

Nominal Pipe Size Conversion to Metric Size

The following article is taken from the *Construction Metrication* newsletter published by the Construction Metrication Council of the National Institute of Building Sciences.

Pipe is one of the most ubiquitous products in construction. It is made of a wide variety of materials, including galvanized steel, black steel, copper, cast iron, concrete, and various plastics such as AB, PVC, CPVC, polyethylene, and polybutylene, among others.

But like wood 2-by-4's, which are not really 2 inches by 4 inches, pipe is identified by "nominal" or "trade" names that are related only loosely to actual dimensions. For instance, a 2-inch galvanized steel pipe has an inside diameter of about 2-1/8 inches and an outside diameter of about 2-5/8 inches. It is called "2-inch pipe" only for the sake of convenience.

Since few, in any, pipe products have actual dimensions that are in even, round inch-pound numbers, there is no need to convert them to even, round metric numbers. Instead, only their *names* change – from inch-pound to metric. Pipe cross sectional sizes do not change. Fittings, flanges, couplings, valves, and other piping components are renamed in like manner, as are pipe threads.

Here are the inch pound names for pipe products (called NPS or "nominal pipe size") and their metric equivalents (called DN or "diameter nominal"). The metric designations conform to International Standards Organization (ISO) usage and apply to all plumbing, natural gas,

NPS	DN	NPS	DN
1/8"	6 mm	8"	200 mm
3/16"	7 mm	10"	250 mm
1/4"	8 mm	12"	300 mm
3/8"	10 mm	14"	350 mm
1/2"	15 mm	16"	400 mm
5/8"	18 mm	18"	450 mm
3/4"	20 mm	20"	500 mm
1"	25 mm	24"	600 mm
1-1/4"	32 mm	28"	700 mm
1-1/2"	40 mm	30"	750 mm
2"	50 mm	32"	800 mm
2-1/2"	65 mm	36"	900 mm
3"	80 mm	40"	1000 mm
3-1/2"	90 mm	44"	1100 mm
4"	100 mm	48"	1200 mm
4-1/2"	115 mm	52"	1300 mm
5"	125 mm	56"	1400 mm
6"	150 mm	60"	1500 mm
For pipe over 60", use 1" – 25 mm			

heating oil, and miscellaneous piping used in buildings. Reinforced concrete pipe and corrugated steel pipe used in highways and other civil works construction also use these designations.

Note that all whole-number inch designations on the following chart convert to multiples of 25 mm except for 3-inch pipe, which ISO designates as 80 mm.

Metric Rules-Of-Thumb

1 mm = about 1/25 inch = thickness of a dime

25 mm = about 1 inch (1" = 25.4 mm)

300 mm = about 1 foot (12" = 304.8 mm)

1 m² = roughly 10 sq. ft. (1 m² = 10.76 sq. ft.)

1 L = about 1 quart (1 L = 1.06 qt.)

1 kg = about 2.2 pounds

1000 kg = 1 Mg = 1 metric ton = about 2200 lbs.