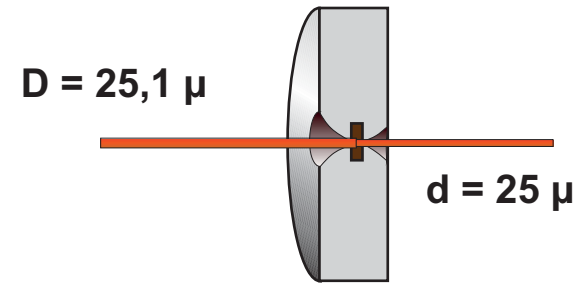


Elongation measurement

Why measure to elongation a small diameter wire die or die set ?

Because this method gives the highest precision of all known measuring systems.



Example:

Let's try to obtain a wire of $25\mu\text{m} = 0.025\text{mm}$ with a tolerance of $0.1\mu\text{m}$

To this day, no equipment can give with precision an absolute value of a wire of $25\mu\text{m}$

Only a comparative measure will allow to ascertain the difference between a $25.0\mu\text{m}$ and a $25.1\mu\text{m}$ wire.

The method giving the highest precision to establish this difference is by elongation (which is closer to real life wire drawing conditions).

$$A = \frac{D^2}{d^2} - 1 = \frac{25,1^2}{25^2} - 1 = 0,008016 \quad \text{Elongation} = 0,8 \%$$

Indeed, let's calculate the elongation of a $25.1\mu\text{m}$ wire going through a die which has a theoretical diameter of $25\mu\text{m}$. By drawing down 1 meter (1000mm) of $25.1\mu\text{m}$ wire, the drawn down wire should become 1008.6mm in length. These extra 8mm can easily be measured with a ruler.

