

IS 6649 : 1985 Specification for hardened and tempered washers for high strength structural bolts and nuts (First Revision)

Hardened and tempered washers are designed to function with high-strength structural bolts and nuts in demanding applications like heavy construction, bridges, and industrial structures. These washers undergo rigorous hardening and tempering to enhance their strength, durability, and resistance to wear, enabling them to withstand the high stresses typical of structural environments. Their primary role is to evenly distribute load and prevent loosening or deformation in the bolt-nut assembly, ensuring a secure and stable connection. Hardening strengthens the washer, while tempering reduces brittleness, making it resilient enough to perform reliably in the challenging conditions of structural engineering.

Consumers seeking **hardened and tempered washers** for structural applications prioritize quality characteristics that ensure **reliability** and **longevity**. High-strength materials, typically hardened steel with specific hardness ratings, are essential to support heavy loads without cracking or deforming. **Dimensional accuracy** and **flatness** are equally critical, as they allow for even load distribution and prevent misalignment during installation. To maximize durability, especially in outdoor or corrosive conditions, effective **corrosion** and **wear resistance** is necessary. **Temperature resistance** is also important, as washers must maintain their structural integrity under fluctuating or elevated temperatures. Furthermore, consistent **hardening** and **tempering** are vital to avoid weak points, ensuring each washer delivers the expected performance and durability. Collectively, these qualities provide consumers with a product that secures connections for extended, safe use in demanding environments.

This Indian Standard specifies the requirements for three types of hardened and tempered steel washers intended for use with high-strength structural bolts and nuts: plain hole circular washers (Type A), square taper washers for use with channels (Type B), and square taper washers (Type C). These types are classified by their shape, dimensions, and tolerances. The standard outlines material requirements, as well as heat treatment requirements, including minimum hardness levels.