

IS 11552 : 2020 Liquid Nitrogen Vessels : Be cool like Nitrogen

Liquid nitrogen is a chemical that is extremely cold. It is an inert cryogenic fluid with a temperature of $-196\text{ }^{\circ}\text{C}$ [$-320\text{ }^{\circ}\text{F}$]. It is injected directly into the batch water storage tank, aggregate, or mixer via lances to lower the temperature of the concrete as much as practical without freezing. For its storage and transportation, special designed liquid nitrogen vessels are used. Such vessels are normally used in scientific research work, such as cryosurgery, space research artificial insemination processes, embryonic stem cells, etc, and shrink fitting applications.

Indian Standard IS 11552:2020 , developed by the Bureau of Indian Standards (BIS), outlines the safety and performance requirements for liquid nitrogen vessels that are double walled with multilayer, vacuum insulated construction and of capacities up to 75 litres for storage and transportation of liquefied nitrogen

This standard includes provisions related to the design of the vessels to ensure optimal thermal insulation and minimize the risk of nitrogen loss. The design must also account for user safety during filling, transport, and usage. Safety is paramount in the handling of liquid nitrogen. The standard specifies features such as pressure relief mechanisms to prevent the build-up of excessive pressure, protective layers to reduce the risk of frostbite, and guidelines for safe handling practices. The standard mandates rigorous testing protocols for the vessels to ensure they meet the required performance criteria. These tests evaluate aspects such as thermal efficiency, pressure durability, and leakage rates. In addition to technical specifications, the document provides user-friendly guidelines for the operation and maintenance of the vessels, including best practices for filling and emptying, regular inspections, and storage recommendations.

The components of this standards serves as a crucial reference for manufacturers, suppliers, and users of liquid nitrogen vessels. By adhering to this standard, Consumers can ensure that their practices not only comply with safety regulations but also enhance the efficiency and longevity of their equipment. This standard plays a vital role in fostering a safe environment for the handling of liquid nitrogen across various applications.

Kushagra Jindal
Sc C