

# Hoya


# Colour Glass Filters


## ◆ Key Properties of Hoya Colour Glass Filters


- 🎨 **Broad Spectral Control:** Available in UV, visible, and NIR types — including short-pass, long-pass, bandpass, and neutral density filters.
- 🔍 **Precisely Defined Transmission:** Tight optical tolerances ensure accurate and repeatable spectral performance across all filter types.
- 🧪 **Material-Based Absorption:** Colouration is achieved through optical absorption within the glass — no thin-film layers to delaminate or shift with temperature.
- 🛡️ **Durable and Stable:** Resistant to humidity, UV exposure, and temperature changes; ideal for long-term or outdoor use.
- ⚙️ **Highly Customisable:** Filters can be ground, polished, cemented, stacked, or AR-coated for tailored performance.
- 🔪 **Precision Fabrication:** Manufactured with high surface quality and flatness for demanding optical and imaging systems.


## Applications of Hoya Colour Glass Filters


 Imaging and Machine Vision: Used to control spectral response and contrast in cameras, sensors, and automated inspection systems.

 Microscopy and Fluorescence: Enables selective excitation and emission filtering for biological and analytical imaging systems.

 Spectroscopy and Photometry: Provides stable wavelength selection and attenuation across UV–VIS–NIR ranges.

 Laser and Illumination Systems: Used for beam shaping, attenuation, and spectral conditioning in optical setups.

 Environmental & Scientific Sensors: Ensures reliable spectral discrimination for aerospace, meteorological, and remote-sensing instruments.

 OEM and Custom Assemblies: Integrated into multi-filter designs, protective windows, and analytical instrument optics.

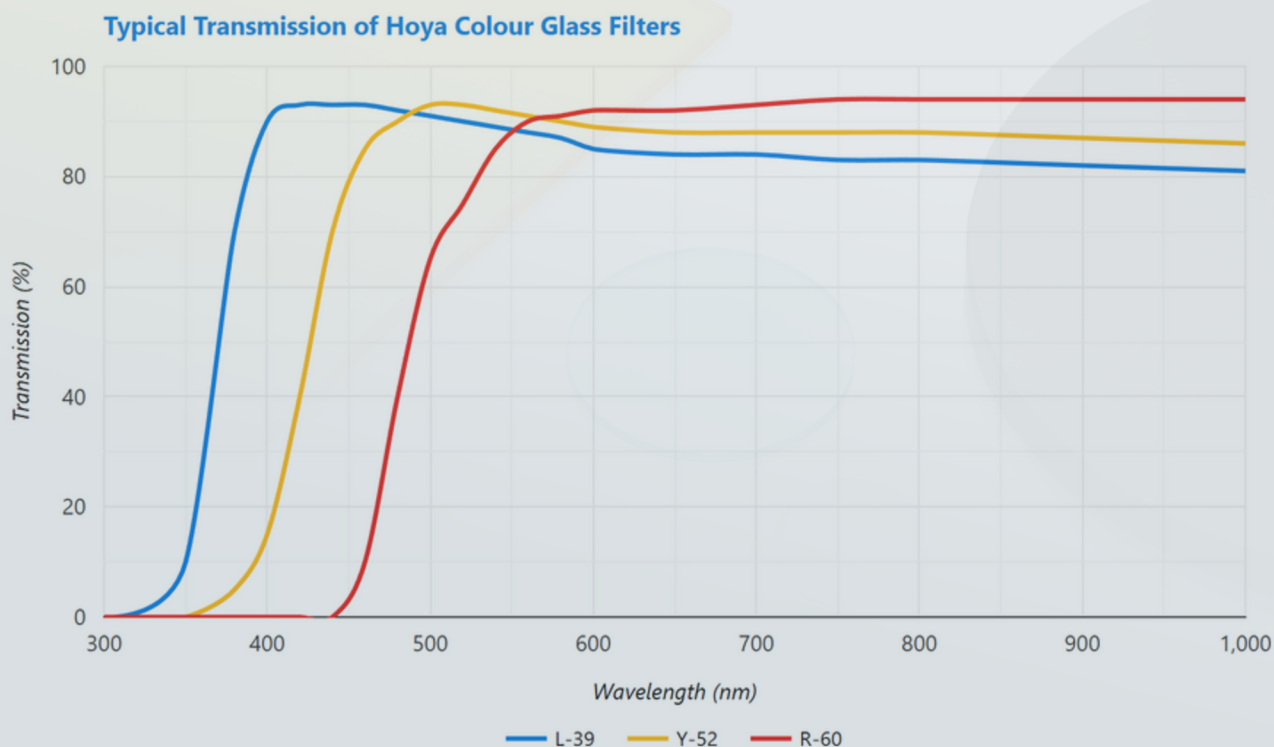
## Technical Parameters of Hoya Colour Glass Filters

