Indian Standard IS 9442: 1980 - Specification for hot-rolled steel plates, sheets, and strips for the manufacture of agricultural tillage discs

Tillage discs are circular, concave steel blades used in agricultural equipment for soil preparation, typically mounted on a common shaft or gang as part of disc harrows or plows. These discs are manufactured from **hot-rolled steel plates, sheets, and strips**, which provide the necessary hardness and toughness for durability and effective soil penetration.

The **Indian Standard IS 9442:1980** specifies the requirements for hot-rolled steel plates, sheets, and strips used in agricultural tillage discs. This standard defines the chemical composition, mechanical properties, grain size, decarburization limits, and acceptable grades of steel. It covers three steel grades, each with specific carbon, manganese, and silicon contents, ensuring that the material meets the mechanical demands of tillage applications. The standard also limits the sulphur and phosphorus content to a maximum of **0.050%**, preventing brittleness and ensuring optimal performance. Furthermore, it mandates that the steel be produced through open-hearth or electric furnace methods, free from harmful defects, ensuring quality and durability.

The standard specifies a **fine grain size range of 5 to 8** to enhance wear resistance and maintain sharpness during operation, as well as a hardness limit of **220 HB (Brinell Hardness)**. This hardness range balances wear resistance with toughness, as excessive hardness could lead to brittleness, reducing the steel's ability to withstand the impacts and stresses of soil cultivation.

The **DPIIT Quality Control Order** mandates that all hot-rolled steel plates, sheets, and strips used for the manufacture of agricultural tillage discs comply with IS 9442:1980 and display the BIS Standard Mark. This ensures that only high-quality steel is used in agricultural practices.

In summary, IS 9442:1980 provides critical guidelines for the quality and manufacturing processes of steel used in agricultural tillage discs. It ensures the material meets the necessary mechanical and chemical properties for efficient and durable soil preparation.