

Summary of IS 1285:2023

Wrought aluminum and aluminum alloy extruded round tubes and hollow sections are specialized products manufactured from high-grade wrought aluminum or aluminum alloys through the **extrusion process**, where the material is forced through a die to produce continuous profiles with a consistent cross-sectional geometry. These extrusions are utilized in a diverse range of industries, including construction, marine, and HVAC systems, owing to their exceptional combination of **lightweight properties, high strength-to-weight ratio, corrosion resistance, and versatility**.

The standard defines precise alloy compositions for aluminum and its alloys, as these materials are particularly valued for their superior corrosion resistance, especially in demanding environments such as marine or industrial applications. Additionally, the alloys must undergo **stringent heat treatment processes**, such as solution heat treatment followed by artificial aging, to optimize their mechanical properties and ensure performance under load.

Extruded tubes and hollow sections are required to meet strict dimensional tolerances, including wall thickness, outside diameter, length, and cross-sectional shape. Furthermore, mechanical property requirements—such as **tensile strength, yield strength, and elongation**—are crucial for applications where **structural integrity and load-bearing capacity** are paramount. The extrusions must exhibit a uniform, defect-free surface, devoid of imperfections such as cracks, dents, or scratches. To address these quality parameters, the standard outlines specific requirements for mechanical properties, surface finish, workmanship, and dimensional tolerances.

In addition, the standard stipulates that purchasers must provide detailed specifications when placing an order, including **alloy designation, temper condition**, quantity, dimensions, packing requirements, and product drawings. It also includes provisions for the rejection and retesting of materials that do not meet the specified criteria, as well as guidelines for packaging in compliance with IS 10259.

The overarching goal of the standard is to ensure uniformity and high-quality standards in aluminum extrusions used in engineering applications. It provides comprehensive guidelines for both manufacturers and purchasers, addressing **material specifications, testing protocols**, and marking requirements. This document is an indispensable reference for manufacturers, engineers, and quality control professionals working with aluminum extrusions in India, ensuring that products meet the rigorous demands of modern engineering.