

Performance Summary

Brock Base Technology for Artificial Turf Systems

Brock Compared to Stone

Studies demonstrate that changes in surface stiffness by more than 20% are perceivable to players. Since Brock reduces surface stiffness by only 10% compared to stone, there is no perceivable difference between a synthetic field on Brock and a synthetic field on a stone base during normal playing conditions (running). However, under higher loads equivalent to head impacts, Brock reduces surface stiffness by 45% and reduces g_{\max} by 26%. Subsequently, a field on Brock will feel like a field on stone but will absorb significantly more impact than stone under high loads.

Brock Compared to Rubber Pads and E-layers

When compared to traditional padding underlayments, Brock actually reduces g_{\max} more than rubber pads and e-layers under head impact loads. However, since pads and e-layers reduce surface stiffness under low loads by as much as 39% when compared to stone, fields with pads and e-layers feel noticeably softer to the athlete, which results in higher fatigue levels and related physiological and performance issues.

The Effect of Brock on g_{\max} Over Time

G_{\max} on an infill turf system installed on a stone base will increase over time as a result of infill compaction. Because Brock is a resilient material, impact energy is transferred through the infill into Brock, which helps prevent compaction over time. In addition, Brock provides a safety factor in the event that infill is displaced. Most importantly, Brock accomplishes this without producing a surface that is noticeably softer to the athlete during normal playing conditions.

The Science Behind Brock Technology

Brock is made of a proprietary, high crystalline polypropylene plastic bead and a polyurethane binder. Brock has the unique ability to remain rigid under loads up to a pre-determined deflection point. After loads reach this point, the material deflects to absorb impact. Brock has engineered the deflection point to correspond with the impact forces associated with the ASTM F-355 drop test (the ASTM F-355 test simulates the head impact of an athlete on a surface as a result of a tackle or fall). Therefore, any load below the engineered deflection point does not compress Brock, while loads above the deflection point cause the material to compress momentarily, thereby absorbing the load. In addition, because Brock is resilient, it will recover after each impact. Brock simplifies the design, reduces the cost and improves the safety and performance of synthetic turf fields.

Figure 2: Surface Firmness Comparing Stone to Various Underlayments

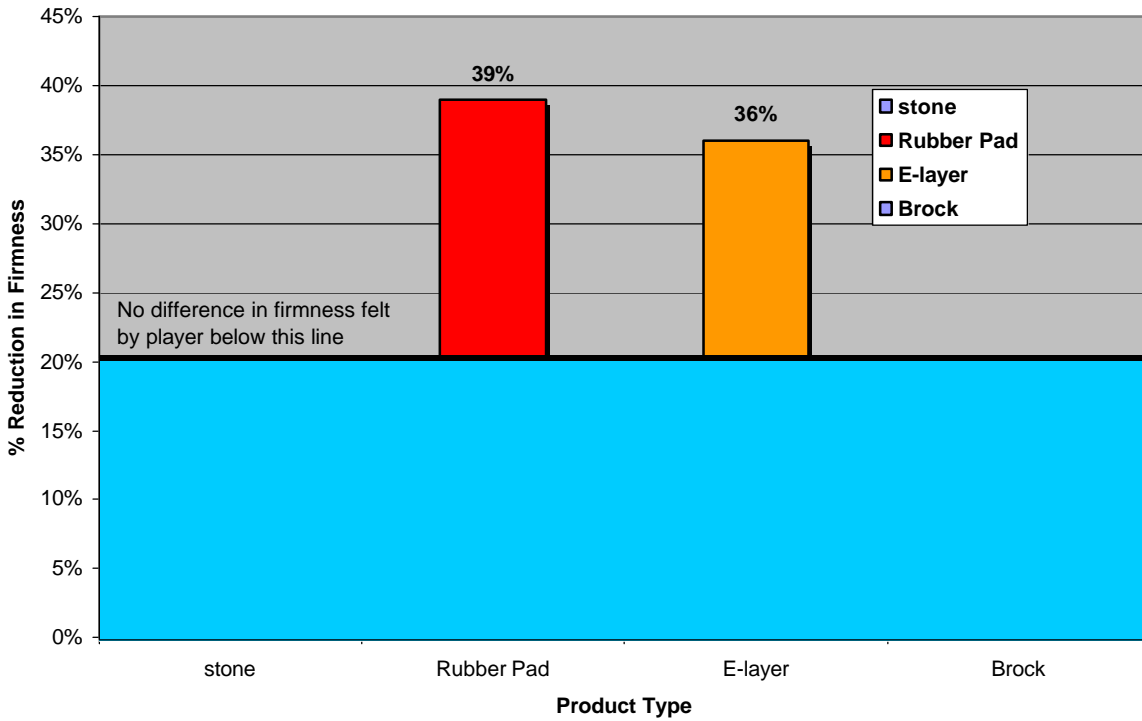


Figure 1: G-max Comparison Between Rubber Pad, E-layer and Brock Under Infill Turf