Property	Typical Value
Spectral Range	UV-Visible-NIR (250–2500 nm, depending on glass type)
Optical Function	Colour control, spectral separation, heat absorption, and attenuation
Refractive Index (nd)	~1.50 – 1.65 (varies by filter type)
Transmission Range	L-39 (UV Cut): >90% above 400 nm Y-52 (Yellow): >90% above 520 nm R-60 (Red): >90% above 600 nm ND Series: 10–80% uniform attenuation HA Series: High visible, strong IR absorption
Density	~2.4 – 2.6 g/cm <sup>3</sup>
Thermal Expansion Coefficient (α)	~8.0 × 10 <sup>-6</sup> /°C

Thermal Expansion Coefficient (α)	~500–600 °C (typical)
Thermal Expansion Coefficient (α)	40–20 scratch–dig typical (better on request)
Thermal Expansion Coefficient (α)	±0.1 mm (standard)   ±0.05 mm (precision)
Thermal Expansion Coefficient (α)	<1 arc min typical
Thermal Expansion Coefficient (α)	AR, BBAR, or mirror coatings (optional)
Thermal Expansion Coefficient (α)	Spectroscopy • Machine Vision • Laser Safety • Photometry • Imaging & Optical Instrumentation
Thermal Expansion Coefficient (α)	UV-Visible-NIR (250–2500 nm, depending on glass type)
Thermal Expansion Coefficient (α)	Colour control, spectral separation, heat absorption, and attenuation



## Hoya Colour Glass Filters – Transmission Spectra



Representative transmission spectra for **L-39**, **Y-52**, and **R-60** filters.  
Covering UV–Visible–NIR ranges and showing the spectral selectivity of colour glass filters.

The transmission data shown above represents typical performance characteristics of selected Hoya Optical Filter Glasses, including UV-cut (L-series), visible bandpass (Y- and R-series), neutral density (ND-series), and heat-absorbing (HA-series) materials.

These curves illustrate nominal uncoated performance for standard 1–2 mm thickness samples and are intended as reference data to show general spectral behaviour.

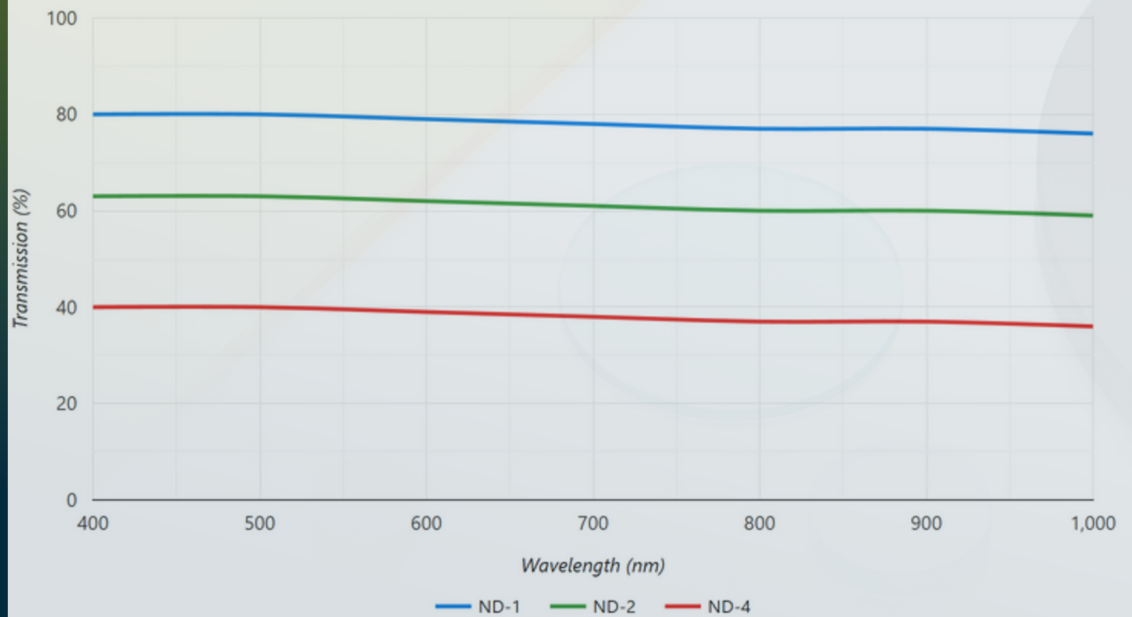
Actual transmission may vary slightly depending on thickness, surface finish, and optional anti-reflective coatings.

