Mechanical Properties and Impact Test

Mechanical properties confirm the basic strength level of the pipe. The Charpy impact test verifies low-temperature notch toughness, which is the main reason ASTM A333 is selected instead of ordinary carbon steel pipe.

Property	ASTM A333 Grade 6 Typical Requirement	Inspection Meaning
Yield Strength	Min 240 MPa / 35 ksi	Confirms resistance to permanent deformation
Tensile Strength	Min 415 MPa / 60 ksi	Confirms minimum load-bearing capacity
Elongation	Per standard and specimen condition	Indicates ductility before fracture
Charpy Impact Test	Required at specified test temperature	Verifies low-temperature notch toughness
Hydrostatic / NDE Test	As required by standard and PO	Confirms pipe integrity before delivery

ASTM A333 Grade 6 is commonly associated with low-temperature impact testing around -45°C / -50°F, but the exact test temperature and acceptance criteria should follow the project specification and purchase order. For critical low-temperature service, the impact test record should be reviewed together with heat number, wall thickness, test specimen direction, and MTC.

Review focus: heat number -> tensile result -> Charpy impact record -> hydro/NDE -> MTC traceability