



Finished drill pipe is the inspection target

Pipe body + upset + friction weld + tool joint + connection

CURRENT TECHNICAL BASIS

Reference item	Published basis
Main specification	API Spec 5DP
Edition	2nd Edition
Edition publication	May 2020
Addendum	Addendum 1 - January 2025
Monogram effective date	July 2, 2025
Latest listed errata	Errata 3 - March 2025

Use the applicable licensed standard and purchase agreement for formal acceptance. This reference condenses selected published limits and frequencies for buyer review.

INSPECTION MUST FOLLOW THE PHYSICAL PRODUCT AND ITS RECORDS

PIPE BODY

OD / wall / grade

Chemistry, tensile, CVN, dimensions

UPSET + WELD

Transition / weld zone

Hardness, CVN, side-bend as applicable

TOOL JOINT

Box / pin / bore

Hardness, CVN, dimensions

RELEASE RECORD

Heat / lot / marking

Inspection evidence tied to shipment

KEY ACCEPTANCE NUMBERS USED IN THIS REFERENCE

S135 P / S

<=0.020% / <=0.015%

Pipe body chemistry

E/X/G/S Weld

<=37 HRC

Surface & mean through-wall

Tool Joint Box

285-341 HBW

Non-SS grades

CVN 10 x 10

54 J avg / 47 J min

X/G/S/V PSL-1 at 21 C +/- 3 C



Thread Gauge Check



Shoulder Inspection



OD / ID Measurement



Make-up Test Fit

Dimensional and connection inspection examples

CHEMICAL COMPOSITION - MAXIMUM PHOSPHORUS AND SULFUR

Product element	Maximum P	Maximum S
Grade E pipe body	0.030%	0.020%
Grades X, G, S, V pipe body	0.020%	0.015%
Grades E, X, G, S, V tool joints	0.020%	0.015%
SS75 pipe body	0.015%	0.010%
SS95 / SS105 pipe body	0.015%	0.010%
SS75 / SS95 / SS105 tool joints	0.015%	0.010%

S135 example: P must be <=0.020% and S <=0.015%. The heat chemistry on the MTC should be checked against these limits.

WELD-ZONE HARDNESS

Grade / location	Maximum
E, X, G, S - surface	37 HRC
E, X, G, S - mean through-wall	37 HRC
V - surface	40 HRC
V - mean through-wall	40 HRC
SS grades - surface	32 HRC

S135 quick read

35 HRC is below the 37 HRC maximum. 39 HRC exceeds the published limit and triggers the applicable retest / rejection route.

TOOL-JOINT BOX HARDNESS

NON-SS TOOL JOINT BOX

285-341 HBW

Acceptance range; a value above or below the range is a conformity issue.

HARDNESS RESULT ABOVE LIMIT - DECISION PATH

- 1Initial result exceeds limit
- 2Immediate-area retest
- 3ARetest complies -> accept
- 3BRetest exceeds -> reject / permitted re-heat-treatment route



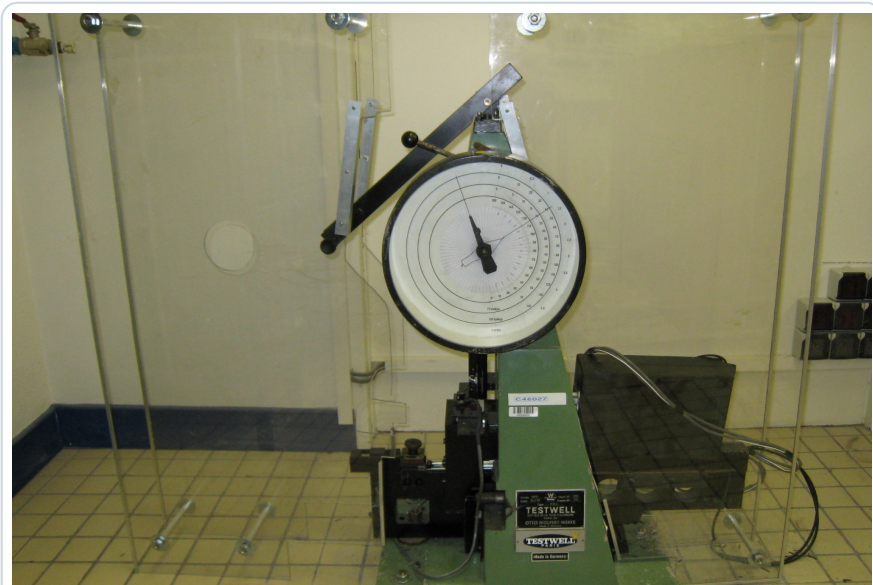
Shoulder Surface
Check contact area and condition

