

ASTM A53 TYPE E GRADE A and B PIPE



SCOPE

Covers black and hot-dipped galvanized electric resistance welded, Grade A and B. Pipe is intended for mechanical and pressure applications and is acceptable for ordinary uses in steam, water, gas and air lines. SAHATHAI ASTM A53 is UL Listed, sizes 1/2" through 8" nominal. Pipe is suitable for welding, threading, grooving and bending. Pipe is furnished either non-expanded or cold expanded at the option of the manufacturer. Produced to ASTM A53/A53M latest revision.

MANUFACTURE

The weld seam of electric resistance welded pipe in Grade B sizes 4" through 8" nominal, shall be heat treated after welding to a min 1000 °F so that no untempered martensite remains.

HOT-DIP GALVANIZED

The average weight of zinc coating shall be not less than 1.8 oz. per sq. ft. of surface (inside and outside). When galvanized pipe is bent or otherwise fabricated to a degree which causes zinc coating to stretch or compress beyond the limit

CHEMICAL REQUIREMENTS

Composition, max. %

| | C | Mn | P | S | Co ^A | Ni ^A | Cr ^A | Mo ^A | V ^A |
|---------|-------------------|------|------|-------|-----------------|-----------------|-----------------|-----------------|----------------|
| Grade A | 0.25 ^B | 0.95 | 0.05 | 0.045 | 0.40 | 0.40 | 0.40 | 0.15 | 0.08 |
| Grade B | 0.30 ^C | 1.20 | 0.05 | 0.045 | 0.40 | 0.40 | 0.40 | 0.15 | 0.08 |

A : The combination of these five elements shall not exceed 1.00%.

B : For each reduction of 0.01 % below the specified carbon maximum, an increase of 0.06 % manganese above the specified maximum will be permitted up to a maximum of 1.35 %.

C : For each reduction of 0.01 % below the specified carbon maximum, an increase of 0.06 % manganese above the specified maximum will be permitted up to a maximum of 1.65 %.

TENSILE REQUIREMENTS

| | Grade A | Grade B |
|----------------------------|----------------------------------|---------|
| Tensile Strength, min, Psi | 48 000 | 60 000 |
| Yield Strength, min, Psi | 30 000 | 35 000 |
| Elongation in 2" | Refer to A53 Table x 4.1, latest | |

BENDING TEST (COLD) FOR NPS 2 and UNDER:

| | Degree of Bend | Diameter of Mandrel |
|---------------|----------------|----------------------------|
| Standard | 90° | 12 x outside pipe diameter |
| Close Coiling | 180° | 8 x outside pipe diameter |

FLATTENING TEST - NPS 2-1/2 and Greater

Weld located 0/90 degree from line of direction of force.

Stage-1 : For weld ductility unit 2/3 of outside dia of specimen pipe.

Stage-2 : For ductility of steel unit 1/3 of outside dia of specimen pipe.

Stage-3 : Full flattening for testing of laminated and unsou

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HYDROSTATIC TESTING

All information contained herein is accurate as known at the time of publication.

STS reserves the right to change product specifications without notice and without incurring obligations.

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Hydrostatic test pressures for plain-end pipe are indicated below

| NPS | 0.188 in. | | SCH 40 | | SCH 80 | |
|----------------|-----------|------|--------|------|--------|------|
| | GR.A | GR.B | GR.A | GR.B | GR.A | GR.B |
| 1/2" through 1 | - | - | 700 | - | 850 | - |
| 1-1/4" | - | - | 1200 | - | 1800 | - |
| 1-1/2" | - | - | 1200 | - | 1800 | - |
| 2" | - | - | 2300 | - | 2500 | - |
| 2-1/2" | - | - | 2500 | - | 2500 | - |
| 3 | - | - | 2220 | - | 2500 | - |
| 3-1/2" | - | - | 2030 | - | 2800 | - |
| 4" | 1500 | 1750 | 1900 | 2210 | 2700 | 2800 |
| 5" | 1220 | 1420 | 1670 | 1950 | 2430 | 2800 |
| 6" | 1020 | 1190 | 1520 | 1780 | 2350 | 2740 |
| 8" | 780 | 920 | 1340 | 1570 | - | - |

DIMENSIONS and WEIGHTS

| BLACK PLAIN END | | | | | | |
|-----------------|-----------|----------------|-------------|----------------|-------------|----------------|
| Nominal Size | OD Inches | Wall 0.188 in. | SCH 40 | | SCH 80 | |
| | | Weight Lb./Ft. | Wall Inches | Weight Lb./Ft. | Wall Inches | Weight Lb./Ft. |
| 1/2" | .840 | - | .109 | .85 | .147 | 1.09 |
| 3/4" | 1.050 | - | .113 | 1.13 | .154 | 1.48 |
| 1" | 1.315 | - | .133 | 1.68 | .179 | 2.17 |
| 1-1/4" | 1.660 | - | .140 | 2.27 | .191 | 3.00 |
| 1-1/2" | 1.900 | - | .145 | 2.72 | .200 | 3.63 |
| 2" | 2.375 | - | .154 | 3.66 | .218 | 5.03 |
| 2-1/2" | 2.875 | - | .203 | 5.80 | .276 | 7.67 |
| 3" | 3.500 | - | .216 | 7.58 | .300 | 10.26 |
| 3-1/2" | 4.000 | - | .226 | 9.12 | .318 | 12.52 |
| 4" | 4.500 | 8.67 | .237 | 10.79 | .337 | 14.98 |
| 5" | 5.563 | 10.80 | .237 | 14.62 | .375 | 20.78 |
| 6" | 6.625 | 12.94 | .28 | 18.97 | .432 | 28.57 |
| 8" | 8.625 | 16.96 | .322 | 28.58 | - | - |

PERMISSIBLE VARIATIONS IN WALL THICKNESS

Minimum wall thickness at any point shall not be more than 12.5% under nominal wall thickness specified.

