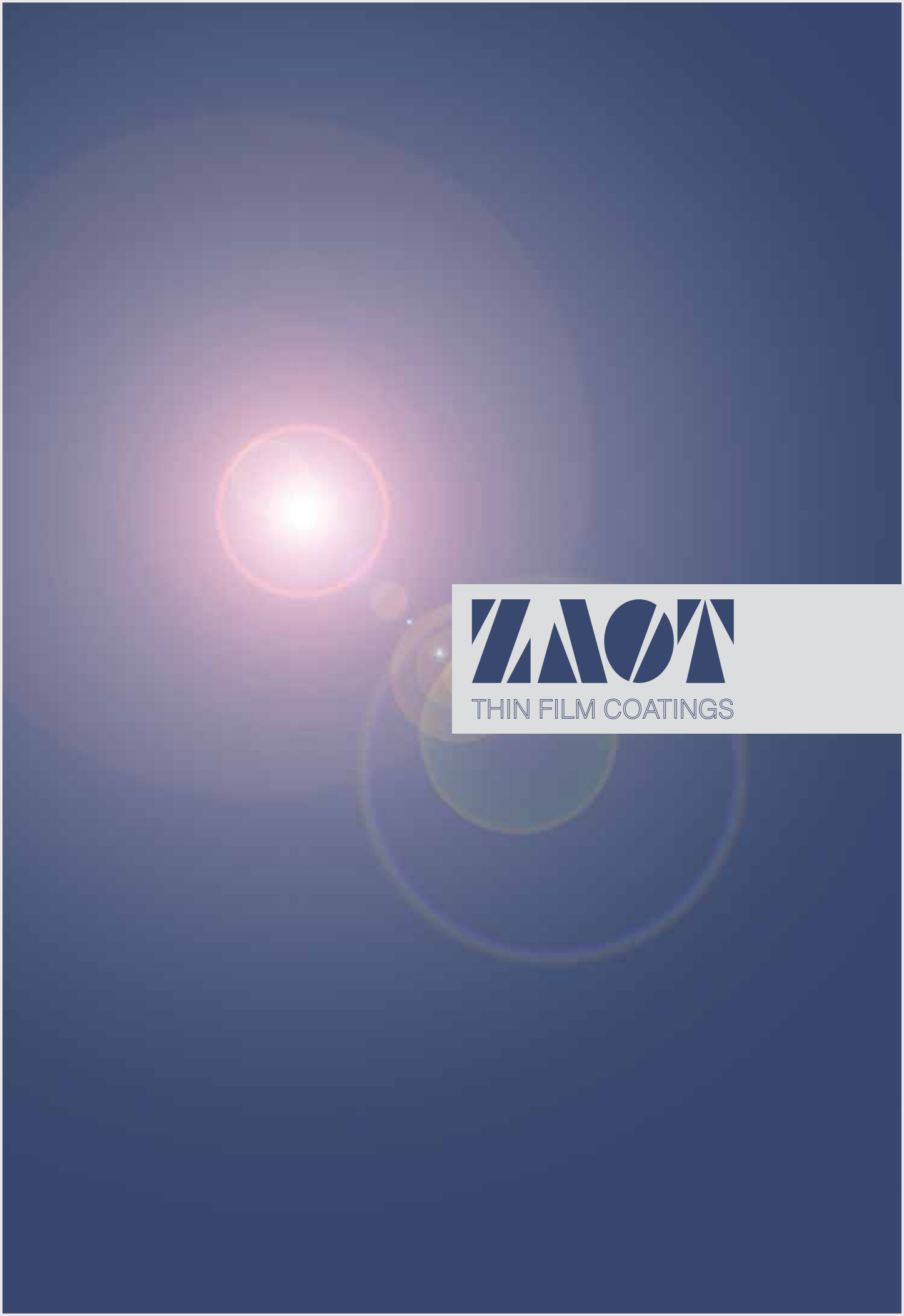
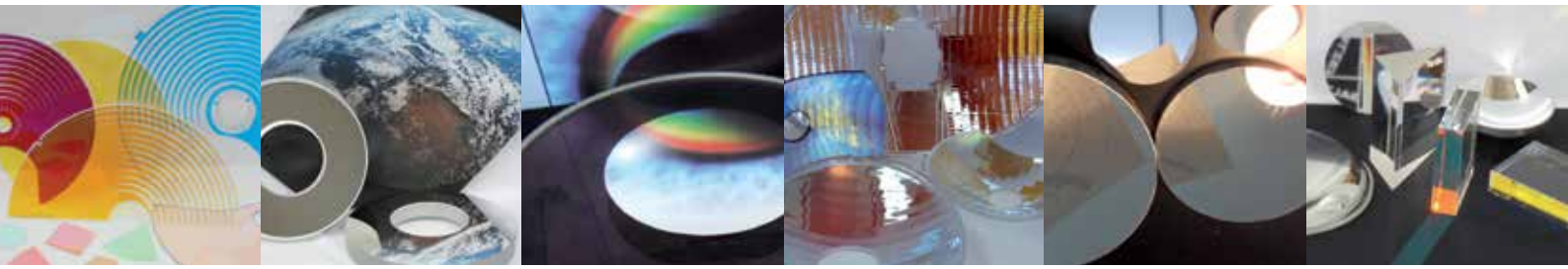