Tool Joint OD / ID
Dimensional inspection

Gauge Verification
Use API 7-2 gauges for acceptance

Identification Mark
Traceability and lot

Tool joint inspection points



Charpy pendulum impact testing equipment

Photo: Cjp24 / Wikimedia Commons, CC BY-SA 3.0

PSL-1 TEST CONDITION

TEST TEMPERATURE

21 C +/- 3 C

Longitudinal Charpy V-notch

FULL-SIZE SPECIMEN

10 x 10 mm

Reduced specimens use lower energy values

ABSORBED ENERGY ACCEPTANCE - DRILL PIPE BODY GRADES X / G / S / V

Specimen size	Minimum average	Minimum individual
10 x 10 mm	54 J	47 J
10 x 7.5 mm	43 J	38 J
10 x 5 mm	30 J	26 J

How to read a CVN report

A CVN result should show specimen size, test temperature, individual absorbed energies, average value, and the heat / lot represented by the test.

INSPECTION EVIDENCE - WHAT MUST BE VISIBLE

Record field	Why it matters	Buyer check
Specimen size	Acceptance energy changes with 10 x 10, 10 x 7.5, or 10 x 5 mm	Match size to the correct limit
Test temperature	PSL-1 X/G/S/V reference condition is 21 C +/- 3 C	Confirm test condition
Individual energies	A low specimen can fail even when the average looks adequate	Check each specimen
Average energy	Full-size requirement is 54 J minimum average	Compare the set average
Heat / lot identity	Determines which production quantity the test represents	Tie report to shipment records

PSL-1 DRILL PIPE BODY - SELECTED TEST FREQUENCIES

Drill pipe body category	Chemical analysis	Tensile	Charpy impact
Grade E, < 6-5/8 in.	2 product analyses / heat	1 / 400 or lot*	-
Grade E, >= 6-5/8 in.	2 product analyses / heat	1 / 200 or lot*	-
Grades X/G/S/V, < 6-5/8 in.	2 product analyses / heat	1 / 200 or lot*	1 / 200 or lot*
Grades X/G/S/V, >= 6-5/8 in.	2 product analyses / heat	1 / 100 or lot*	1 / 100 or lot*

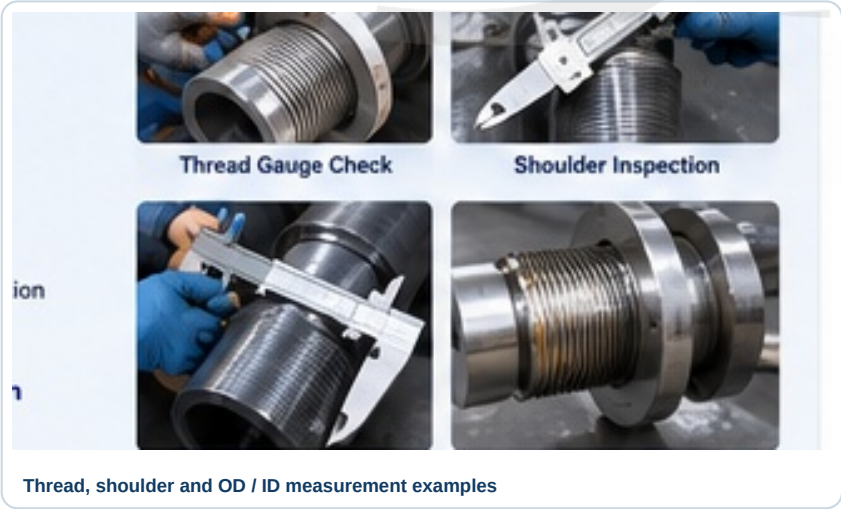
* API Table D.10 footnote: whichever is the smaller quantity. Example: 5 in. S135 PSL-1 falls in the X/G/S/V group below 6-5/8 in., so tensile and Charpy testing are 1 per 200 products or per lot, whichever is smaller.

