

Definition and Details of Pipe

What is a Pipe?

Pipe is a hollow tube with round cross section for the conveyance of products. The products include fluids, gas, pellets, powders and more. The word pipe is used as distinguished from tube to apply to tubular products of dimensions commonly used for pipeline and piping systems. On this website, pipes conforming to the dimensional requirements of: **ASME B36.10** Welded and Seamless Wrought Steel Pipe and **ASME B36.19** Stainless Steel Pipe will be discussed.

Pipe or Tube?

In the world of piping, the terms pipe and tube will be used. Pipe is customarily identified by "Nominal Pipe Size" (NPS), with wall thickness defined by "Schedule number" (SCH).

Tube is customarily specified by its outside diameter (O.D.) and wall thickness (WT), expressed either in Birmingham wire gage (BWG) or in thousandths of an inch.

Pipe: NPS 1/2-SCH 40 is even to outside diameter 21,3 mm with a wall thickness of 2,77 mm.

Tube: 1/2" x 1,5 is even to outside diameter 12,7 mm with a wall thickness of 1,5 mm.

The principal uses for tube are in Heat Exchangers, instrument lines and small interconnections on equipment such as compressors, boilers etc..



Materials for Pipe

Engineering companies have materials engineers to determine materials to be used in piping systems. Most pipe is of carbon steel (depending on service) is manufactured to different ASTM standards.

Carbon-steel pipe is strong, ductile, weldable, machinable, reasonably, durable and is nearly always cheaper than pipe made from other materials. If carbon-steel pipe can meet the requirements of pressure, temperature, corrosion resistance and hygiene, it is the natural choice.

Iron pipe is made from cast-iron and ductile-iron. The principal uses are for water, gas and sewage lines.

Plastic pipe may be used to convey actively corrosive fluids, and is especially useful for handling corrosive or hazardous gases and dilute mineral acids.

Other Metals and Alloys pipe made from copper, lead, nickel, brass, aluminium and various stainless steels can be readily obtained. These materials are relatively expensive and are selected usually either because of their particular corrosion resistance to the process chemical, their good Heat Transfer, or for their tensile strength at high temperatures. Copper and copper alloys are traditional for instrument lines, food processing and Heat Transfer equipment. Stainless steels are increasingly being used for these.

Lined Pipe

Some materials described above, have been combined to form lined pipe systems. For example, a carbon steel pipe can be internally lined with material able to withstand chemical attack permits its use to carry corrosive fluids. Linings (Teflon®, for example) can be applied after fabricating the piping, so it is possible to fabricate whole pipe spools before lining.

Other internal layers can be: glass, various plastics, concrete etc., also coatings, like Epoxy, Bituminous Asphalt, Zink etc. can help to protect the inner pipe.

Many things are important in determining the right material. The most important of these are pressure, temperature, product type, dimensions, costs etc..