Pencil Style Calibration Lamps

- Compact and simple tools for calibrating spectral instruments
- Narrow, discrete UV to IR wavelengths
- Excellent stability

6035 Hg(Ar) Lamp in 6058 Fiber Optic Accessory.

These lamps produce narrow, intense lines from the excitation of various rare gases and metal vapors. They are used for wavelength calibration of spectroscopic instruments such as monochromators, spectrographs, and spectral radiometers. We also offer a full range of accessories, from mounts and holders, to fiber optic adapters and aperture shields.

Which Lamp Do I Choose?

We offer six lamps; choose the lamp or lamps that suit your wavelength range.

Mercury (Argon) Lamp

- Preferred lamp for calibration
- Temperature insensitive
- Average intensity is constant and reproducible
- Longer life

The 6035 Hg(Ar) Lamp is insensitive to temperature. It requires a two-minute warm-up for the mercury vapor to dominate the discharge, then 30 minutes for complete stabilization. The average intensity is remarkably constant and reproducible after the thermal conditions stabilize.

Mercury (Neon) Lamp

- Emits additional lines in the VIS-NIR
- Temperature dependent

The 6034 Hg(Ne) Lamp is temperature dependent. When run in normal lab ambient, the output is very similar to that of the Hg(Ar) Lamp, which is the characteristic mercury line spectrum. Forced air-cooling (i.e. from a muffin fan) of the lamp adds the neon lines to the output.

Lamp Construction

We call these "Pencil" lamps because of their size and shape. They are made of double bore quartz tubing with two electrodes at one end sealed into a phenolic handle. A 1 ft. (305 mm) long cord with male connector is attached to the end of the handle for connection to the power supply.

Table 1 Usable Wavelengths of Spectral Calibration Lamps (in nm)

6035 Hg(Ar)	6034 (HgNe)	6033 (Xenon)	6030 (Argon)	6032 (Neon)	6031 (Krypton)
184.9	253.65	418.0	294.3	585.25	427.4
187.1	296.73	419.3	415.9	594.48	432.0
194.2	302.15	433.1	420.1	607.43	435.5
253.65	312.57	439.6	427.7	609.62	457.7
265.4	313.15[1]	444.8	476.5	614.31	461.9

284.8	313.18[1]	446.2	488.0	616.36	465.9
302.2	365.02	473.4	696.54	621.73	473.9
312.57[1]	404.66	480.7	738.40	626.65	476.6
313.15[1]	435.84	483.0	750.39	630.48	483.2
313.18[1]	546.07	508.1	751.47	633.44	557.0
320.8	576.96	529.2	763.51	638.3	587.1
326.4	579.07	531.4	772.38[1]	640.11[1]	758.74
345.2	614.31*	554.0	772.42[1]	640.22[1]	760.15
365.02	638.30*	541.9	794.82	650.65	769.45
404.66	640.11[1]*	547.2	801.48	653.29	769.45
435.84	640.22[1]*	597.7	811.53	659.90[1]	785.48
546.07	650.65*	603.6	826.45	660.29[1]	805.95
576.96	703.24*	605.1	840.82	667.83	810.44
579.07	1013.98	609.8	842.46	671.70	811.29
615.0	1128.74	659.5	912.3	692.95	819.00
1014.0	1357.02**	680.5	922.4	703.24	826.32
1357.0	1367.35**	699.1	965.8	717.39	829.81
1692.0	1529.58	823.2	1047.1	724.52	829.81
1707.3	1688.15**	828.0	1331.3	743.89	850.9
1711.0	1692.02**	834.7	1336.7	783.9	877.7
	1694.20**	840.9	1371.8	792.7	975.2
	1707.28**	881.9	1694.0	793.7	975.2
	1710.99**	895.2		794.3	1363.4
	1732.94**	980.0		808.2	1442.7
	1813.04**	992.3		811.9	1523.9
	1970.02**	1262.3		812.9	1533.4
		1365.7		813.6	1678.51
		1473.3		825.9	1689.04
		1541.8		826.6	1689.68
		1672.8		826.7	1693.58
		1732.5		830.0	1816.73
		2026.2		836.6	
		2482.4		837.8	
		2626.9		841.7	
		2651.0		841.8	
				846.3	
				848.8	
				849.9	
				854.5	
				857.1	
				859.1	
				863.5	
				864.7	
				865.4	
				865.6	
				867.9	
				868.2	
				870.4	
				877.2	
				878.0	
				873.4	
				885.4	
				920.7	
				930.1	
				932.7	
				942.5	
				948.7	
				953.4	
				1056.2	
				1079.8	
				1084.5	
				1114.3	

Power Supplies; AC versus DC

We offer different power supplies for different needs:

AC Supplies

- Stable operating current

- CE Marked

Choose an AC supply if output variations are not a concern, and if you are only operating one or two line lamps. This mode of operation also prolongs lamp life.

DC Supplies

- Variable current output lets you run any of the lamps
- Significantly more stable output
- Also runs as an AC supply

Use a DC supply if you are calibrating multichannel detectors, PDAs or CCDs, or if you are using various lamps, as these supplies run all our Spectral Line Lamps (AC supplies are lamp specific). Note: prolonged use in a single polarity DC Mode will shorten lamp life due to electrophoresis.

Observed Signal

The curves shown illustrate the relative signal strength observed at various wavelengths. The signal can differ very significantly from these curves due to the spectral throughput of the optical system, e.g. monochromator and its grating, or FT-IR and its beam splitter, and the spectral responsivity of the detector being convolved with the spectral properties of the incident light to produce that signal. The differences can be pretty insignificant or quite drastic depending on the exact experimental conditions.