PERMISSIBLE VARIATIONS IN OUTSIDE DIAMETER

NPS 1-1/2 and under $\pm .016"$

NPS 2 and over $\pm 1%$

PERMISSIBLE VARIATIONS IN WEIGHT PER FOOT

Pipe shall not vary more than $\pm 10%$ from the standard specified.

END FINISH

Plain End:

NPS 1-1/2 and smaller: unless otherwise specified on order, end finish shall be at the option of the manufacturer.

NPS 2 and larger: Sch 40 and Sch 80 weights: ends beveled to angle of 30°, +5°, -0° with a root face of 1/16" \pm 1/32".

Threaded: To ANSI Standard B 1.20.1

Couplings: To ASTM Standard A865.

PRODUCT MARKING

Each length of pipe 1/2 NPS and larger is continuously stenciled to show the manufacturer, the grade of pipe (ASTM A53), the kind of pipe (E for electric resistance welded, A,B for Grade A,B) the size, and length. Stencil markings indicate UL Listing Approval for sizes 1/2" through 8" nominal, Bar Coding is acceptable as a supplementary identification method.

ASTM A135 GRADE A and B PIPE



SCOPE

Covers two grade of electric resistance welded. steel piping to meet ASTM specifications A135 Grade A and Grade B that is often used in the conveying of gas, vapor, water or other liquids. While the ASTM A135 specification references nominal pipe sizes (NPS), SAHATHAI produces piping sizes up to 8" OD and in wall thicknesses up to 0.148" nominal that meet the requirements called out for in produced to ASTM A135/A135M latest revision.

MANUFACTURE

The weld seam of electric resistance welded pipe in Grade B sizes 3" through 8" nominal, shall be heat treated after welding to a min 1000 °F so that no untempered martensite remains.

CHEMICAL REQUIREMENTS

Composition, max. %

| | C | Mn | P | S |
|---------|------|------|-------|-------|
| Grade A | 0.25 | 0.95 | 0.035 | 0.035 |
| Grade B | 0.30 | 1.20 | 0.035 | 0.035 |

TENSILE REQUIREMENTS

| | Grade A | Grade B |
|----------------------------------|----------|---------|
| Tensile Strength, min, MPa | 330 | 415 |
| Yield Strength, min, MPa | 205 | 240 |
| Elongation in 2 in. min, % : | | |
| Wall thickness less than 1/16 in | 56t+16.5 | 148t+14 |
| Tested using a full-size | 35 | 30 |

FLATTENING TEST

Weld located 0/90 degree from line of direction of force.

Stage-1 : For weld ductility unit 2/3 of outside dia of specimen pipe.

Stage-2 : For ductility of steel unit 1/3 of outside dia of specimen pipe.

Stage-3 : Full flattening for testing of laminated and unsound material.

PERMISSIBLE VARIATIONS IN WALL THICKNESS

Minimum wall thickness at any point shall not be more than 12.5% under nominal wall thickness specified.

PERMISSIBLE VARIATIONS IN OUTSIDE DIAMETER

The outside diameter shall not vary more than $\pm 1\%$ from the nominal size specified.

PERMISSIBLE VARIATIONS IN WEIGHT PER FOOT

Pipe shall not vary more than $\pm 10\%$ from the standard specified.

DIMENSIONS, WEIGHTS AND TEST PRESSURES

| NPS | DN | OD Inches | SCH 10 | | Test Pressure, psi | |
|--------|-----|-----------|-------------|----------------|--------------------|---------|
| | | | Wall Inches | Weight Lb./Ft. | Grade A | Grade B |
| 3/4" | 20 | 1.050 | .083 | .86 | 2500 | - |
| 1" | 25 | 1.315 | .109 | 1.40 | 2500 | - |
| 1-1/4" | 32 | 1.660 | .109 | 1.81 | 2400 | - |
| 1-1/2" | 40 | 1.900 | .109 | 2.09 | 2100 | - |
| 2" | 50 | 2.375 | .109 | 2.64 | 1700 | - |
| 2-1/2" | 65 | 2.875 | .120 | 3.53 | 1500 | - |
| 3" | 80 | 3.500 | .120 | 4.33 | 1200 | 1400 |
| 3-1/2" | 90 | 4.000 | .120 | 4.97 | 1000 | 1200 |
| 4" | 100 | 4.500 | .120 | 5.61 | 900 | 1100 |
| 5" | 125 | 5.563 | .134 | 7.77 | 850 | 1000 |
| 6" | 150 | 6.625 | .134 | 9.27 | 750 | 900 |
| 8" | 200 | 8.625 | .148 | 13.41 | 650 | 750 |

END FINISH

Plain End:

Schedule 10: Plain ends pipe for welding beveled to angle of 30°, +5°, -0° with a root face of 1/16" \pm 1/32".

Threaded: To ANSI Standard B 1.20.1

Couplings: To ASTM Standard A865.

PRODUCT MARKING

Each length of pipe 3/8 NPS and larger is continuously stenciled to show the manufacturer, the grade of pipe ASTM A135 (Electric Resistance Welded, A,B for Grade A,B) the size, and length. Bar Coding is acceptable as a supplementary identification method.

All information contained herein is accurate as known at the time of publication.

STS reserves the right to change product specifications without notice and without incurring obligations.

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