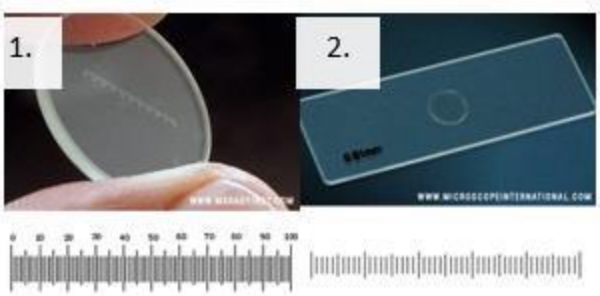
Calibration of the Ocular Micrometer

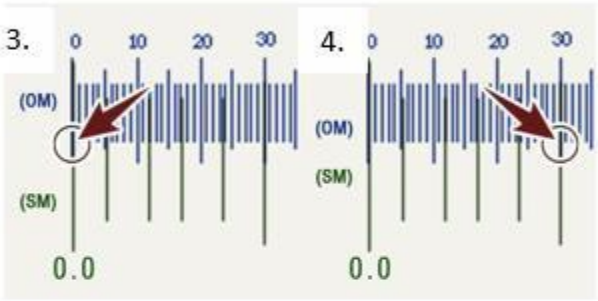
Introduction

This is a simple and precise method for measuring objects seen in the microscope. Ocular micrometers are calibrated by comparing the ocular micrometer scale with a calibrated stage micrometer. A calibration procedure must be completed to determine the calibration factor for each objective and each microscope.

Instructions

1. Insert the ocular micrometer into a 10X eyepiece. The ocular micrometer is divided into ocular divisions (OD).
2. Place the calibrated stage micrometer slide on the stage and focus on the scale. The stage micrometer has a calibrated scale which is divided into 0.1 millimeters (mm) and 0.01 mm units.
3. Adjust the field so the 0 line of the ocular micrometer (OM) scale is exactly superimposed upon the 0.0 line of the stage micrometer (SM) scale.
4. Without moving the stage micrometer, locate the point as far to the extreme right as possible where any two lines are exactly superimposed upon each other.
5. Count the number of divisions (mm) on the stage micrometer between the 0.0 line and the superimposed line to the far right.
6. Count the number of ocular divisions on the ocular micrometer between the 0 line and the superimposed line to the far right.
7. Divide the distance determined in step 5 by the number of ocular divisions in step 6 and multiply by 1000 to give the ocular micrometer units in µm.
8. Repeat steps 3 through 7 for each objective on the microscope.
9. If at any time the ocular micrometer is moved to a different microscope or a new objective is added to the microscope, the calibration procedure must be completed again.





7. $\frac{\text{Length seen on stage micrometer}}{\text{\# of divisions counted on ocular micrometer}} \times 1000 = \_\_\_\_ \text{ µm}$

Example:

$$\frac{.30 \text{ mm}}{30 \text{ units}} \times 1000 = \underline{10} \text{ µm}$$

This job aid is a component of the free, on-demand CDC training course “Basic Microscopy.” Find the course at https://www.cdc.gov/labtraining.