

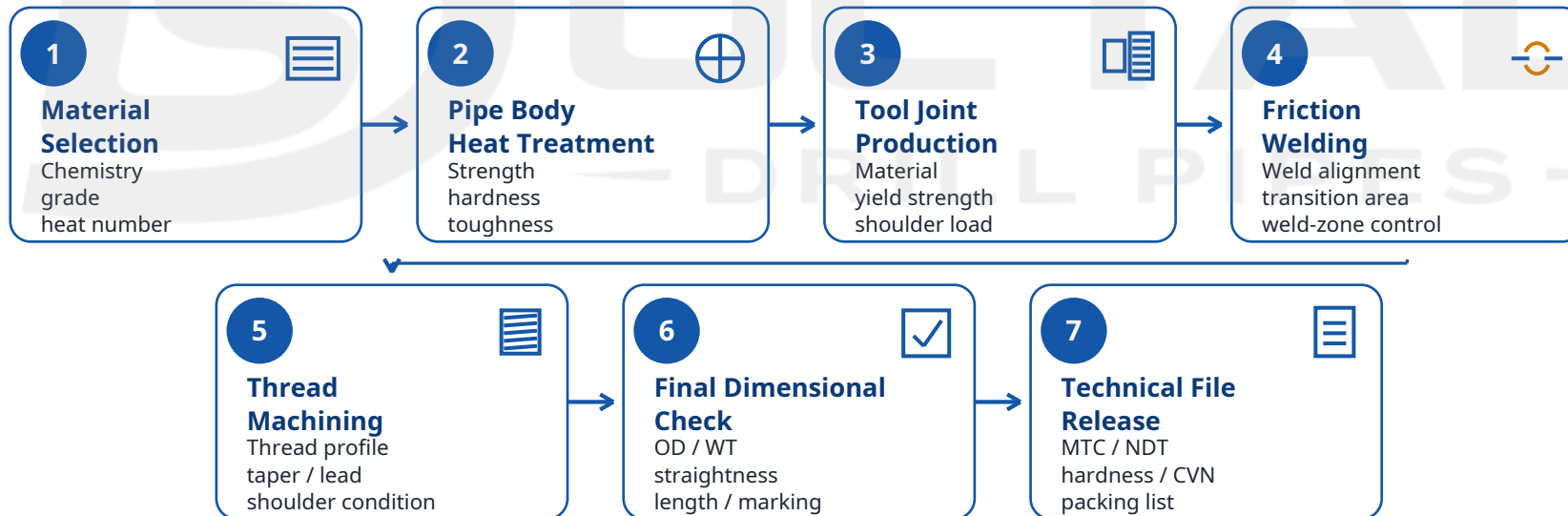
Special Material Drill Pipe

Manufacturing and Traceability Control

Special Material Drill Pipe requires a controlled production chain from material selection to final technical file release. The focus is not only OD, wall thickness, grade and connection, but also material properties, heat treatment, hardness, toughness, weld-zone condition and traceable inspection records across the full drill pipe assembly.

Manufacturing Control Route

Each stage produces a control result that should match the pipe identity and technical file.



Control logic

material identity -> heat treatment -> inspection record -> thread condition -> packing identity

Pipe body, tool joint and weld zone should be controlled as separate technical areas for sour service, controlled yield, low-temperature and non-magnetic applications.

Control Stage, Inspection and Traceability Output

Production control should create verifiable records, not isolated test results

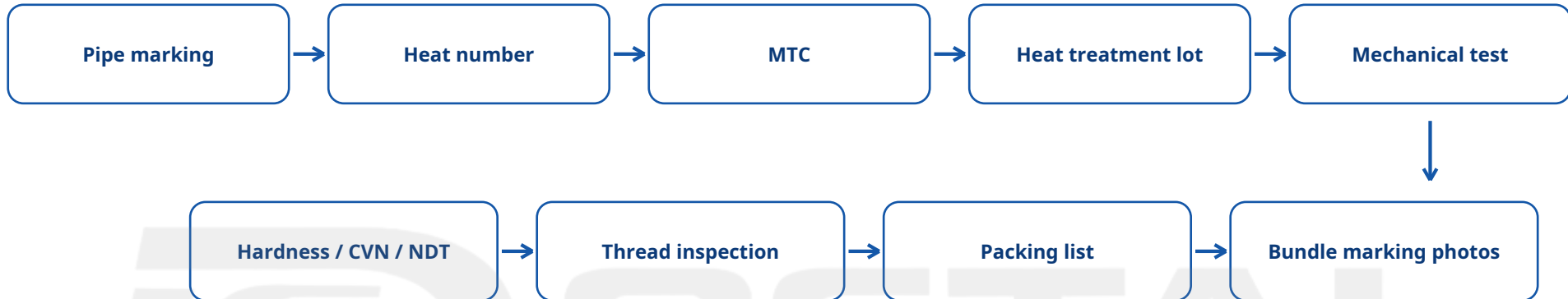
Control Stage	Technical Control Focus	Key Inspection / Test	Traceability Output
Material Selection	Chemistry, grade, heat number and material route	Chemical analysis; grade verification	MTC; chemical analysis; heat number record
Pipe Body Heat Treatment	Strength, hardness, toughness and microstructure consistency	Tensile test; hardness test; CVN when required	Heat treatment lot; tensile report; hardness record; CVN report
Tool Joint Production	Tool joint material, yield strength, hardness and shoulder loading performance	Tool joint mechanical test; hardness check	Tool joint test record; heat treatment record; hardness report
Friction Welding	Weld alignment, transition-area integrity and weld-zone toughness	Visual check; NDT; hardness / impact record when required	Weld inspection record; NDT result; weld-zone hardness / impact record
Thread Machining	Thread profile, taper, lead, shoulder condition and connection match	Thread inspection; gauge result; shoulder review	Thread inspection record; gauge result
Final Dimensional Check	OD, wall thickness, straightness, length, marking and appearance	Dimensional inspection; visual marking check	Dimensional report; pipe marking photos
Technical File Release	Lot consistency, document matching and package identity	File review; packing identity check	MTC; NDT; hardness / CVN records; thread inspection; packing list; bundle marking photos

Technical note A hardness value, CVN result or NDT report is useful only when it links to heat number, heat treatment lot, product element and pipe marking.

Traceability Chain and Technical File Release

Keep pipe identity, inspection record and package identity connected

Traceability chain



Technical file package

MTC

heat number, chemistry and mechanical properties

CVN report

test temperature, specimen size and absorbed energy

Thread inspection

connection type, gauge result and shoulder condition

Hardness report

pipe body, tool joint and weld zone when required

NDT report

method, scope, acceptance basis and result

Packing list

size, grade, connection, length, bundle number and quantity

For special material drill pipe, inspection records must match the actual pipe identity before field service.