ZAOT
THIN FILM COATINGS

RIVESTIMENTI A FILM SOTTILE PER L'INDUSTRIA OTTICA

THIN FILM COATINGS FOR INDUSTRIAL OPTICS



Frequentemente i componenti ottici sono rivestiti con strati sottili di materiali solidi atti a modificare le loro proprietà ottiche e la riflessione, trasmissione, assorbimento della luce incidente.

Un rivestimento a film sottile consiste in un solo strato depositato sulla superficie di un substrato adatto. Vengono spesso depositati diversi strati e in questo caso il rivestimento viene genericamente denominato "multistrato".

Il laboratorio della Zaot è a disposizione per soddisfare le richieste di tali rivestimenti per svariate applicazioni. Vengono utilizzate tecniche di evaporazione termica, a cannone elettronico anche assistito da cannone ionico.

The optical components are frequently coated with thin layers of solid materials designed to change their optical properties and the reflection, transmission, absorption of the incident light.

A thin film coating consists of a single layer deposited on the surface of a suitable substrate.
Quite often several layers are deposited and in this case the coating is referred to as "multilayer".

Zaot's laboratory is available to meet the demands of these coatings for various applications. The techniques used are thermal evaporation, electron gun also assisted by ion gun.

ZAOT
THIN FILM COATINGS

Nel catalogo troverete le principali lavorazioni, con le relative curve di principio, che Zaot realizza offrendo anche piena disponibilità nell'eseguire particolari trattamenti secondo le richieste dei clienti.

In the following pages you can find the main products, with the principle curves, that Zaot realizes. Zaot is also available to meet customer's requirements for special coatings.

