# Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Fire Protection Use ASTM A795



*Engineered Fire Piping S.L. | c.del Pino 17, Polígono Industrial La Malena, Yuncos, Toledo – España*

*C.I.F. B - 45762119 | Inscrita en el Registro Mercantil de Toledo*

This speciﬁcation covers black and hot-dipped galvanized welded and seamless steel pipe in sizes NPS 1/2 (Note 1) to NPS 10 inclusive, with wall thicknesses as given in Table 1 and Table 2.

Pipe ordered under this speciﬁcation is intended for use in ﬁre protection systems. The pipe may be bent, but it is not intended for bending made at ambient temperature wherein the inside diameter of the bend is less than twelve times the outside diameter of the pipe being bent

**This pipe is suitable for joining by the following methods:**

## Light-Weight Fire Protection Pipe

## Rolled groove, welding, and ﬁttings for plain end pipe. See Table 1 for dimensions

## Standard-Weight Fire Protection Pipe:

## Cut or rolled groove, threading, welding, and ﬁttings for plain end pipe. See Table 2 for dimensions.

## Pipe may be furnished in the following types:

* **Type F:** Furnace-butt welded, continuous welded.
* **Type E:** Electric-resistance-welded, or
* **Type S:** Seamless.

**Materials and Manufacture:**

The steel for both welded and seamless pipe shall be made by one or more of the following processes: open-hearth, electric-furnace, or basic-oxygen.

Welded pipe NPS 4 and under may be furnace-welded or electric-resistance welded. Welded pipe over NPS 4 shall be electric-resistance–welded.

The weld seam of electric-resistance-welded pipe in Grade B shall be heat treated after welding to a minimum of 1000°F (540°C) so that no untempered martensite remains, or otherwise processed in such a manner that no untempered martensite remains.

**Chemical Composition**

The steel shall conform to the requirements as to chemical composition speciﬁed in the following Table:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Carbon** | **Manganese** | **Phosphorus** | **Sulfur** |
| GRADE | **Composition max, %** | | | |
| A  Type E (electric-resistance-welded pipe) & Type S (seamless pipe) | 0,25 | 0,95 | 0,035 | 0,035 |
| B  Type E (electric-resistance- welded pipe) & Type S (seamless pipe) | 0,3 | 1,20 | 0,035 | 0,035 |
| Type F (furnace-welded pipe)\* | ? | ? | 0,035 | 0,035 |

*\** *Open-hearth, electric-furnace, or basic oxygen*

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**Weight** For the pipe covered by Table 1 and Table 2, the weight shall not vary more than ± 5% from that prescribed.

Unless pipes ordered under special requirements the Diameter permissible variations shall be the included in the following table:

|  |  |  |
| --- | --- | --- |
| **NPS (DN)** | **Outside Diameter Permissible Variations** | |
| Inches (mm) | Over  Inches (mm) | Under Inches (mm) |
| ≤1 1/2" (≤ 40) | 1/64 - 0,4 | 1/32 - 0,8 |
| ≥2" (≥ 50) | 1 % standard specified | 1 % standard specified |

**Wall thickness:** The minimum wall thickness at any point shall not vary more than 12.5 % under the nominal wall thickness.

**Pipes Lengths:** Unless otherwise speciﬁed, pipe shall be furnished in single random lengths of 16 to 22 ft (4.9 to 6.7 m)..

## Hydrostatic Test and Galvanizing Process:

* + Hydrostatic Test:

Each length of pipe shall be subjected to a hydrostatic test by the manufacturer. The minimum test pressure shall be as prescribed in Table 1 and Table 2. This does not prohibit testing at a higher pressure at the manufacturer’s option. The manufacturer may apply the hydrostatic test to pipe with plain ends, with threads only, or with threads and couplings. The hydrostatic test may be applied to single or multiple lengths.

* + Galvanizing process:

Galvanized pipe shall be coated with zinc inside and outside by the hot-dip process. The zinc used for the coating shall be any grade of zinc conforming to Speciﬁcation *ASTM B 6 Specification for Zinc.*

The weight of the zinc coating shall not be less than 1.5 oz/ft2 (0.46 kg/m2) as determined from the average of two specimens tested in accordance with 16.1 and not less than 1.3 oz/ft2 (0.40 kg/m2) for either of the specimens.

The weight of coating expressed in ounces per square foot or kilograms per square metre shall be calculated by dividing the total weight of zinc, inside plus outside, by total area, inside plus outside, of the surface coated.

