

# CRAFTSMAN CRIBSHEET

## Why Do We Say Tenths Instead of Ten Thousandths?

In machinist parlance, a tenth is a tenth of a thousandth, not a tenth of an inch.

By David Wynn, Director of Technical Services, PMPA

Why do we say “tenths” in our shop vernacular? What is a tenth? Why do we call it that? Why do non-machinists get so confused? This topic often comes up in face-to-face conversations and online. Who has not been told by some well-meaning “civilian” that “It is not a tenth, its one ten-thousandth. Tenths are the first place after the decimal.” Let’s look at why tenths are the correct descriptor.

In a precision machining shop that runs on Imperial units (inch/foot), we routinely dimension and speak of dimensions in thousandths of an inch. The confusion starts when people think in base inch. For instance, 0.100" is not a tenth of an inch; it is 100 thousandths. In Imperial measurements, we often think in fractions of an inch: 1/4", 1/16" and 1/64". In the early days, when working with small numbers in North America, our language changed to base our measurement on thousandths (0.001") rather than those awkward fractions which were too large for our work. While those not in precision machining start at an inch (1.0"), machine shops see the world as 1.0e-3". When someone says “a couple more,” they mean they want 0.002". It is a request to make the diameter bigger by 0.002" or the hole deeper by 0.002". It is our common vernacular to speak in base 1.0e-3".



Tenths in inch base thinking (non-machinist thinking):  
 $1.0" \times .1 = 1.0e-1"$  or 0.100".

When people who have never worked in a shop think tenths, they think tenths of an inch. This is what they learned in school. Below I will show it is because we think in a different base, which is why tenths is correct language.

Tenths in machine shop language (thousands base thinking):  
 $1.0e-3" \times 0.1 = 1.0e-4"$  or 0.0001".

A tenth of our base unit 1.0e-3 (0.001" or 1 thousandth of an inch) in a shop is 0.0001". The math above proves it.

Now you have proof the next time someone tells you tenths is not correct language. Language is a funny thing. When we lose the context to why we say things, they can begin to look incorrect. When we know the history and understand the root meaning of

words, we can find that our language is correct. Words have meaning, and it is important to understand that meaning. The foundation of society is that we can communicate clearly. To do that, we have to understand this meaning of our language to drive home our points with accuracy and precision. When a machinist says “tenth,” they are saying 0.0001" or 1/40th of the thickness of a sheet of paper, which typically measures about 0.004". **P**