

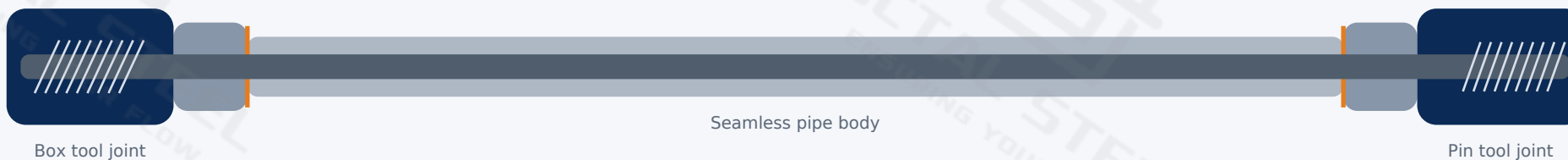
## CURRENT API STANDARD SUMMARY

# API Spec 5DP Drill Pipe Data Reference

A data-led summary of the current API Spec 5DP edition status, conventional drill-pipe grades, dimensional designations, chemistry limits, hardness controls, impact requirements, inspection frequencies, and purchaser release points.

### CURRENT CONTROLLED BASIS (AS OF AUG 2026)

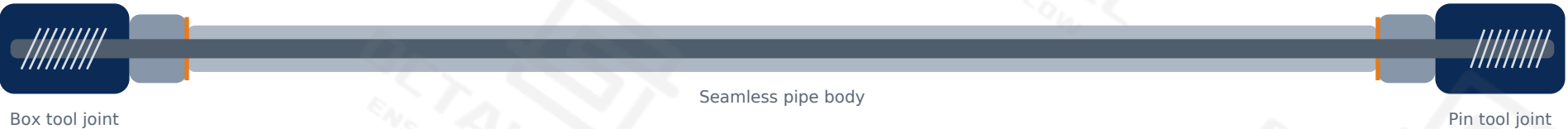
- API Spec 5DP, 2nd Edition - May 2020
- Errata 1 - July 2020
- Addendum 1 - January 2025
- Errata 2 - January 2025
- Errata 3 - March 2025



*Not a substitute for the licensed standard. Values are summarized from official API/ISO public documents and current API addenda/errata.*

Scope. API Spec 5DP specifies technical delivery conditions for steel drill pipe with upset pipe-body ends and weld-on tool joints for drilling and production operations. The document uses three product specification levels: PSL-1, PSL-2 and PSL-3; PSL-1 is the base level and additional requirements for PSL-2/3 are addressed in Annex G.

## Finished Drill Pipe Assembly



## Conventional Pipe-Body Mechanical Properties

| Grade | Specified Yield Range | Specified Yield Range | Minimum Tensile | Minimum Tensile | Procurement meaning                                                                        |
|-------|-----------------------|-----------------------|-----------------|-----------------|--------------------------------------------------------------------------------------------|
| E75   | 75-105 ksi            | 517-724 MPa           | 100 ksi         | 689 MPa         | Lower-strength conventional grade; capacity depends on OD, wall, connection and condition. |
| X95   | 95-125 ksi            | 655-862 MPa           | 105 ksi         | 724 MPa         | Higher body strength than E75; still requires connection and fatigue review.               |
| G105  | 105-135 ksi           | 724-931 MPa           | 115 ksi         | 793 MPa         | Common high-strength grade for increased tension/torque demand.                            |
| S135  | 135-165 ksi           | 931-1138 MPa          | 145 ksi         | 1000 MPa        | High-strength grade; fatigue, toughness and connection capacity remain separate checks.    |

**Important:** Grade strength is a pipe-body material property, not a finished-joint working-load rating. Tool-joint section, connection, wear and design factors may control.

