Standard Speciﬁcation for Electric-Resistance-Welded Steel Pipe

*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*

# ASTM A135

This speciﬁcation covers two grades of electric-resistance-welded steel pipe in NPS 2 to NPS 30 inclusive, with nominal (average) wall thickness up to 0.500 in. (12.70 mm), inclusive, and in nominal sizes NPS 3⁄4 to NPS 5 inclusive with nominal (average) wall thickness 0.083 in. (2.11 mm) to 0.134 in. (3.40 mm), depending on size.

The pipe is intended for conveying gas, vapor, water or other liquid; only Grade A is adapted for ﬂanging and bending This provision is not intended to prohibit the cold bending of Grade B pipe

**Manufacture**

The steel shall be made by either or both of the following processes: basic-oxygen or electric-furnace..

The pipe shall be manufactured from ﬂat rolled steel in individual lengths or in continuous length by electric-resistance or electric-induction welding without the addition of extraneous material.

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

**Chemical Composition** The steel shall conform to the requirements prescribed in the Table below, based on the heat analysis:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Carbon** | **Manganese** | **Phosphorus** | **Sulfur** |
| GRADE | **Composition, max, %.** |
| A | 0,25 | 0,95 | 0,035 | 0,035 |
| B | 0,30 | 1,20 | 0,035 | 0,035 |

**Mechanical Properties**

Tensile PropertiesThe material shall conform to the requirements as to tensile properties prescribed in the above Table:

|  |  |  |
| --- | --- | --- |
|  | **GRADE A** | **GRADE B** |
| Tensile strength, min, ksi (MPa) | 48 (331) | 60 (414) |
| Yield strength, min, ksi (MPa) | 30 (207) | 35 (241) |

**Dimensions, Weight, and Permissible Variations**

The **Weight** of any length of pipe other than Schedule 10 shall not vary more than 3.5 % under or 10 % over that speciﬁed, but the carload weight shall be not more than 1.75 % under the nominal weight

The weight of pipe furnished to Schedule 10 shall not vary more than 610 % from that calculated using the weight (mass) per unit length prescribed in Table 1.

 The **Outside Diameter** shall not vary more than 61 % from the nominal size speciﬁed.

The minimum **Wall Thickness** at any point shall be not more than 12.5 % under the speciﬁed wall thickness.

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**Lengths:**

Unless otherwise speciﬁed, Schedule 10 pipe shall be between 16 and 22 ft (4.9 and 6.7 m) for a minimum of 90 %of the footage furnished, with any balance being shorter lengths at least 8 ft (2.4 m) long.

Pipes other than SCH 10 shall be furnished in lengths averaging 38 ft (11.6 m) or over, with a minimum length of 20 ft (6.1 m), but no more than 5 % may be under 32 ft (9.8 m).

Jointers made by welding are permissible.

When threaded pipe is ordered, jointers shall be made by threaded connections and shall not exceed 5 % of the order.

**Hydrostatic Test:**

Each length of pipe shall be hydrostatically tested at the mill, without leakage through the wall. SCH 10 pipes shall be tested at the test pressure included on Table 1. Other than SC 10 pipes shall be tested to a pressure calculated from the following equation:

 *P = 2St/D*

*where:*

*P = Minimum hydrostatic test pressure, psi, (MPa). The test pressure need not exceed 2500 psi (17.24 MPa),*

*S = Allowable ﬁber stress 18 000 psi (124 MPa) for Grade 18 000 psi (124 MPa) for Grade A and 21 000 psi (144 MPa) for Grade B. This does not prohibit testing at higher pressure at the manufacturer’s option.*

*t = Speciﬁed wall thickness, in., and*

*D = Speciﬁed outside diameter, in.*

|  |
| --- |
| **TABLE 1 Dimensions, Nominal Weights, and Test Pressures for Light Wall Steel Pipe** |
|  |  | **SCH 10** | **Test Pressure Mpa (psi)** |
| NPS | Outside diamenter mm (in) |  Specified Wall Thickness mm (in) | Weight(Mass) Per Unit Lengthkgm (lb/ft) | GRADE A | GRADE B |
| 1 | 33,4 (1,315) | 2,77 (0,109) | 2,09 (1,41) | 17,24 (2500) | 17,24 (2500) |
| 1 1/4 | 42,2 (1,660) | 2,77 (0,109) | 2,69 (1,81) | 17,24 (2500) | 17,24 (2500) |
| 1 1/2 | 48,3 (1,900) | 2,77 (0,109) | 3,11 (2,09) | 16,55 (2400) | 16,55 (2400) |
| 2 | 60,3 (2,375) | 2,77 (0,109) | 3,93 (2,64) | 14,48 (2100) | 13,10 (1900) |
| 2 1/2 | 73,0 (2,875) | 3,05 (0,120) | 5,26 (3,53) | 11,72 (1700) | 11,72 (1700) |
| 3 | 88,9 (3,500) | 3,05 (0,120) | 6,46 (4,34) | 10,34(1500) | 9,65 (1400) |
| 4 | 114,3 (4,500) | 3,05 (0,120) | 8,37 (5,62) | 6,21 (900) | 7,58 (1100) |
| 5 | 141,3 (5,563) | 3,40 (0,134) | 11,58 (7,78) | 5,86 (850 | 6,89 (1000) |