CHI SIAMO
ABOUT US

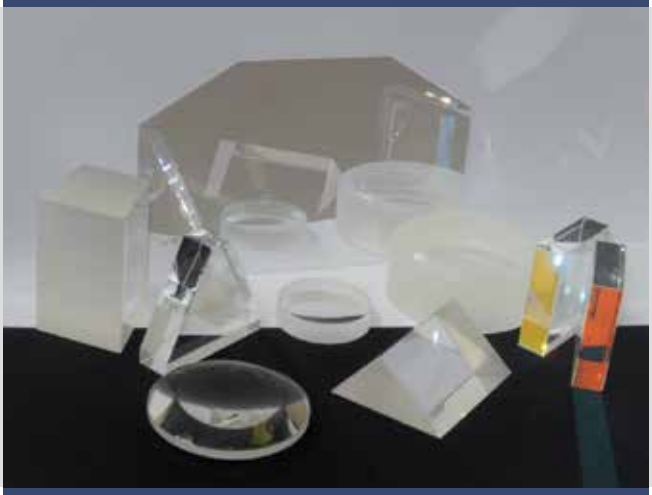


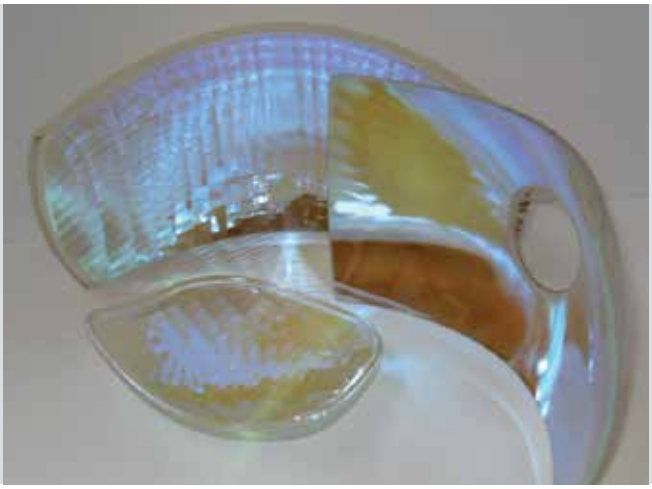


L'attività della Zaot è stata avviata nel 1978 per offrire un servizio di qualità nel settore dei rivestimenti ottici a film sottile per l'ottica industriale.
Negli anni si è sviluppata e potenziata acquisendo tecnologie, esperienza e macchinari per soddisfare le crescenti richieste.
La pluriennale esperienza e l'utilizzo esclusivo di impianti e strumentazioni Balzers permette di offrire prodotti di elevato standard qualitativo.

The activity of Zaot started in 1978 to provide a quality service in the field of optical thin film coatings for the industrial optics.
Over the years it has developed and enhanced by acquiring technologies, experience and equipments to meet the increasing demands.
Many years of experience and the exclusive use of Balzers facilities and equipments allow to offer products of high quality standards.

MERCATI
MARKETS







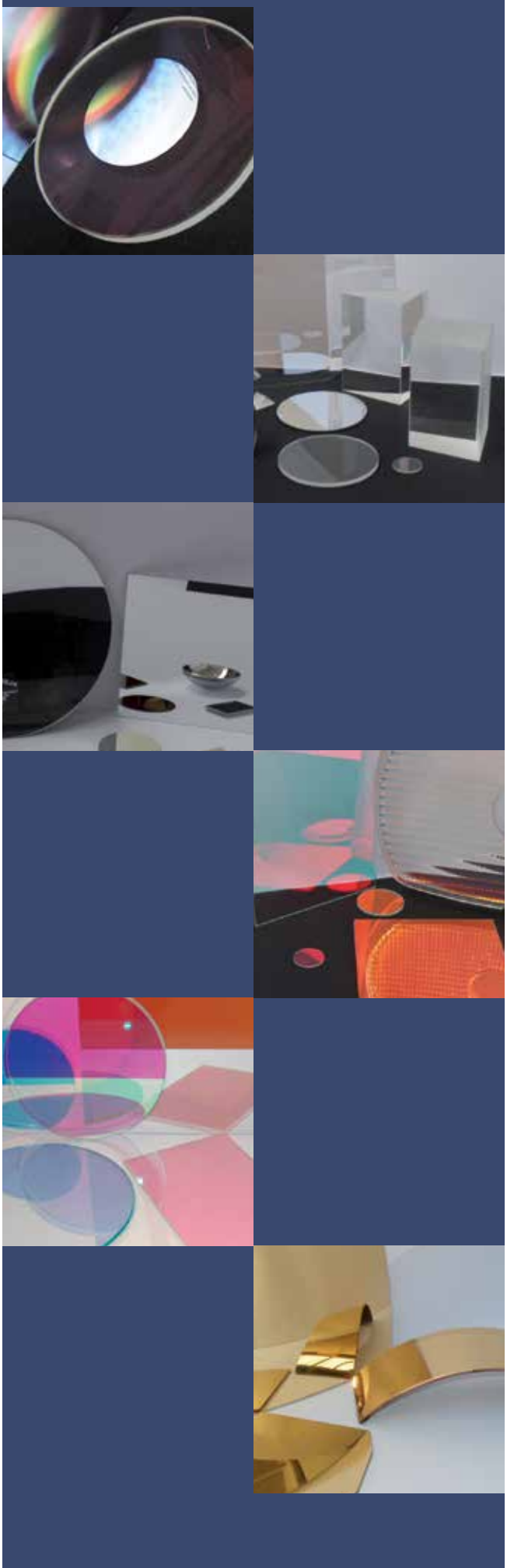
ILLUMINOTECNICA
OTTICHE INDUSTRIALI
APPLICAZIONI MEDICALI
SISTEMI UV
TECNOLOGIE SOLARI
ASTRONOMIA
SIMULATORI SOLARI
ESSICAZIONE UV
SENSORI OTTICI
APPLICAZIONI LASER
ILLUMINAZIONE AEROPORTUALE
APPLICAZIONI LED
SISTEMI DI VISIONE
DEPOSITI PER GOBOS

