How are alloy-steel properties established?

Alloy Steel for Pipe and Tube: Grades, Properties and Applications

Fabrication control	Why it matters	Evidence/control
Preheat / interpass	Controls cooling rate, hardness and cracking risk.	WPS / PQR
Filler compatibility	Controls weld-metal chemistry and properties.	WPS / consumable spec
PWHT	Affects residual stress, hardness and microstructure.	Code / procedure / chart
Hardness / NDT	Verifies fabrication outcome in selected services.	Project acceptance criteria

Source / basis: https://niktrd.com/alloy-steel