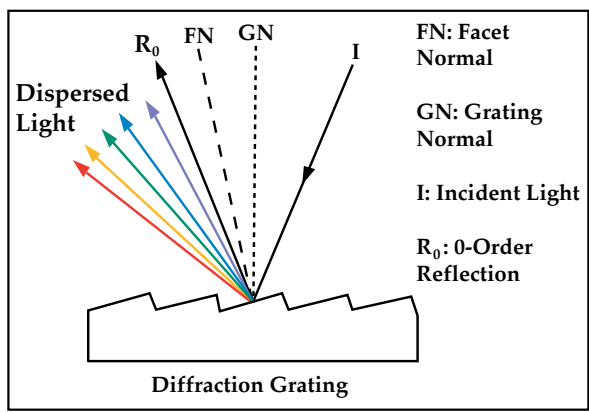




# D A T A S H E E T

S E R I E S R E S T O R A T I O N S



Acton Research SpectraPro<sup>®</sup> monochromators and spectrographs use diffraction to separate polychromatic "white" light into individual wavelengths. When polychromatic light encounters the grating it is dispersed so that each wavelength reflects from the grating at a slightly different angle. The monochromator or spectrograph then reimages dispersed light so that individual wavelengths (or a desired band of wavelengths) can be directed to a detection system or sample. Roper Scientific/Acton Research offers over 100 high-performance gratings for the SpectraPro line of monochromators and spectrographs.

## S E L E C T I N G T H E P R O P E R G R A T I N G

<p><b>Groove density (or groove frequency):</b> the number of grooves contained on a grating surface, expressed in grooves per mm (g/mm) or lines per mm (l/mm).</p>	<p>Groove density affects the mechanical scanning range and the dispersion properties of a system. It is an important factor in determining the resolution capabilities of a monochromator. Higher groove densities result in greater dispersion and higher resolution capabilities.</p> <p>Select a grating that delivers the required dispersion when using a CCD or array detector, or the required resolution (with appropriate slit width) when using a monochromator.</p>
<p><b>Mechanical scanning range:</b> the wavelength region in which an instrument can operate.</p>	<p>Refers to the mechanical rotation capability (not the operating or optimum range) of a grating drive system with a specific grating installed.</p> <p>Select a grating groove density that allows operation over your required wavelength region.</p>
<p><b>Blaze wavelength:</b> the angle in which the grooves are formed with respect to the grating normal, often termed blaze angle.</p>	<p>Diffraction grating efficiency plays an important role in monochromator or spectrograph throughput. Efficiency at a particular wavelength is largely a function of the blaze wavelength if the grating is ruled, or modulation if the grating is holographic.</p> <p>Select a blaze wavelength that encompasses the total wavelength region of your application(s), and if possible, favors the short wavelength side of the spectral region to be covered (see Grating Efficiency Curves).</p>
<p><b>Quantum wavelength range:</b> the wavelength region of highest efficiency for a particular grating.</p>	<p>Normally determined by the blaze wavelength.</p> <p>Select a grating with maximum efficiency over the required wavelength region for your application(s).</p>

### Advantages of Multiple-Grating Turrets

Quite often it becomes necessary to select two or three gratings to achieve efficient light throughput over a broad spectral region. That's why SpectraPro monochromators and spectrographs are equipped with multiple-grating turrets as a standard feature. Turrets make grating changes an easy push-button or computer-controlled operation, while reducing the risk of handling the delicate gratings.

Contact your local Roper Scientific sales representative for assistance in selecting the best gratings for your applications.



# D A T A S H E E T

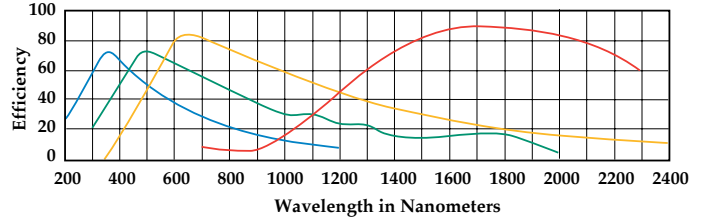
S P E C T R A P A R A M E T E R S

## Grating Efficiency Curves\*

\* The grating curves show typical relative efficiency for the various blaze wavelengths for selected gratings and should be used as a comparison guide only.

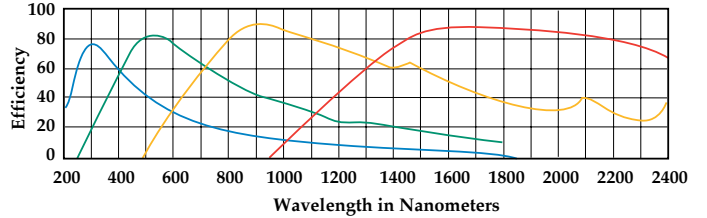
### 150-g/mm Gratings

- 300-nm Blaze
- 500-nm Blaze
- 800-nm Blaze
- 2- $\mu$ m Blaze



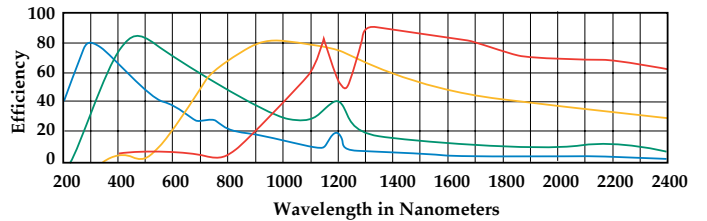
### 300-g/mm Gratings

- 300-nm Blaze
- 500-nm Blaze
- 1- $\mu$ m Blaze
- 2- $\mu$ m Blaze



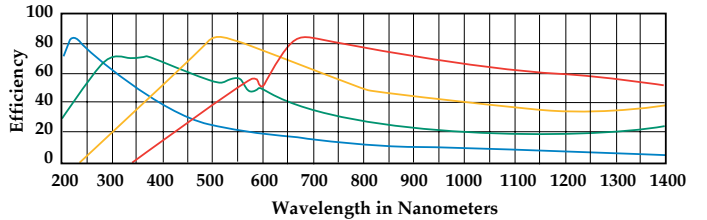
### 600-g/mm Gratings

- 300-nm Blaze
- 500-nm Blaze
- 1- $\mu$ m Blaze
- 1.6- $\mu$ m Blaze



### 1200-g/mm Gratings

- Holographic
- 300-nm Blaze
- 500-nm Blaze
- 750-nm Blaze



## OPTIMAL WORKING RANGE FOR THE MOST COMMONLY REQUESTED GRATINGS

Blaze	50 g/mm	75 g/mm	150 g/mm	300 g/mm	600 g/mm	1200 g/mm	1800 g/mm	2400 g/mm	3600 g/mm
250 nm							190-450 nm	190-450 nm	190-450 nm
300 nm			200-500 nm	200-500 nm	200-500 nm	200-500 nm			
500 nm			330-950 nm	330-900 nm	330-900 nm	330-900 nm	330-850 nm		
600 nm	400-1200 nm								
750 nm						500-1400 nm			
800 nm			475-1300 nm						
1 $\mu$ m				650-1800 nm	650-1800 nm				
1.6 $\mu$ m					1 - 2.4 $\mu$ m				
2 $\mu$ m				1.3 - 3 $\mu$ m					
4 $\mu$ m			2.6 - 6 $\mu$ m						
8 $\mu$ m		5 - 13 $\mu$ m							
Holographic						190-400 nm; 450-1400 nm		190-450 nm; 400-700 nm	190-450 nm



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