LIGHTING TECHNOLOGY
INDUSTRIAL OPTICS
MEDICAL TECNOLOGIES
UV DEVICES
SOLAR TECHNOLOGIES
ASTRONOMY
SUN SIMULATORS
UV DRIERS
OPTICAL SENSORS
LASER APPLICATIONS
AIRPORT LIGHTING
LED APPLICATIONS
VISION SYSTEMS
GOBOS COATINGS

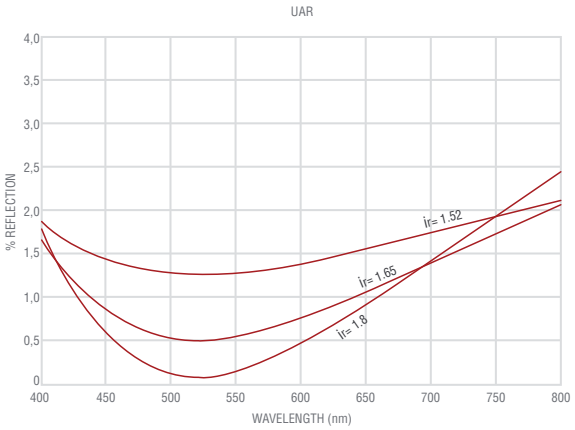
PRODOTTI
PRODUCTS

DEPOSITI ANTIRIFLESSO
DEPOSITI SEMIRIFLETTENTI
SPECCHI FRONTALI
FILTRI ANTICALORE
SPECCHI FREDDI
FILTRI DICROICI
FILTRI CONVERTITORI
DEPOSITI UV
FILTRI PASSA BANDA
DEPOSITI METALLICI
VETRO

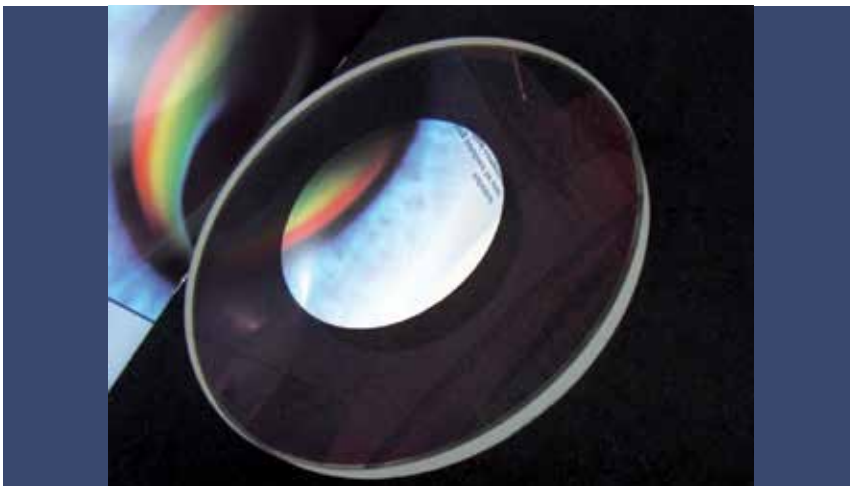
ANTIREFLECTION COATINGS
BEAM SPLITTERS
FRONT SURFACE MIRRORS
HEAT PROTECTION FILTERS
COLD LIGHT MIRRORS
DICHROIC FILTERS
CONVERSION FILTERS
UV COATINGS
BANDPASS FILTERS
METALLIC COATINGS
GLASS SUBSTRATE

