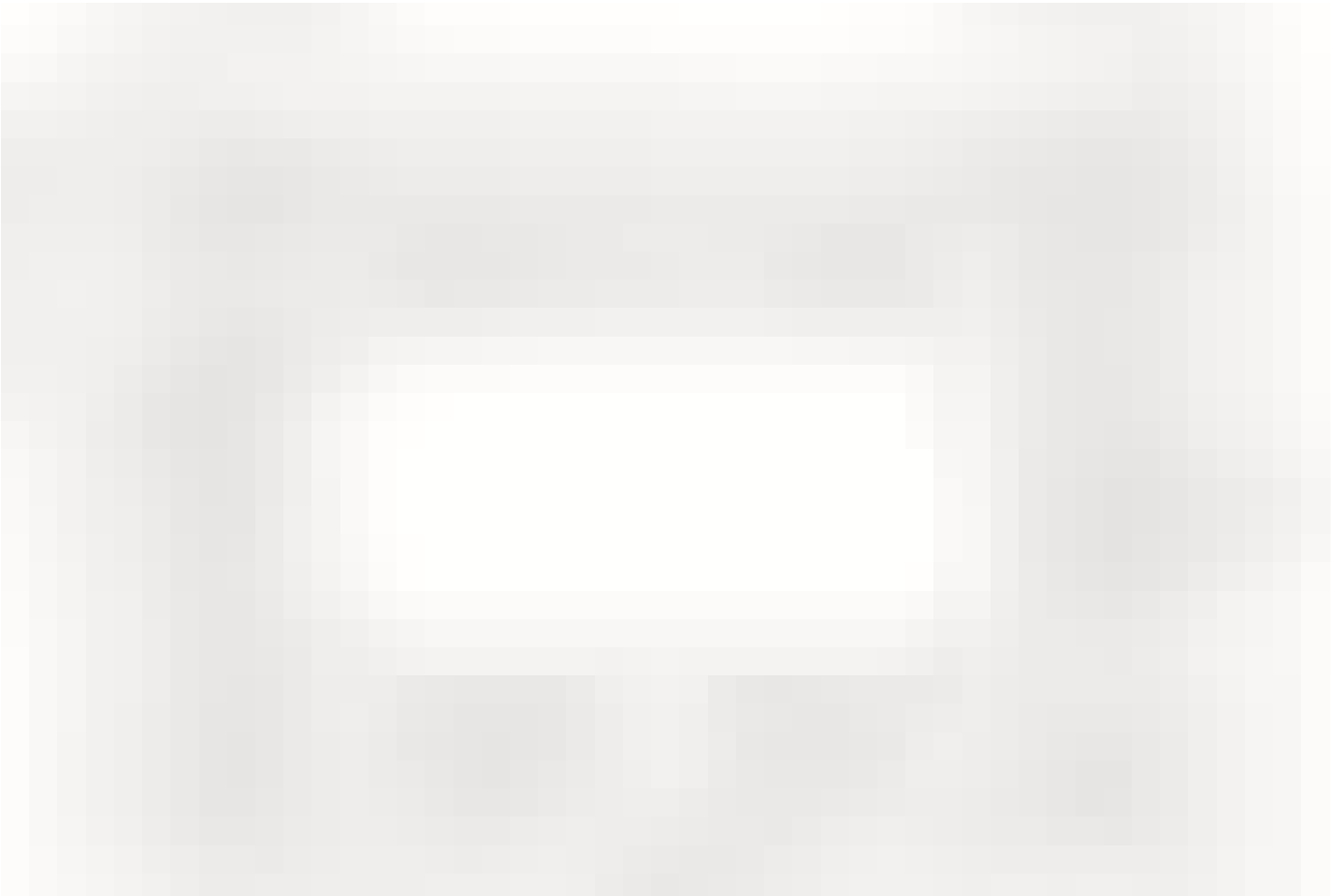
- Maintain consistent court temperature (~18 °C / 64.4°F) with programmable thermostats.
- Ensure ventilation provides ≥4 ACH for humidity control.
- Avoid drafts; choose HVAC components that are flush-mounted, protected, and unobtrusive.

4. Lighting in Squash Courts

Proper lighting significantly affects player safety, comfort, and performance. Squash lighting must ensure adequate protection from ball impacts.

The recommended lighting level for squash courts is 500 lux, ensuring optimal visibility for both players and spectators. In the past, lighting levels of around 300 lux were common, but this is no longer sufficient for the fast-paced modern game—especially as video recording and live streaming on social media become increasingly standard. Poor lighting not only reduces visibility and detracts from the playing experience, but also increases the risk of injuries due to impaired depth perception and slower reaction times.

Modern facilities predominantly use LED lamps for energy efficiency, durability, and superior illumination. A standard squash court typically requires 8–10 lamps. The precise lamp arrangement depends on selected lamp specifications; detailed lighting calculations are essential.



Example Lighting Calculation for a Squash Court

Local sourcing ensures quick replacement of lamps, minimizing downtime. Fixtures must not intrude into the playing space. Uniform illumination across the court eliminates shadows and glare, enhancing visibility and reducing eye strain.

Practical Recommendations

- Use LED lamps for efficiency, durability, and optimal illumination.
- Maintain ≥500 lux lighting level for safe, quality play.
- Conduct detailed lighting calculations based on lamp specifics.

- Source lamps locally for efficient replacements.
- Use shatter-resistant or protected fixtures to prevent ball damage.

Ensuring the highest quality and safety standards in flooring, glass wall design, climate control, and lighting is critical for squash facilities. Adhering to these guidelines provides optimal playing conditions, enhances player experience, and significantly extends court longevity. By investing in certified materials, proper installation techniques, robust climate management, and carefully planned illumination, facility operators can guarantee sustainable and high-performance environments suitable for players of all levels, from casual enthusiasts to elite competitors.