

IS 13893: 1994

Polyurethane soles semirigid – specification

Polyurethane Sole: A sole made from durable, flexible, and wear-resistant polymerized polyurethane, designed for footwear to offer comfort, strength, and cushioning.

Semirigid: This term indicates that the polyurethane sole has moderate rigidity, balancing flexibility and support for comfort and protection.

Relative Density: This characteristic is essential for evaluating the density of the sole material. A higher relative density generally signifies a more robust and denser material, whereas a lower value may suggest a lighter and more flexible sole. The standard outlines both minimum and maximum relative density thresholds that the polyurethane sole material must satisfy.

Hardness: Hardness is vital for assessing the stiffness or softness of the sole, which affects both comfort and durability. A softer sole may enhance comfort but could compromise durability, while a harder sole may offer better support at the expense of comfort. The standard specifies a defined range of Shore A hardness values for polyurethane soles.

Tensile Strength: This property reflects the material's ability to resist stretching or tearing. High tensile strength is crucial for ensuring the sole's longevity under the mechanical stresses associated with walking or running. The standard establishes a minimum tensile strength, generally exceeding 6 MPa for semi-rigid polyurethane soles, to guarantee the sole's strength and durability under load.

Elongation at Break: Elongation at break indicates the percentage increase in length that a material can experience before failure when subjected to tensile stress. This property provides insight into the material's flexibility.

Abrasion Resistance: Abrasion resistance refers to the capacity of the sole material to endure wear caused by friction when it comes into contact with surfaces like concrete or asphalt. Purpose of This characteristic is essential for ensuring the durability and lifespan of footwear, as soles with inadequate abrasion resistance may deteriorate rapidly, resulting in early failure.

A semirigid polyurethane sole is a type of footwear sole crafted from a specially designed polyurethane material that strikes a balance between flexibility and rigidity, providing both durability and comfort for the user. To guarantee quality and reliability in footwear applications, the sole must meet the specifications and performance standards set forth in IS 13893: 1994.