Filter Reliability

All Semrock filters demonstrate exceptional reliability. The simple all-glass structure and hard dielectric glass coatings (as hard as the glass on which they are coated!) mean they are virtually impervious to humidity-induced shifting and can be cleaned and handled like any standard glass optics. All Semrock coatings are hard – **never** soft.

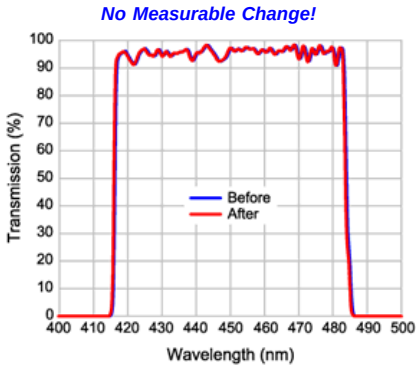
All Semrock filters are capable of withstanding high optical intensities. Semrock filters either have laser-damage threshold specifications, or, depending on the application, have been tested with intense broadband sources for extended periods of time with no noticeable degradation. Semrock filters do not burn out under normal conditions, even with prolonged use.

You will never find any adhesives in the optical path of a Semrock filter. Epoxies and cements can absorb water vapor and swell or shift, and they can photo-darken or be optically damaged. **Semrock filters are built for longevity**.

Semrock filters have been tested to meet or exceed requirements for environmental and physical durability set forth in specifications such as MIL-STD-810F, MIL-C-48497A, MIL-C-675C, and ISO 9022-2. The table below shows some of the key standards against which our filters are regularly tested.

Environmental Durability Testing	Standard/Procedure	Test Description
Humidity	MIL-STD-810F (507.4)	Aggravated Humidity (> 10 x 24 hr cycles)
High Temperature	MIL-STD-810F (501.4)	Induced Hot (> 7 x 24 hr cycles)
Low Temperature	MIL-STD-810F (502.4)	Cold (C2) (24 hr cycles)
Physical Durability Testing	**Standard/Procedure**	**Test Description**
Adhesion	MIL-C-48497A (4.5.3.1)	"Tape Test"
Humidity	MIL-C-48497A (4.5.3.2)	Damp Heat
Moderate Abrasion	MIL-C-48497A (4.5.3.3)	"Cheesecloth Test" (> 50 cycles)
Solubility/Cleanability	MIL-C-48497A (4.5.4.2)	Sequential immersion in acetone and alcohol
Water Solubility	MIL-C-48497A (4.5.5.3)	Immersion in distilled water (> 24 hrs)

Semrock's dedicated reliability laboratory with state-of-the-art environmental test chambers is in regular use.



Examples of bandpass filter spectra measured before and after ten 24-hour cycles of Aggravated Humidity testing according to MIL-STD-810F, demonstrating negligible change.