Accessories

Spectral Calibration Lamp Mounts

We offer mounts to hold one or two calibration lamps at the input slit of an Oriel Monochromator or Spectrograph.

Fiber Optic Accessory

The 6058NS Fiber Optic Accessory holds the face of an SMA terminated fiber close to the lamp to collect a portion of the light output for spectral calibration purposes.

Rod Mounted Lamp Holder

If you simply want to hold the lamp in open air, use the 63670 Holder. It holds the lamp atop an optical rod.

Filters

We offer filters that fit over the lamp to block a specific wavelength region (Fig. 2). We offer the following models:

- 6041 Short Wave Filter: absorbs the visible lines
- 6042 Long Wave Conversion Filter: attenuates the 253.7 nm Hg line and fluoresces from 300 - 400 nm
- 6057 Glass Safety Filter: protects you from the lamp's intense UV lines, completely absorbs the 253.7 nm Hg line and attenuates the 312.6 nm line

Aperture Shields

The shields listed below fit over the lamps to limit the radiation area. We offer three aperture sizes:

- 6038 Pinhole Shield: 0.040 inch (1 mm) diameter
- 6039 Small Aperture Shield: 0.313 x 0.375 inches
- 6040 Large Aperture Shield: 0.188 x 1.50 inches

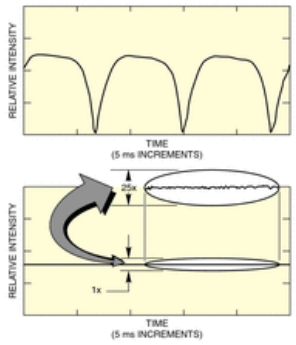

Fig. 1 Output intensity variation of 6034 Hg(Ar) Lamp when operated by 6047 AC Power Supply (top) and 6060 DC Power Supply (bottom).

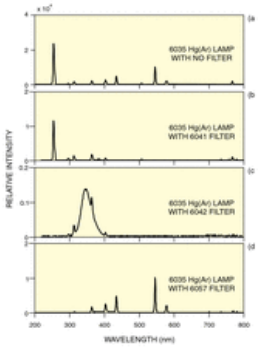

*Fig. 2 Relative line intensities of **6035** Lamp with different filters.*

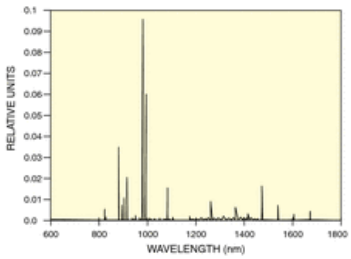

*Fig. 3 Output spectrum of **6033** Xenon Lamp, run at 6 mA, measured with MIR 8025 FT-IR with CaF_2 beam splitter and InGaAs Detector.*

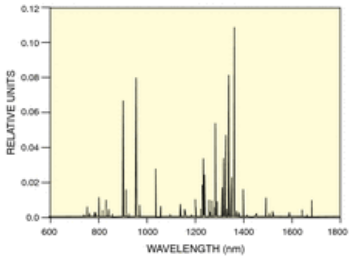

*Fig. 4 Output spectrum of **6030** Argon Lamp, run at 10 mA, measured with MIR 8025 FT-IR with CaF_2 beam splitter and InGaAs Detector.*

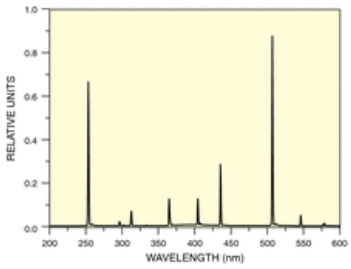

*Fig. 5 Output spectrum of **6035** Hg(Ar) Lamp, run at 18 mA, measured with MS257 1/4 m Monochromator with 50 µm slits.*

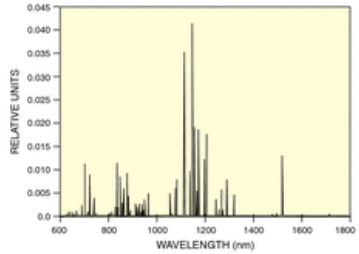

*Fig. 6 Output spectrum of **6032** Neon Lamp, run at 6 mA,*

measured with MIR 8025 FT-IR with CaF_2 beam splitter and InGaAs Detector.

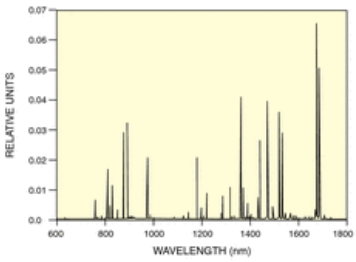

*Fig. 7 Output spectrum of **6031** Krypton Lamp, run at 10 mA, measured with MIR 8025 FT-IR with CaF_2 beam splitter and InGaAs Detector.*

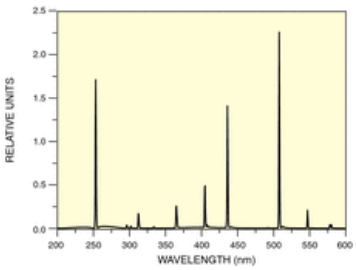

*Fig. 8 Output spectrum of **6034** Hg(Ne) Lamp, run at 18 mA, measured with MIR 8025 FT-IR with CaF_2 beam splitter and InGaAs Detector.*

6035 Hg(Ar) Lamp in 63670 Holder with 6047 Power Supply

Safety Considerations

Exposure to UV radiation, even low intensity UV, may cause severe damage to the eyes and skin. We recommend you wear protective eyewear and gloves with any UV source. For disposal of mercury-containing lamps, refer to www.lamprecycle.org.

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