



## IS 1781: 2022 Urea, Technical — Specification

Urea, also known as **carbamide**, is a nitrogen-rich organic compound with the chemical formula  $\text{H}_2\text{NCONH}_2$ . It plays a vital role in agriculture as a nitrogen supplement for **fertilizers, enhancing plant growth and productivity**. Urea is also used in animal feed to supply nitrogen for **protein synthesis in livestock**, and it serves as a key raw material in the **production of various plastics, pharmaceuticals, and other chemicals**.

In India, the quality standard for **technical-grade urea** is prescribed by **IS 1781**. Initially published in **1961**, **this standard outlined requirements for both industrial and fertilizer grades of urea**. However, in **1975**, a separate standard, **IS 5406**, was established specifically for **fertilizer-grade urea**, allowing IS 1781 to focus on technical or industrial-grade urea. The second revision of IS 1781 introduced an alternative method for determining iron content using 1,10-phenanthroline, a colorimetric reagent that enhances precision in testing. Additionally, Annex-J of the revised standard provides a detailed procedure for collecting samples from continuous production facilities, ensuring uniformity and reliability in sampling.

The standard specifies **technical-grade urea's requirements, sampling methods, and testing procedures, excluding fertilizer applications**. For determining **particle size, IS 460 (Part 1)** sieves are recommended. If these **specific sieves are unavailable, equivalent sieves with similar aperture sizes** can be used to maintain accuracy in measurements. This standardization ensures that technical-grade urea meets industry requirements for purity and quality, supporting its safe and effective use in various applications, from manufacturing to agriculture.