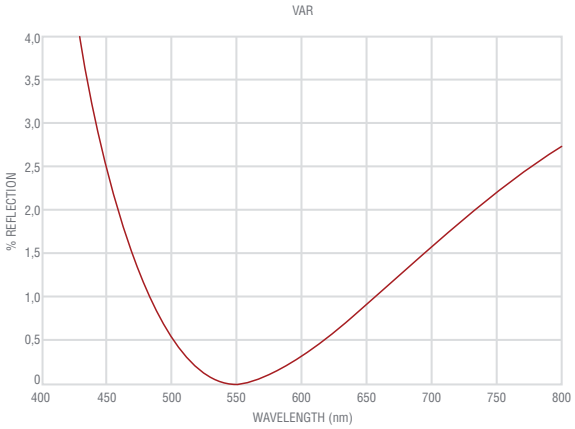


DEPOSITI ANTI RIFLESSO
ANTIREFLECTION COATINGS



R avg ≤ 1,5% at 550 nm
AOI = 0°

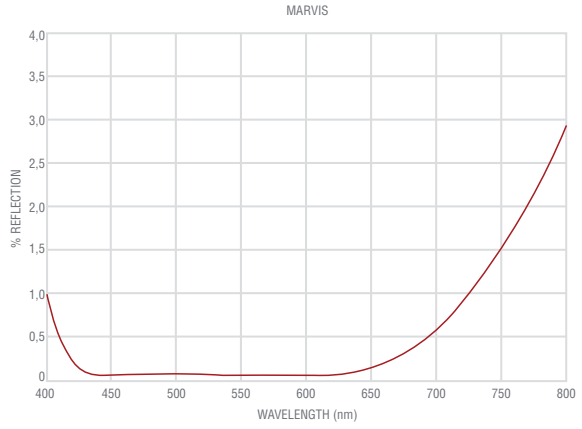




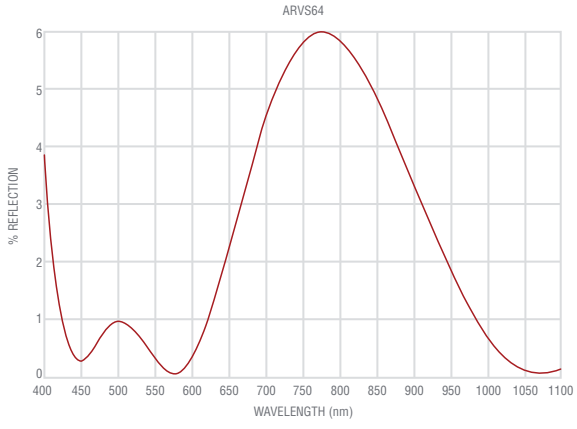
R ≤ 0,15% at 550 nm
AOI = 0°

I depositi antiriflesso sono utilizzati per aumentare la trasmissione di un substrato ottico e per ridurre le immagini fantasma di riflessioni secondarie.
Sono indispensabili in un'ampia gamma di applicazioni ottiche.

The antireflection coatings are used to increase the optical transmission performance and to reduce ghost images from secondary reflections.
They are essential in a wide variety of optical applications.



R avg ≤ 0,5% for 430-650 nm
AOI = 0°



R avg ≤ 0,5% for 475-670 nm
R avg ≤ 0,5% at 1064 nm
AOI = 0°

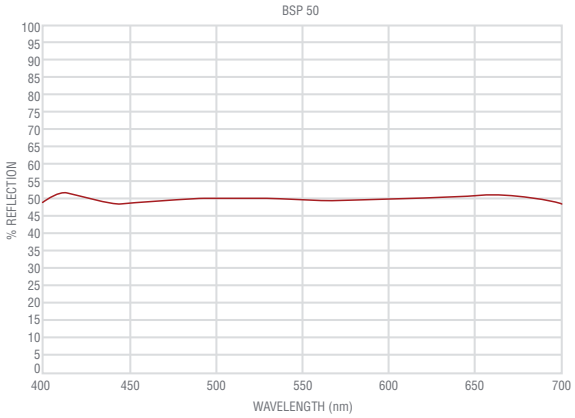
DEPOSITI SEMI RIFLETTENTI

BEAM SPLITTERS

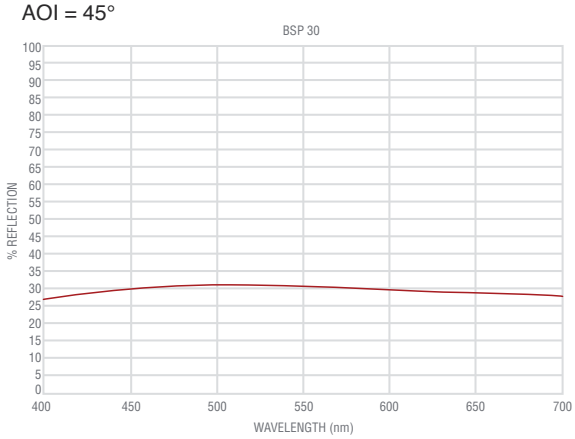


Un beam splitter è un dispositivo ottico che divide il raggio di luce in due parti: una riflessa ed una trasmessa.

