

	<b>TRACE-PM 12.2 Microscopic Ocular Unit Calculation</b>	
	<i>Document #: 7501</i>	<i>Page 1 of 2</i>
	<i>Revision #: 1</i>	<i>Issued Date: 04/13/2018</i>
	<i>Document Manager: Cheryl Lozen</i>	<i>Approved By: Jeffrey Nye</i>

## 12.2 Microscopic Ocular Unit Calculation

### 12.2.1

Equipment needed:

- Eyepiece micrometer = arbitrary divisions, no real scale
- Stage micrometer = in millimeters, subdivided in 0.01 mm

To measure the length of an object, note the number of ocular divisions spanned by the object. Then multiply by the conversion factor for the magnification used. The conversion factor is different at each magnification. Therefore, when using a reticule for the first time, it is necessary to calculate the scale by focusing on a second micrometer scale (a stage micrometer).

Once this conversion factor is established it is not necessary to conduct periodic verifications unless the eyepiece or objective is changed

### 12.2.2 Ocular unit calculation

#### 12.2.2.1

Focus the eyepiece so that the scale appears with maximum sharpness

#### 12.2.2.2

Place the stage micrometer on the stage and focus the microscope on the stage micrometer

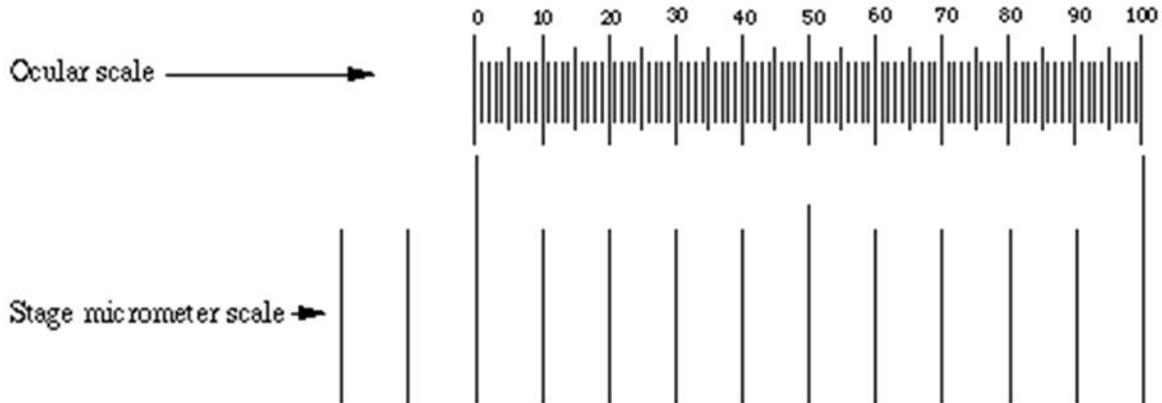
#### 12.2.2.3

Rotate the eyepiece until the scales are parallel to each other

#### 12.2.2.4

Count the number of intervals in the eyepiece micrometer that correspond to a specific distance on the stage micrometer. Choose a value which is visible on the stage micrometer, the bigger the better, since the stage micrometer values are in fractions of millimeters (1 millimeter = 1000 micrometers).

	<b>TRACE-PM 12.2 Microscopic Ocular Unit Calculation</b>	
	Document #: 7501	Page 2 of 2
	Revision #: 1	Issued Date: 04/13/2018
	Document Manager: Cheryl Lozen	Approved By: Jeffrey Nye



#### 12.2.2.5

Calculate the length which corresponds to one interval on the eyepiece ocular objective.

$$\text{One interval} = \frac{100 \text{ } \mu\text{m}}{10 \text{ } \mu\text{m}} \text{ equals } 10 \text{ } \mu\text{m} / \text{ocular unit for that objective}$$

#### 12.2.2.6

It is then only necessary to multiply the number of ocular units covered by the object in the eyepiece to approximately determine the length or width of the object.

#### 12.2.2.7

An ocular unit value must be calculated for each objective in use on the microscope.

### 12.2.3 References

Walter C. McCrone, Lucy B. McCrone and John Gustav Delly, Polarized Light Microscopy (1997), Chapter VII, C (98).