

IS 573:2023 Trisodium Phosphate — Specification

Trisodium phosphate (TSP) appears as a white crystalline powder or as easily friable small lumps. TSP has a range of industrial applications due to its strong cleaning and buffering properties. It is widely used in:

- **Cleaning and Degreasing:** TSP effectively removes grease, stains, and dirt from surfaces, making it popular in household cleaners and industrial degreasers.
- **Water Treatment:** Used to control *pH* levels and prevent scale formation in boilers and water systems.
- **Food Processing:** In regulated quantities, TSP serves as an additive to maintain acidity and moisture levels in certain foods.

Recognizing TSP's industrial significance, BIS first published an Indian Standard for Trisodium Phosphate (IS 573) in 1954, covering three types of TSPs namely; anhydrous, monohydrate and dodecahydrate. The standard has since been revised in 1964, 1973, 1985, 1992 and most recently in 2023 to reflect advancements in manufacturing and testing technologies.

The current standard categorizes TSP based on its form (anhydrous or crystalline) and its applications. It specifies two grades:

- (a) Technical (dodecahydrate and anhydrous) - used in detergent mixtures, softening water, prevention of hard boiler scale, tanning of leather, clarifying sugar, laundering, manufacture of paper, in photographic developers, and in kier boiling.
- (b) Analytical (dodecahydrate). used as a reagent in laboratories.

The standard outlines requirements for TSP's purity, phosphate content, water-insoluble matter, alkalinity in the form of carbonate and total alkalinity, soluble iron compounds and moisture content along with acceptable limits for impurities such as heavy metals.

The standard also accounts for the fact that when stored under ordinary conditions, the dodecahydrate form may lose some water of crystallization. Any loss in water will cause an assay of more than 100 percent trisodium phosphate on the basis of the assay of sodium phosphate dodecahydrate. However, the standard notes that this does not significantly affect determination of the relative amount of other characteristics.

This standard therefore defines the physical and chemical properties that TSP must meet to ensure its effectiveness and safety. Overall, IS 573 provides guidelines to ensure that trisodium phosphate meets consistent quality standards across various uses, enhancing its reliability and safety in industrial and commercial applications.