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|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **TABLE 1 DIMENSIONS, WEIGHTS, AND TEST PRESSURE FOR LIGHT-WEIGHT FIRE PROTECTION PIPE - SCHEDULE 10A** | | | | | | | | | | | |  |
| NPS (Nominal Pipe Size) | Outside Diameter  *in. mm* | | Nominal Wall Thickness  *in. mm* | | Weight Plain End  *lb/ft kg/m* | | Furnace  Welded  *psi* | **Test Pressure**  Seamless and Electric- Resistance-Welded  *Mpa psi Mpa* | | | |
| 1" | 1,315 | 33,4 | 0,109 | 2,77 | 1,41 | 2,09 | 500 | 3,45 | 700 | 4,83 |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 1/4" | 1,660 | 42,2 | 0,109 | 2,77 | 1,81 | 2,69 | 500 | 3,45 | 1000 | 6,89 |
| 1 1/2" | 1,900 | 48,3 | 0,109 | 2,77 | 2,09 | 3,11 | 500 | 3,45 | 1000 | 6,89 |
| 2" | 2,375 | 60,3 | 0,109 | 2,77 | 2,64 | 3,93 | 500 | 3,45 | 1000 | 6,89 |
| 2 1/2" | 2,875 | 73,0 | 0,120 | 3,05 | 3,53 | 5,26 | 500 | 3,45 | 1000 | 6,89 |
| 3" | 3,500 | 88,9 | 0,120 | 3,05 | 4,34 | 6,46 | 500 | 3,45 | 1000 | 6,89 |
| 4" | 4,500 | 114,3 | 0,120 | 3,05 | 5,62 | 8,37 | 500 | 3,45 | 1200 | 8,27 |
| 5" | 5,563 | 141,3 | 0,134 | 3,40 | 7,78 | 11,58 | B | B | 1200 | 8,27 |
| 6" | 6,625 | 168,3 | 0,134 | 3,40 | 9,30 | 13,85 | B | B | 1000 | 6,89 |
| 8" | 8,625 | 219,1 | 0,188C | 4,78 | 16,96 | 25,26 | B | B | 800 | 5,51 |
| 10" | 10,750 | 273,1 | 0,188C | 4,78 | 21,23 | 31,62 | B | B | 700 | 4,83 |

*A Schedule 10 corresponds to Schedule 10S as listed in ANSI B 36.19 for NPS 3⁄4 through 6 only.*

*B Furnace-welded pipe is not made in sizes larger than NPS 4.*

*C Not Schedule 10.*

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| TABLE 2 DIMENSIONS, WEIGHTS, TEST PRESSURES FOR STANDARD-WEIGHT FIRE PROTECTION PIPE --SCHEDULE 30 AND SCHEDULE 40 | | | | | | | | | | | | | | |
| NPS  (Nominal Pipe Size) | Outside Diameter  *in. mm* | | Nominal Wall Thickness  *in. mm* | | Weight Plain End  *lb/ft kg/m* | | WeightThread And Coupling  *lb/ft kg/m* | | B | Test Pressure  Furnace-Welded Seamless and  Electric-Resistance-Welded  *psi Mpa psi Mpa* | | | |
| 1" | 1,315 | 33,4 | 0,133 | 3,88 | 1,68 | 2,50 | 1,68 | 2,50 |  | 700 | 4,83 | 700 | 4,83 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 1/4" | 1,660 | 42,2 | 0,140 | 3,56 | 2,27 | 3,39 | 2,28 | 3,40 | 1000 | 6,89 | 1000 | 6,89 |
| 1 1/2" | 1,900 | 48,3 | 0,145 | 3,68 | 2,72 | 4,05 | 2,73 | 4,07 | 1000 | 6,89 | 1000 | 6,89 |
| 2" | 2,375 | 60,3 | 0,154 | 3,91 | 3,66 | 5,45 | 3,69 | 5,50 | 1000 | 6,89 | 1000 | 6,89 |
| 2 1/2" | 2,875 | 73,0 | 0,203 | 5,16 | 5,80 | 8,64 | 5,83 | 8,68 | 1000 | 6,89 | 1000 | 6,89 |
| 3" | 3,500 | 88,9 | 0,216 | 5,49 | 7,58 | 11,29 | 7,62 | 11,35 | 1200 | 8,27 | 1000 | 6,89 |
| 4" | 4,500 | 114,3 | 0,237 | 6,02 | 10,80 | 16,09 | 10,91 | 16,25 | 1200 | 8,27 | 1200 | 8,27 |
| 5" | 5,563 | 141,3 | 0,258 | 6,55 | 14,63 | 21,79 | 14,82 | 22,07 | B | B | 1200 | 8,27 |
| 6" | 6,625 | 168,3 | 0,280 | 7,11 | 18,99 | 28,29 | 19,20 | 28,60 | B | B | 1200 | 8,27 |
| 8" | 8,625 | 219,1 | 0,277 | 7,04 | 24,72 | 38,62 | 25,57 | 38,09 | B | B | 1200 | 8,27 |
| 10" | 10,750 | 273,1 | 0,307 | 7,80 | 34,27 | 51,05 | 35,78 | 53,29 | B | B | 1000 | 6,89 |