## 2. Common Drill-Pipe Body Size Designations

Dimensions in inch and mm

### Common API Drill-Pipe Body OD / Nominal Weight / Wall Combinations

The combinations below are commonly used API drill-pipe body designations. The calculated body ID is OD - 2t. Final purchase release must use the current controlled API 5DP dimensional table and the approved manufacturer data sheet, including upset type and tool-joint geometry.

| OD in. | OD mm | Nominal wt lb/ft | Wall in. | Wall mm | Calculated ID in. | Calculated ID mm |
|--------|-------|------------------|----------|---------|-------------------|------------------|
| 2-3/8  | 60.3  | 4.85             | 0.190    | 4.83    | 1.995             | 50.67            |
| 2-3/8  | 60.3  | 6.65             | 0.280    | 7.11    | 1.815             | 46.10            |
| 2-7/8  | 73.0  | 6.85             | 0.217    | 5.51    | 2.441             | 62.00            |
| 2-7/8  | 73.0  | 10.40            | 0.362    | 9.19    | 2.151             | 54.64            |
| 3-1/2  | 88.9  | 9.50             | 0.254    | 6.45    | 2.992             | 75.99            |
| 3-1/2  | 88.9  | 13.30            | 0.368    | 9.35    | 2.764             | 70.21            |
| 3-1/2  | 88.9  | 15.50            | 0.449    | 11.40   | 2.602             | 66.09            |
| 4      | 101.6 | 11.85            | 0.262    | 6.65    | 3.476             | 88.29            |
| 4      | 101.6 | 14.00            | 0.330    | 8.38    | 3.340             | 84.84            |
| 4      | 101.6 | 15.70            | 0.380    | 9.65    | 3.240             | 82.30            |
| 4-1/2  | 114.3 | 13.75            | 0.271    | 6.88    | 3.958             | 100.53           |
| 4-1/2  | 114.3 | 16.60            | 0.337    | 8.56    | 3.826             | 97.18            |
| 4-1/2  | 114.3 | 20.00            | 0.430    | 10.92   | 3.640             | 92.46            |
| 4-1/2  | 114.3 | 22.82            | 0.500    | 12.70   | 3.500             | 88.90            |
| 4-1/2  | 114.3 | 24.66            | 0.550    | 13.97   | 3.400             | 86.36            |
| 4-1/2  | 114.3 | 25.50            | 0.575    | 14.61   | 3.350             | 85.09            |
| 5      | 127.0 | 16.25            | 0.296    | 7.52    | 4.408             | 111.96           |
| 5      | 127.0 | 19.50            | 0.362    | 9.19    | 4.276             | 108.61           |
| 5      | 127.0 | 25.60            | 0.500    | 12.70   | 4.000             | 101.60           |
| 5-1/2  | 139.7 | 19.20            | 0.304    | 7.72    | 4.892             | 124.26           |
| 5-1/2  | 139.7 | 21.90            | 0.361    | 9.17    | 4.778             | 121.36           |
| 5-1/2  | 139.7 | 24.70            | 0.415    | 10.54   | 4.670             | 118.62           |
| 6-5/8  | 168.3 | 25.20            | 0.330    | 8.38    | 5.965             | 151.51           |
| 6-5/8  | 168.3 | 27.70            | 0.362    | 9.19    | 5.901             | 149.89           |

#### LENGTH RANGES

#### R1 / R2 / R3

Purchase orders should state finished joint range and tolerance; do not infer length from grade.

#### UPSET FORMS

#### IU / EU / IEU

Upset geometry changes end bore, weld section and tool-joint matching.

#### ORDERING RULE

#### OD is not enough

Release OD + nominal weight + wall + upset + tool-joint OD/ID + connection + range.

Why the same OD has several weights. Nominal weight changes wall thickness and body ID, which changes tensile section, torsion section and hydraulic flow area. The tool-joint bore may be more restrictive than the pipe-body ID.