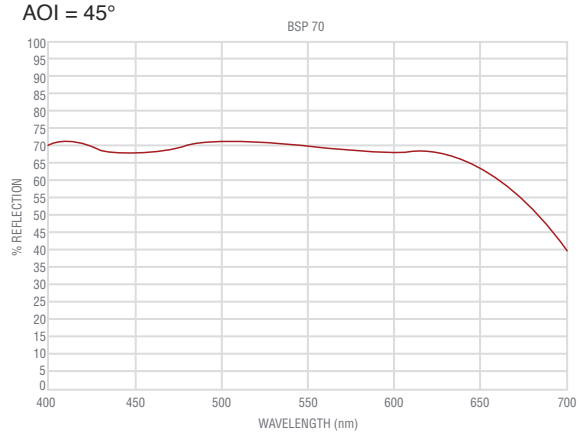
A beam splitter is an optical component that splits the light beam into two parts: one is reflected and the other one is transmitted.



R = 50% ± 5%
T = 50% ± 5%
for 450-650 nm
AOI = 45°

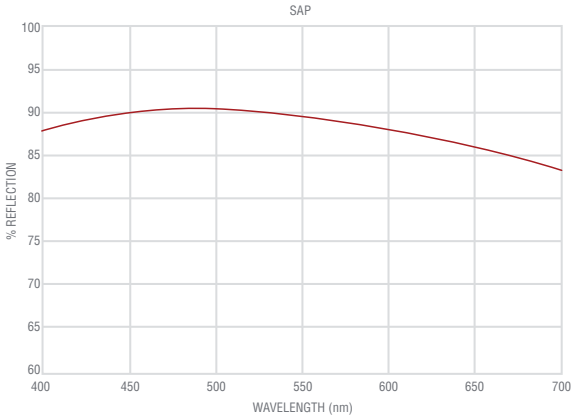


R = 30% ± 5%
T = 70% ± 5%
for 450-650 nm
AOI = 45°

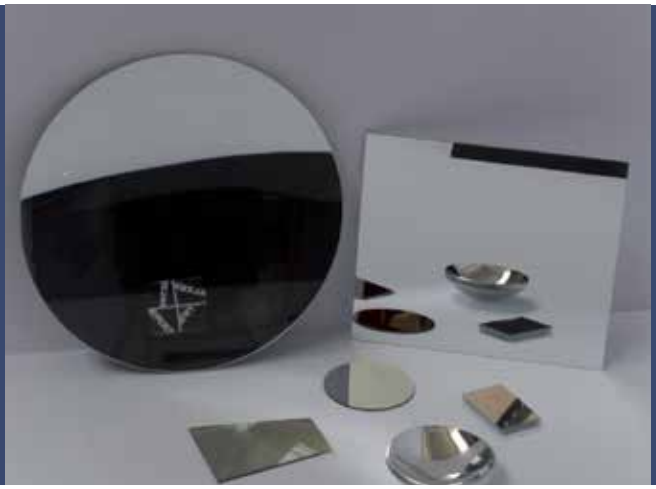


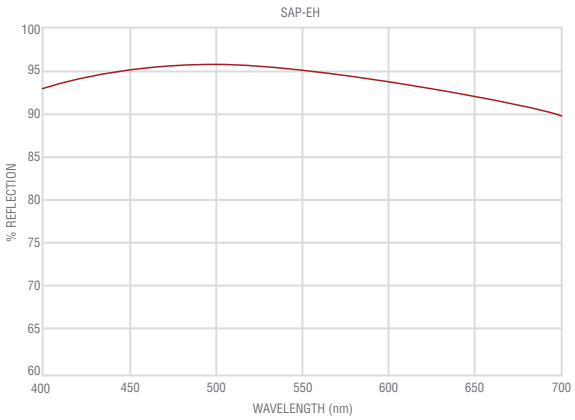
R = 70% ± 5%
T = 30% ± 5%
for 450-650 nm
AOI = 45°

