

## **IS 12145:1987, Specification for quenched and tempered alloy steel forgings used in pressure vessels**

The alloy steel forgings are used in pressure vessels for power generation and nuclear reactors, where they withstand high pressure and radiation. For example, Bharat Heavy Electricals Ltd. (BHEL) manufactures pressure vessels for thermal power plants using materials specified under IS 12145 to ensure safety and durability.

The Indian defense industry employs these forgings in critical components like naval submarines and armored vehicles, where resilience to pressure and impact is paramount. For instance, components manufactured by the Steel Authority of India Ltd. (SAIL) following this standard are incorporated into defense projects that require high-performance materials.

In the petrochemical industry, pressure vessels and reactors process volatile chemicals at high temperatures and pressures. This standard ensures that components like flanges and shells can endure prolonged exposure to such conditions without failing, supporting companies like Indian Oil Corporation in maintaining safe operational facilities.

Refineries in India using quenched and tempered alloy steel forgings designed per IS 12145 reported significant improvement in equipment longevity and safety. The standardized material properties reduced maintenance frequency and prevented operational shutdowns, illustrating the standard's practical impact in real-world applications.

IS 12145:1987 sets stringent standards for alloy steel forgings, ensuring that these materials meet the demands of high-pressure and high-stress applications. Its use across industries like energy, defense, and petrochemicals demonstrates its importance in supporting infrastructure that requires high-strength, durable, and safe materials. By adhering to these standards, manufacturers and industries can guarantee the quality and reliability of their pressure-containing components.