

High-Quality Pipeline Materials



Natural gas transmission pipelines are built with pipe manufactured from high-strength carbon steel produced under strict engineering and metallurgical specifications developed by the American Petroleum Institute (API) and approved by the Pipeline and Hazardous Materials Administration (PHMSA) to ensure safety.

This high-strength, specialty steel is not what you find in most consumer products. One particular standard, API Specification 5L, sets requirements for pipe made to transport natural gas and petroleum products. This specification includes standards for the dimensional, physical, mechanical, and chemical properties of the carbon steel. API certifies several pipe mills in North America and around the world to manufacture API 5L line pipe for the natural gas industry. Pipe mills produce two types of line pipe: seamless and welded.

Seamless pipe is formed from a cylindrical bar of steel that is heated to a very high temperature and then is pierced with a probe to create a hole through the cylinder. Rollers size the cylinder to produce the proper diameter and wall thickness. This technique is used to make small diameter pipe, from 0.5 inches to 24 inches in diameter.

Mills that produce line pipe meet stringent criteria for steel making and pipe production technologies to ensure safe, reliable pipeline service.

Most pipe produced for interstate natural gas pipelines is the welded variety because interstate systems require larger diameter pipe, generally 24 to 42 inches in diameter. Pipe mills manufacture welded line pipe by forming a steel plate or coil into a cylindrical shape, and closing the seam using a welding process. The mill evaluates the quality of the weld seam using ultrasonic and/or radiological inspection methods and pressure tests each joint of pipe to levels significantly higher than the eventual operating pressure of the pipeline. The mill and its customer want to make sure that the pipe can do its job safely.

The pipe is further tested to ensure that it meets all requirements of steel chemistry, strength, toughness and dimensional characteristics. Mills that produce line pipe to API/PHMSA specifications meet stringent criteria for steel making and pipe production technologies to ensure safe, reliable pipeline service. During the construction process, pipelines are inspected and tested again before going into service.