### 3. Chemistry, Hardness and Impact Data

Current Addendum 1 data

#### Chemical Composition Limits - Conventional Grades

| Product element | Grades        | Mn / Cr / Mo / C                       | P max  | S max  | Interpretation                                                               |
|-----------------|---------------|----------------------------------------|--------|--------|------------------------------------------------------------------------------|
| Pipe body       | E             | Not fixed by the public addendum table | 0.030% | 0.020% | Heat chemistry and mechanical results are reported on the MTC.               |
| Pipe body       | X, G, S, V    | Not fixed by the public addendum table | 0.020% | 0.015% | Manufacturer alloy design is controlled by the approved manufacturing route. |
| Tool joint      | E, X, G, S, V | Not fixed by the public addendum table | 0.020% | 0.015% | Tool-joint material is separately identified from the pipe-body heat.        |

#### Hardness Controls

| Area / product                 | Requirement                                                                             | Release meaning                                             |
|--------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------|
| Weld zone - grades E, X, G, S  | No surface value > 37 HRC; mean through-wall weld-zone hardness <= 37 HRC               | Applies after final weld-zone heat treatment and finishing. |
| Tool-joint box - non-SS grades | 285-341 HBW                                                                             | Current Addendum 1 range for the box tool joint.            |
| Tool-joint heat control        | One hardness control test from each steel heat used for boxes (and pins when necessary) | Record shall be available to the purchaser.                 |

#### PSL-1 Charpy V-Notch Data at 21 C +/- 3 C

| Product element                  | 10 x 10 mm                                           | 10 x 7.5 mm | 10 x 5 mm | Minimum single specimen |
|----------------------------------|------------------------------------------------------|-------------|-----------|-------------------------|
| Pipe body grades X, G, S, V      | 54 J avg                                             | 43 J avg    | 30 J avg  | 47 / 38 / 26 J          |
| Tool joints grades E, X, G, S, V | 54 J avg                                             | 43 J avg    | 30 J avg  | 47 / 38 / 26 J          |
| Grade E pipe body                | Not required at base PSL-1 unless SR 19 is specified | -           | -         | See purchase agreement  |

## 4. Inspection and Test Frequency

Selected current API 5DP controls

### Selected PSL-1 Test Frequencies

| Product / size            | Chemical analysis           | Tensile                     | Charpy                      | Hardness / bend                                                                                       |
|---------------------------|-----------------------------|-----------------------------|-----------------------------|-------------------------------------------------------------------------------------------------------|
| Grade E body < 6-5/8 in.  | 2 product analyses per heat | 1 per 400 or per lot        | Not base PSL-1              | -                                                                                                     |
| Grade E body >= 6-5/8 in. | 2 product analyses per heat | 1 per 200 or per lot        | Not base PSL-1              | -                                                                                                     |
| X/G/S/V body < 6-5/8 in.  | 2 product analyses per heat | 1 per 200 or per lot        | 1 per 200 or per lot        | -                                                                                                     |
| X/G/S/V body >= 6-5/8 in. | 2 product analyses per heat | 1 per 100 or per lot        | 1 per 100 or per lot        | -                                                                                                     |
| Tool-joint pin E/X/G/S/V  | 1 per heat (solid form)     | 1 per 200 or per lot        | 1 per 200 or per lot        | Hardness 1 per 200 or per lot when tensile specimen unavailable                                       |
| Tool-joint box E/X/G/S/V  | 1 per heat (solid form)     | -                           | 1 per 200 or per lot        | Hardness 1 per 200 or per lot                                                                         |
| Weld line E/X/G/S/V PSL-1 | -                           | 1 per 400 welds or weld lot | 1 per 400 welds or weld lot | Surface hardness: all welds at 3 locations 120 deg apart; through-wall and bend 1 per 400 or weld lot |

### Mandatory Process Controls Highlighted in Current Errata / Addendum

#### Weld-zone wet fluorescent MPI

Entire outside weld-zone surface for transverse imperfections. Black-light intensity  $\geq 1000$  uW/cm<sup>2</sup> at 365-370 nm. Particle concentration checked every 8 h or each shift.

#### Tool-joint wet magnetic-particle inspection

After heat treatment and threading, each tool joint is inspected inside and outside for longitudinal and transverse imperfections under a written procedure.

