Since 1897, the members of the MFMA have been dedicated to producing the highest quality northern hard maple flooring and sports flooring systems in the world. More than 100 years later, MFMA continues to attract new members who subscribe to the same high standards for which the association has become known. Through consistent enforcement of strict manufacturing, grading, packaging, shipping and installation, MFMA has become synonymous with quality. As the most recognized name in sports flooring, the experience of MFMA Mill Manufacturer and Sport Floor Contractor members is unmatched.

Within the last 20 years, there has been a movement within the industry to quantify performance characteristics that best define “a good sports floor.” As a result, our industry has hundreds of different sports flooring systems each with varying levels of performance. Within this range of system options, there are some common performance characteristics that the industry has recognized as being most desired and important.

MFMA’s PUR Standards focus on shock absorption, vertical deflection, area of deflection, ball bounce, and surface friction. These standards have been designed, utilizing exacting testing methodologies, to ensure that customers receive a reliable, well performing, competitive sports surface. No one knows more about how a good floor should perform and how it should be installed than the MFMA members. As an organization representing the worldwide sports flooring industry, our goal is to balance technical standards with practical flooring system design in order to create uniform standards of performance for competition sports floors.

When a specific flooring system is a MFMA PUR Compliant floor, it is understood that testing is on a strict pass/fail evaluation. In order to minimize confusion that exists around floor testing, the MFMA will only allow the use of the term “compliant” as it pertains to its PUR testing; either a floor is compliant and passes the standards or it does not. Like all performance standards, there are tradeoffs between individual standards depending on the intended use. Carefully selected criteria will help you choose the characteristics that are most appropriate for the activities being performed on your floor.

For additional information on MFMA testing procedures, contact MFMA Headquarters or any of the MFMA Mill Manufacturing members on their system(s) that have been tested in accordance with the MFMA PUR Standards.
**INDIVIDUAL PERFORMANCE CHARACTERISTICS**

**SHOCK ABSORPTION**

Measures the flooring system’s ability to absorb impact forces generated by the athlete.

As an athlete impacts a sports surface, the impacting force is translated into two resultant forces: one absorbed by the floor and the other absorbed by the athlete. While hard surfaces such as concrete and asphalt provide little or no force reduction for the athlete upon impact due to running, jumping or falling, MFMA sports floor systems absorb these impact forces (shock) and are rated by the percentage of force reduction they provide as compared to hard surfaces. In general, a sports floor with a force reduction value of 60% will absorb 60% of the impact force and the remaining 40% is absorbed by the athlete.

**AREA OF DEFLECTION**

Measures the floor system’s ability to contain the deflected area under an athlete’s impact, measured at 20” (500 mm) from the point of impact.

The area of deflection is a measurement of the surface of the floor that is deflected during impact. Area of deflection is based on the relationship between vertical deflection at the point of impact and the deflection at 20” (500 mm). A person jumping on a trampoline, for example, creates a very wide area of deflection. Someone jumping on sand creates a very limited area of deflection.

**VERTICAL DEFLECTION**

Measures the floor system’s downward movement during the impact of an athlete landing on the surface.

This characteristic is the measure of the floor system’s ability to provide vertical displacement at the point of impact. For example, a person jumping on a concrete floor would result in zero vertical deflection, while that same person jumping on a trampoline would create a vertical deflection of many inches.

**BASKETBALL REBOUND**

Measures the basketball’s rebound response off the sports floor system as compared to the ball’s rebound response off concrete. At 100% rebound, the basketball returns to a height equal to its rebound off concrete.

Obviously, ball bounce may not apply to all sports activities.

**SURFACE FRICTION**

Measures an athletic flooring finish’s ability to control the sliding of athletes on a sports surface. The surface friction must be low enough to permit sliding when a large amount of horizontal force is applied to the floor surface and high enough to prevent uncontrollable sliding.

Surface friction is a function of the specified floor finish.
**Why is Performance Important?**

The MFMA Mill Manufacturing Members have been designing sports floor systems for generations. With the evolution of the understanding of the scientific relationship between the athlete and the sports surface, MFMA Mill Manufacturing Members have engineered flooring systems to meet the demands of today's athletes. These standards reflect the competitive nature of today's athletes and provide them with the tools to succeed.

**Performance Requirements**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Specification</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shock Absorption</td>
<td>50% minimum average</td>
<td>Shock absorption measures the ability of a system to reduce impact forces felt by the athlete.</td>
</tr>
<tr>
<td>Area of Deflection</td>
<td>20% maximum at all test points</td>
<td>Measures a floor system's ability to isolate movement of an athlete's impact.</td>
</tr>
<tr>
<td>Basketball Rebound</td>
<td>93% minimum average</td>
<td>Measures the basketball response off a floor system.</td>
</tr>
<tr>
<td>Vertical Deflection</td>
<td>2.3 mm minimum average</td>
<td>Measures a floor system's ability to yield under foot during game play activities.</td>
</tr>
<tr>
<td>Surface Friction</td>
<td>0.6 minimum</td>
<td>Measures the slip and slide characteristics of a finished floor system.</td>
</tr>
</tbody>
</table>

**Why is Uniformity Important in a Sports Floor?**

The MFMA, the sports flooring authority for over 100 years, recognizes the importance of a sports surface's uniformity and consistent game play for a high-quality floor. Therefore, we have established the following uniformity requirements.

**Uniformity Requirements**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Uniformity</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shock Absorption</td>
<td>+/- 5%</td>
<td>Uniformity of shock absorption provides consistent dissipation of force by the floor system assuring uniform reduction of impact forces encountered by athletes.</td>
</tr>
<tr>
<td>Area of Deflection</td>
<td>≤20%</td>
<td>Uniformity in Area of Deflection ensures the same isolation of movement from one athlete to another at all locations.</td>
</tr>
<tr>
<td>Basketball Rebound</td>
<td>+/- 3%</td>
<td>Requiring Basketball rebound consistency assures even ball return throughout the floor system.</td>
</tr>
<tr>
<td>Vertical Deflection</td>
<td>+/- 0.5 mm</td>
<td>Uniformity in Vertical Deflection assures player confidence in predictable response to an athlete's movement on the floor system.</td>
</tr>
<tr>
<td>Surface Friction</td>
<td>+/- 0.1</td>
<td>Uniformity of surface friction is vital to the safety of the athletes.</td>
</tr>
</tbody>
</table>

Contact any MFMA Manufacturer Member for performance data on their individual sports flooring systems.

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**Test Methods**

For information on the MFMA PUR Standards testing methodologies, please visit www.maplefloor.org.

**Mission Statement**

The MFMA is the authoritative source of technical and general information about maple flooring and related sports flooring systems. MFMA's membership consists of sport floor manufacturers, sport floor contractors, distributors and allied product manufacturers who subscribe to established quality guidelines. Through cooperative member programs, MFMA establishes product quality, performance and installation guidelines; educates end users about safety, performance and maintenance issues; and promotes the use of maple, beech and birch flooring products worldwide.

Disclaimer: The MFMA PUR Standards are designed to provide general performance, uniformity and playability information to architects, specifiers and consumers. MFMA, its members, officers and agents disclaim any responsibility whatsoever for the accuracy or applicability of these standards under all circumstances and conditions.

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Maple Flooring Manufacturers Association, Inc.

The Sports Flooring Authority

111 Deer Lake Road, Ste 100 • Deerfield, IL 60015 USA

888-480-9138 • 847-480-9138 • FAX: 847-480-9282 • mfma@maplefloor.org • www.maplefloor.org