

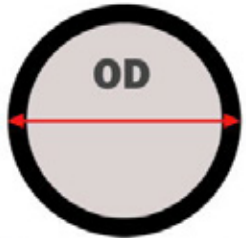
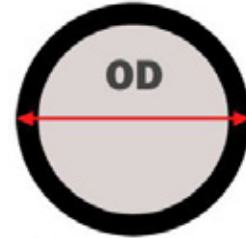
by Larry Adams, senior editor

TUBE OR PIPE: IN PLAIN ENGLISH

Understanding the differences between
these two similar components

Tube vs. Pipe

by CommerceMetals.com

Tube	Pipe
<ul style="list-style-type: none"> ✔ Structural ✔ Measured by Exact OD  <p>OD</p> <p><small>⚙️ Tube is normally used for structural purposes. Sizing is based on the exact outside diameter and wall thickness of the tubing.</small></p>	<ul style="list-style-type: none"> ✔ Vessel ✔ Measured by Nominal OD  <p>OD</p> <p><small>⚙️ Pipe is normally used to transport gases or fluids. Sizing is based on the nominal outside diameter (NPS) and wall thickness.</small></p>
<p>✔ NPS - Nominal Pipe Size</p> <p>NPS is an ANSI standard, and should not be confused with the various thread standards such as NPT and NPSC.</p>	
<p><small>The reason many believe that NPS refers to the ID on smaller pipes is because of how the standard was originally defined. The NPS OD was originally defined so that a pipe with a standardized OD and wall thickness typical of the period, would have a pipe ID that was approximately equal to the nominal size of the pipe. For example, 3" Schedule 40 NPS has an outside diameter and wall thickness that very, very roughly gives it an inside diameter of 3."</small></p>	
<p>❗ Regardless of wall thickness the nominal OD of a pipe will not change.</p>	

The terms tube and pipe are often used interchangeably. And, according to the specialists at Commerce

Metals, even experts working in related industries don't actually know the difference. After all, as the Dover, Minn.-based company explains, "How different can hollow cylinders get? And, who really cares enough to go and look?"

Well I looked, and after running through a multitude of explanations across the internet universe, I found that Commerce Metals explained it best and in plain English. Let's hope that the following information, culled from its website, clears the interchangeability confusion.

Tube

Tube is generally used for structural purposes and the outside diameter is an important and exact number. Tube size is specified by the OD and the wall thickness (WT); and the measured OD and stated OD

are generally within close tolerances of each other. Tube is usually more expensive than pipe due to tighter manufacturing tolerances.

Interestingly, while the stated and measured ODs of tube are almost exact most of the time, copper tube generally has a measured OD that is 1/8 in. larger than the stated OD. As such, maybe it should be called copper pipe. However, stainless steel, aluminum and steel tube all have measured and stated ODs that are exact or very close.

Pipe

Pipe is categorized as a tubular vessel used in pipeline and piping systems and commonly transports gases or fluids. Pipe is specified by Nominal Pipe Size (NPS) and Schedule (wall thickness). NPS is a size standard established by the American National Standards Institute (ANSI) and should not be confused with the various thread standards such as NPT (National Pipe Tapered Thread) and NPSC (National Pipe Straight Coupling).

The manufacturing of NPS' from 1/8 in. to 12 in. is based on a standardized nominal OD that is different from the measured OD. NPS pipe that is 14 in. and up has a measured OD that corresponds to the nominal size.

The reason many people, including plumbers and engineers, mistakenly believe NPS refers to the inner diameter on smaller pipe is because of how the standard was originally defined. The standardized OD was originally defined so that a pipe with a standardized OD and WT typical of the time period would have a pipe ID that was approximately equal to the nominal size of the pipe. For example, 3-in. Schedule 40 NPS pipe has an OD and WT that roughly gives it an ID of 3 in. Regardless of the WT, the nominal OD of a pipe will not change. ■

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