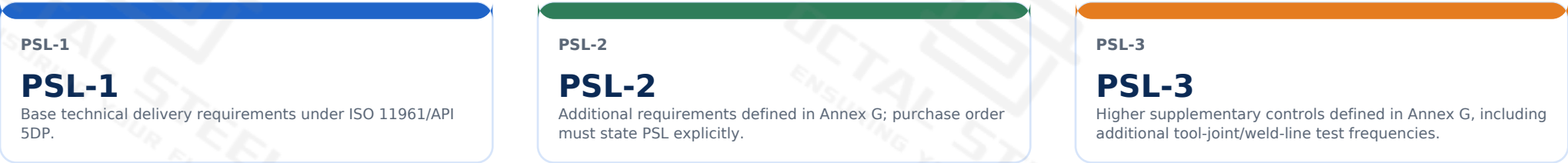
#### Pipe-body wall verification

Each pipe body is verified in a helical or longitudinal path; uncovered end/upset-transition areas require a documented prove-up method.

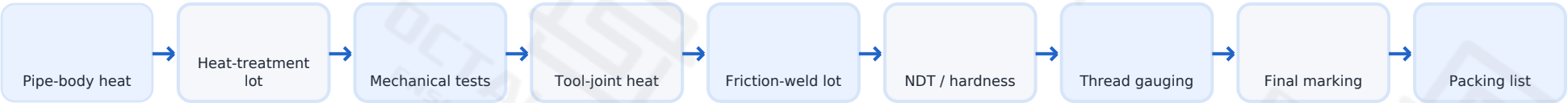
#### Measurement controls

Pipe-body length measuring device accuracy:  $\pm 0.03$  m ( $\pm 0.1$  ft). Mechanical caliper governs in case of wall-thickness dispute.

Product Specification Levels



Marking and Traceability Chain



Marking. Current Addendum 1 updates product marking to include “API 5DP”; a licensed/registered industry mark may be applied at the manufacturer’s option or when required by the purchaser. The API Monogram may only be used by an authorized licensee.

Minimum Purchase-Order Data to Release a Finished Drill Pipe

| Category               | Required entry                                        | Why it matters                                                             |
|------------------------|-------------------------------------------------------|----------------------------------------------------------------------------|
| Pipe body              | OD, nominal weight, wall, grade, range, PSL           | Defines strength section, hydraulic bore and base inspection level.        |
| Upset                  | IU / EU / IEU and approved dimensions                 | Controls end bore, transition and weld section.                            |
| Tool joint             | OD, ID, pin/box lengths, material route               | Controls connection capacity, annular clearance and hydraulic restriction. |
| Connection             | Exact API RSC or proprietary designation; gauge basis | Prevents mating mismatch and incorrect make-up torque basis.               |
| Optional features      | Hardbanding, internal coating, protectors             | Affects wear, casing compatibility and shipment protection.                |
| Inspection / documents | PSL, SRs, NDT, third-party witness, MTC, reports      | Defines release evidence and purchaser hold/witness points.                |

Official Source Basis Used for This Reference

| Source                                           | Status / content used                                                                                                         |
|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| API Spec 5DP, 2nd Edition, May 2020              | Current base edition listed by API.                                                                                           |
| API Spec 5DP Addendum 1, January 2025            | Current chemistry limits, hardness requirements, wall verification, CVN additions, test frequencies and marking updates.      |
| API Spec 5DP Errata 1, July 2020                 | Weld-zone and tool-joint wet fluorescent magnetic-particle inspection corrections.                                            |
| API Spec 5DP Errata 2, January 2025              | Tool-joint hardness-test frequency, heat control and retest provisions.                                                       |
| API Spec 5DP Errata 3, March 2025                | Corrected tool-joint hardness-test table references.                                                                          |
| ISO 11961:2018 and Amd 1:2020                    | Published international standard covering steel drill pipe and PSL-1 / PSL-2 / PSL-3.                                         |
| API RP 7G legacy drill-pipe identification table | Common OD / nominal-weight / wall designations used on Page 3; confirm controlled current 5DP tables before purchase release. |

Controlled-document caution

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Use This Reference For

| Suitable use                                       | Not sufficient by itself               |
|----------------------------------------------------|----------------------------------------|
| Initial technical review and buyer education       | Final dimensional release              |
| Grade / chemistry / hardness / inspection overview | Connection design and make-up torque   |
| Drafting PO data and ITP checkpoints               | API Monogram authorization             |
| Cross-checking supplier documents                  | Drill-string working-load calculations |