Why room-temperature yield and tensile strength are not enough for high-temperature design

High-Temperature Steel for Pipe and Tube: Grades, Properties and Service Limits

Illustrative ASTM A106 Gr.B parameter	Value	Meaning
Specified minimum yield strength at room temperature	240 MPa	Product minimum, not design allowable stress
Specified minimum tensile strength at room temperature	415 MPa	Product tensile minimum, not a direct design input
Published allowable stress near 38 °C	137.9 MPa	Example from a B31.3-based pressure–temperature chart
Published allowable stress near 343 °C	113.8 MPa	Shows temperature derating for the same grade
Published allowable stress near 399 °C	74.5 MPa	Clear illustration of the temperature effect

Source / basis: https://niktrd.com/high-temperature-steel