

CLASSIFICATION OF TUBULAR GOODS:*

There are five general categories of tubular goods which are manufactured to various standards and specifications.

1. Standard pipe is intended for ordinary use such as steam, water, air and gas lines, and plumbing and heating applications. Standard pipe is produced in Continuous Weld, Electric Resistance Weld and Seamless. Standard pipe accounted for 21.7% of all Tubular Products shipped in the United States in 1995. Average yearly shipments were approximately 2,675,000 tons.

2. Line pipe is generally intended for use by the oil and gas industry for the conveyance of oil and gas. Line pipe accounted for 15.2% of all Tubular Products shipped in the United States in 1995. Average yearly shipments were approximately 1,875,000 tons.

3. Oil Country Tubular Goods (OCTG) encompasses drill pipe, and tubing. It is used in the drilling and operation of gas and oil wells. Oil Country products accounted for 13.9% of all the Tubular Products shipped in the United States in 1995. Average yearly shipments were approximately 1,700,000 tons.

4. Pressure tubing is intended for use in pressure applications such as boilers and condensers. Pressure tubing accounted for 1.8% of all Tubular Products shipped in the United States in 1995. Average yearly shipments were approximately 210,000 tons.

5. Mechanical tubing is used for mechanical and structural applications for machining purposes. Mechanical tubing accounted for 34.3% of all Tubular Products shipped in the United States in 1995. Average yearly shipments were approximately 4,100,000 tons.

* Detailed information on each classification of tubular goods is given in the appropriate section of this manual.

HOW PIPE IS MEASURED

Pipe sizes NPS 1/8 thru NPS 12 are known by their nominal diameters. The nominal diameter does not indicate a true dimension. As an example, NPS 6 pipe in standard weight has an outside dimension of 6.625 inch. All sizes of pipe with a nominal inside diameter of NPS 1/8 thru NPS 12 have a standardized outside diameter. This OD dimension was originally selected so that pipe with a standard wall thickness would have an inside diameter approximately equal to the nominal pipe size. In all sizes of pipe, the outside diameter remains constant; wall thickness affects the inside diameter only. The heavier the wall the smaller the inside diameter. Pipe larger than NPS 12 nominal is called large OD pipe and is known by its outside diameter. Thus, NPS 16 pipe size has an OD of 16 inch. In large OD pipe, 3/8 inch wall thickness is considered standard weight and 1/2 inch wall thickness is considered extra heavy weight.

In the past, pipe was produced basically in three weights: standard, extra heavy, and double extra heavy. In recent years the American National Standards Institute (ANSI) assigned schedule numbers to classify wall thicknesses for different pressure applications. In nominal pipe sizes, NPS 1/8 thru NPS 10, Schedule 40 is identical with standard weight pipe. Schedule 80 is identical with extra heavy weight pipe in nominal NPS 1/8 thru NPS 8 larger sizes. Schedule 40 and 80 can vary greatly from standard and extra heavy pipe. See ANSI B 36.10.

Pipe NPS 1/8 thru NPS 1-1/2 is normally ordered by its nominal pipe size and weight. In recent years it has become common practice to specify pipe NPS 2 diameter and larger by its exact outside diameter, and either the wall thickness expressed in decimals or fractions, or by the per foot weight.

WEIGHT OF PIPE

The weight of steel pipe is expressed in weight per foot. There are two kinds of steel pipe weights. Actual and theoretical. Scale weights (actual) may vary from theoretical weights because of tolerances in the manufacturing process. All weights per foot in the charts contained in this manual are based on theoretical weights. All weights are calculated on the basis of a cubic inch of steel weighs 0.2836 pounds.

The formula used to calculate the weight of steel pipe is $W = 10.69 (D-t) t$.

D = Outside diameter to three decimal places t = Wall thickness to three decimal places

*NOTE Formula has changed from 10.68 to 10.69 due to a revised density of steel.

REJECT, STRUCTURAL GRADE, LIMITED SERVICE PIPE

Producing mills, at the time of manufacturing, reject pipe which cannot be classified as a prime product because of some physical or chemical defect. This material is sold by the mills to steel pipe distributors, steel products, fabricators, and consumers.

Mill rejects are sold on an as is basis and carry no warranty of any kind either expressed or implied.

Reject pipe is available in CW, ERW, DSAW and Seamless, in all sizes weights, and classes of material. Although reject pipe carries no warranty whatsoever, it can have application for structural purpose. Some typical examples where reject pipe has been used are: handrails, columns, posts, piling, sandwash, casing, culverts, fence caissons, sign poles, bumpers, bracing, parking meter posts, towers, supports, rollers, etc. Reject pipe is normally priced substantially under prime pipe and can affect large savings in the right application. However the buyer should be kept continually aware that this material carries no warranty of any kind, either expressed or implied from the producing mill or the pipe distributor.

Reject pipe is also known in the trades as structural grade pipe and/or limited Service Pipe. In certain instances, encompasses pipe which is manufactured to a specific ASTM or API specification, but because of some chemical or physical flaw does not meet the rigid requirements of the intended specification. This pipe could be subjected to lesser hydrostatic test pressures than the original specifications required and this product could be classified as Limited Service or Minimum Test Pipe. Limited Service or Minimum Test Pipe of this description can have application in low pressure situations such as water well or surface casing. Generally, when Limited Service Pipe has been subjected to a minimum test it will be clearly marked on the product.