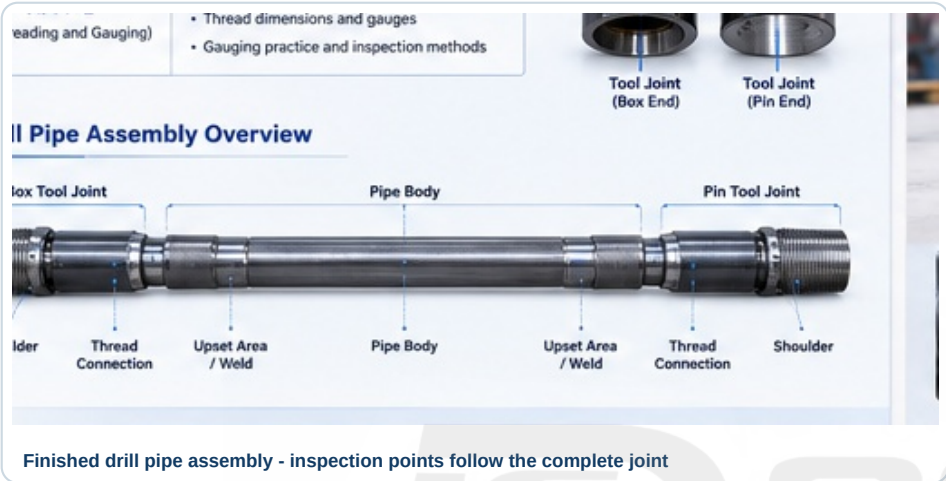
DIMENSIONAL VERIFICATION

Verification item	Published requirement
Wall thickness coverage	Each drill pipe body
Length measuring-device accuracy	+/-0.03 m
Equivalent imperial accuracy	+/-0.1 ft
Mechanical caliper contact pin diameter	6.4 mm (1/4 in.)
Inside contact-pin minimum radius	3.2 mm (1/8 in.)

WELD-LINE PSL-1 - E / X / G / S / V

Test item	Frequency
Charpy impact	1 / 400 welds or weld lot*
Outside surface hardness	All welds - 3 locations, 120 deg apart
Through-wall hardness	1 / 400 welds or weld lot*
Side-bend	1 / 400 welds or weld lot*





MATERIAL

Heat chemistry

P / S limits linked to heat

MECHANICAL

Tensile + CVN

Result + specimen + lot

HARDNESS

Weld + tool joint

Limit / range + retest path

DIMENSIONS

Body + connection

Measured values + controlled method

BUYER ACCEPTANCE MATRIX

Inspection item	Selected acceptance / coverage	Evidence to review	Release decision
S135 pipe body chemistry	P <=0.020%; S <=0.015%	Heat-linked MTC / chemistry	Accept only if heat values comply
E/X/G/S weld hardness	Surface <=37 HRC; mean through-wall <=37 HRC	Weld hardness record	Over-limit -> applicable retest / rejection route
Non-SS tool-joint box hardness	285-341 HBW	Heat-control / product hardness record	Result must remain within range
CVN - X/G/S/V, 10 x 10 mm	Avg >=54 J; individual >=47 J at 21 C +/- 3 C	CVN report with specimen values	Check average and every specimen
5 in. S135 PSL-1 body frequency	Tensile 1/200 or lot*; CVN 1/200 or lot*	Heat / lot + test report	Confirm report represents shipment quantity
Body wall thickness	Each pipe body verified	Dimensional / NDT record	Coverage must be demonstrated
Body length device accuracy	+/-0.03 m (+/-0.1 ft)	Calibration / measurement record	Measurement system within stated accuracy

RELEASE CHAIN

