Inspection, Testing and Document Traceability

Inspection for drill collars should be built around the failure modes that actually affect receiving inspection and field use: wrong connection, thread galling, shoulder damage, mixed heat number, out-of-tolerance bore, uneven hardness, surface cracks and missing document traceability.

Inspection Item	Control Point	Acceptance Meaning	Document / Evidence
Visual inspection	Body surface, shoulder, thread, marking	Finds handling damage, machining defects or wrong marking before packing	Visual inspection record, marking photos
Dimensional inspection	OD, ID, length, bore, straightness, connection dimensions	Confirms compatibility with BHA design and handling equipment	Dimensional report
Thread inspection	Thread profile, taper, lead, shoulder face, gauge check	Reduces makeup problem, leakage risk and shoulder damage	Thread inspection record
Hardness test	Body and connection area as required	Confirms heat treatment consistency and cracking risk control	Hardness report
MPI	Thread area, shoulder area and stress-sensitive surfaces	Detects surface or near-surface cracks in magnetic material	MPI report
UT	Body or critical area if required by ITP	Screens internal discontinuities according to project requirement	UT report
Drift / bore check	Internal clearance	Confirms fluid passage or tool compatibility	Drift / bore inspection record
Material traceability	Heat number, grade, chemical composition	Confirms material identity from raw material to finished product	MTC / heat number record
Packing inspection	Thread protector, bundle identity, packing list	Reduces transport damage and receiving mismatch	Packing list, bundle photos

Traceability focus: Product marking -> heat number -> MTC -> hardness / NDT records -> thread inspection -> packing list -> shipment release.