For precise performance data or material certification, please refer to the relevant Hoya Filter Glass datasheet or contact Global Optics UK for custom optical solutions.



## Hoya Neutral Density (ND) Filters – Transmission Spectra

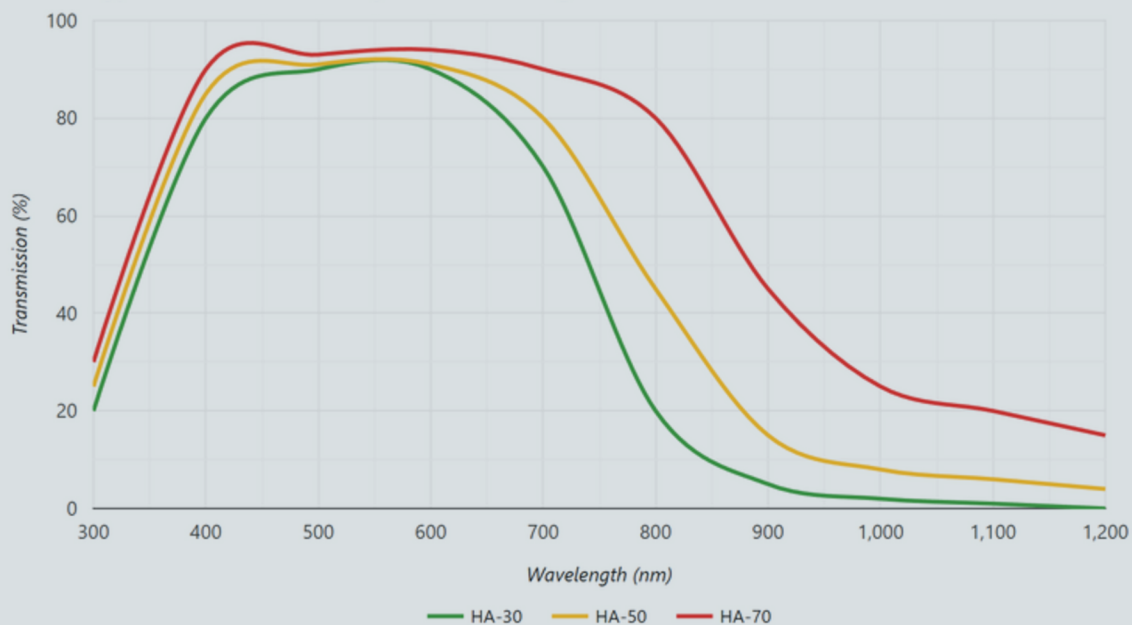
Typical Transmission of Hoya Neutral Density Filters



Transmission curves for **ND-1**, **ND-2**, and **ND-4** filters.  
Demonstrating flat spectral attenuation across the visible–NIR range.

## Hoya Heat-Absorbing Glass – Transmission Spectra

Typical Transmission of Hoya Heat-Absorbing Glass



Typical performance of **HA-30**, **HA-50**, and **HA-70** filters.  
Designed to absorb infrared radiation while transmitting visible light.

# FAQ

**Q: What are Hoya Colour Glass Filters used for?**

A: Hoya Colour Glass Filters are used to selectively transmit, absorb, or attenuate specific wavelength bands in the ultraviolet, visible, and near-infrared regions. They are commonly used in imaging, spectroscopy, photometry, fluorescence microscopy, and laser applications, where precise spectral control is essential.

**Q: How do Hoya filters differ from coated interference filters?**

A: Unlike interference filters, which rely on thin-film coatings, Hoya colour glass filters achieve their spectral properties through intrinsic material absorption. This makes them highly durable, stable under temperature and humidity, and resistant to spectral shift or delamination over time.

**Q: What types of filters are available?**

A: The Hoya range includes long-pass (L-series), short-pass (V-series), bandpass (Y-, O-, and R-series), neutral density (ND-series), and heat-absorbing (HA-series) glasses. Each is designed for specific optical functions such as UV blocking, color correction, intensity attenuation, or IR suppression.

**Q: Can Hoya filter glass be coated?**

A: Yes. Although Hoya filters perform well uncoated, anti-reflective (AR) or protective coatings can be applied to enhance transmission or durability. Global Optics UK offers custom coatings tailored to your wavelength range and environmental requirements.

**Q: How stable are the filters under environmental conditions?**

A: Hoya colour glass filters are chemically stable and non-hygroscopic. They show excellent long-term performance under UV exposure, temperature cycling, and humidity, making them suitable for both laboratory and field use.

**Q: What tolerances and surface quality are available?**

A: Standard filters are supplied with  $\pm 0.1$  mm thickness tolerance and 40–20 scratch–dig surface quality. Precision-polished versions with tighter dimensional or optical tolerances are available upon request.