

ASTM A790 S32760 Technical Datasheet

Prepared from ASTM A790/A790M-24

1. Basic designation

| Standard | UNS designation | Type / common name | Product forms | Scope |
|--------------------|-----------------|--------------------|--------------------------------------|---|
| ASTM A790/A790M-24 | S32760 | — | Seamless / straight-seam welded pipe | General corrosive service, with particular emphasis on stress corrosion cracking resistance |

2. Chemical composition (%)

| C | Mn | P | S | Si | Ni | Cr | Mo | N | Cu |
|--|-------|--------|--------|-------|---------|-----------|---------|-----------|-----------|
| ≤0.030 | ≤1.00 | ≤0.030 | ≤0.010 | ≤1.00 | 6.0-8.0 | 24.0-26.0 | 3.0-4.0 | 0.20-0.30 | 0.50-1.00 |
| Other / notes | | | | | | | | | |
| W 0.50-1.00; PREN condition per note E: %Cr + 3.3×(%Mo + 0.5%W) + 16×%N ≥ 41 | | | | | | | | | |

3. Heat treatment requirements

| Temperature | Quench / cooling | Ordering / manufacture note |
|-----------------------------|--|---|
| 1960-2085 °F [1070-1140 °C] | Rapid cooling in water or by other means | Unless otherwise stated in the order, all pipe shall be furnished in the heat-treated condition shown in Table 1. |

4. Tensile and hardness requirements

| Condition / thickness range | Tensile strength min, ksi [MPa] | Yield strength min, ksi [MPa] | Elongation min, % | HBW max | HRC max |
|-----------------------------|---------------------------------|-------------------------------|-------------------|---------|---------|
| Standard | 109 [750] | 80 [550] | 25 | 310 | 32 |

5. Standard inspection and testing requirements

| Requirement | Details |
|--|---|
| Product analysis (when requested by purchaser) | One billet or one length of flat-rolled stock from each heat, or two pipes from each lot. Lot size: under NPS 2 = 400 lengths max; NPS 2 to 5 incl = 200 max; NPS 6 and over = 100 max. |
| Tension test | One specimen for lots of not more than 100 pipes; two specimens from two pipes for lots of more than 100 pipes. |
| Flattening test | For batch heat-treated pipe: 5% of the pipe from each heat-treated lot. For continuous or direct-quenched pipe: enough pipes to constitute 5% of lot, minimum two lengths. |
| Alternative bend test for welded pipe | A transverse guided face bend test of the weld may be used instead of flattening. If specified wall thickness ≥ 3/8 in. [9.52 mm], two side bend tests may be used instead. |
| Hardness test | Brinell or Rockwell hardness tests on specimens from two pipes from each lot. |
| Hydrostatic or nondestructive electric test | Each pipe shall be subjected to the nondestructive electric test or the hydrostatic test, at manufacturer's option unless otherwise specified by purchaser. |
| Hydrostatic test basis | Per ASTM A999/A999M, except S used in pressure calculation = 50% of specified minimum yield strength of the pipe. |
| NDE methods | Practices E213 or E309. As an alternative when specified by purchaser, each pipe may be examined by NDE in lieu of hydrostatic test. |
| Weld repair | Weld repair with filler is permitted for welded pipe NPS 6 and larger with nominal wall thickness 0.188 in. [4.8 mm] and over; repairs limited to 20% of seam length and must be completed prior to heat treatment. |

6. Dimensional / tolerance requirements

| Item | Requirement |
|---|--|
| Dimensional basis | Appendix X1.1 lists standard stainless steel pipe dimensions based on ANSI B36.19 schedules 5S, 10S, 40S, and 80S. |
| Pipe with other dimensions | Pipe having other dimensions may be furnished provided all other requirements of ASTM A790/A790M are satisfied. |
| Permitted variation in wall thickness | The wall thickness for seamless and welded pipe at any point shall be within the tolerances specified in ASTM A999/A999M; for welded pipe, the weld area is not limited by the "Over" tolerance. |
| Inspection basis for pipe ordered by NPS and schedule | The wall thickness and outside diameter for inspection for compliance are shown by Table X1.1. |
| Lengths, random | Unless otherwise agreed, sizes NPS 1/8 through NPS 8 are available in lengths up to 24 ft with permissible range 15 to |

| | |
|----------------------|--|
| | 24 ft. |
| Lengths, cut lengths | No pipe shall be less than the specified length and no more than 1/4 in. [6 mm] over it. |
| Jointers | No jointers are permitted unless otherwise specified. |

7. Filler metal listed in ASTM A790 Table 4

| AWS A5.9 class | UNS designation / note |
|--|---|
| No grade-specific filler listed in ASTM A790 Table 4 | Use compatible or purchaser-approved higher alloy filler for weld repair per Section 15 |

8. Supplementary requirements (when specified in purchase order)

| Supplementary requirement | Summary |
|---------------------------------|---|
| S1 Product analysis | Additional product analysis frequency when specified in PO. |
| S2 Transverse tension tests | One transverse tension test from one end of 10% of lengths furnished per heat; applies only to pipe over NPS 8. |
| S3 Flattening test | Flattening test on specimen from one or both ends of each pipe, as specified. |
| S4 Etching tests | Etching tests per ASTM E381 on cross section from one or both ends of each pipe. |
| S5 Radiographic examination | Entire length of weld in each double-welded pipe radiographically examined. |
| S6 Intergranular corrosion test | For material susceptible to intermetallic phases, purchaser may specify additional tests under A923 methods as appropriate. |

9. Purchase order description example

| Example wording |
|---|
| ASTM A790/A790M, UNS S32760, seamless or welded ferritic/austenitic stainless steel pipe, NPS 6, Schedule 40S, random length 6 m, heat treated per Table 1, hydrostatic test or NDE electric test, certification EN 10204 3.1, supplementary requirements as specified. |