SPECCHI FRONTALI
FRONT SURFACE MIRRORS

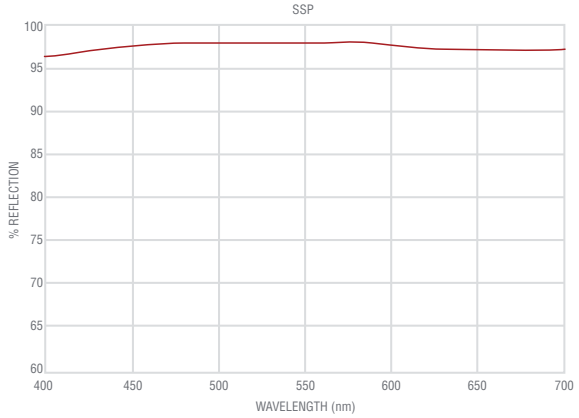


R abs ≥ 88% for 500-600 nm
R avg ≥ 85% for 400-700 nm
AOI = 8°





R abs ≥ 93% for 500-600 nm
R avg ≥ 89% for 400-700 nm
AOI = 8°

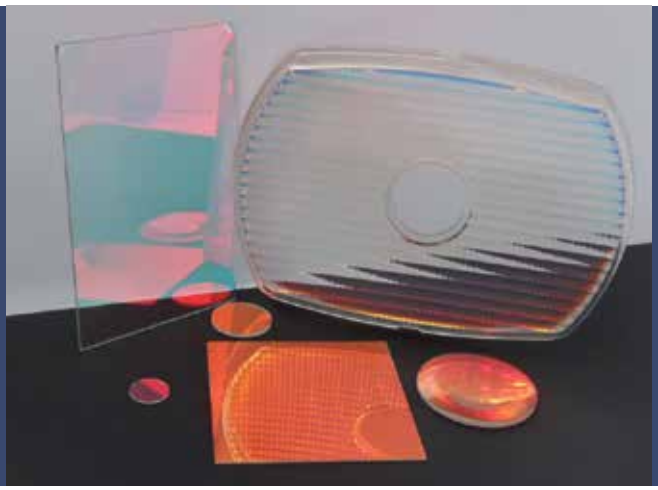


R abs ≥ 98% for 500-600 nm
R avg ≥ 93% for 400-700 nm
AOI = 8°

Lo specchio frontale ha non solo un'alta riflessione nelle parti dello spettro visibile, ultravioletto ed infrarosso, ma anche una buona resistenza chimica e meccanica.

The front surface mirror has not only a high reflection for visible, ultraviolet and infrared parts of the spectrum, but also a good chemical and mechanical resistance.

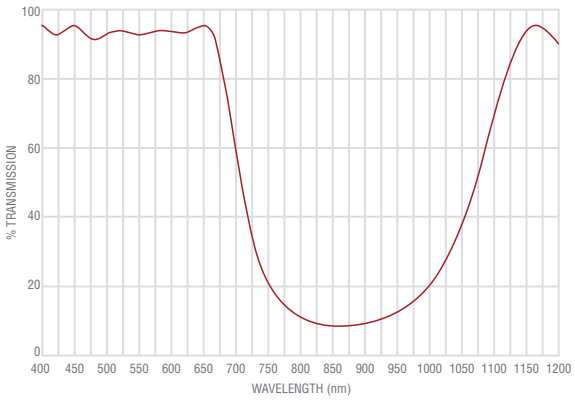
FILTRI ANTICALORE
HEAT PROTECTION FILTERS



Lo specchio caldo viene realizzato per separare il calore dalla luce visibile. La parte della radiazione infrarossa (calore) viene riflessa e la luce visibile viene trasmessa. Lo specchio caldo permette l'uso di sorgenti di radiazioni ad alta intensità con materiali sensibili al calore.
Il rivestimento può essere applicato alla maggior parte dei substrati ottici dall'ultravioletto all'infrarosso.

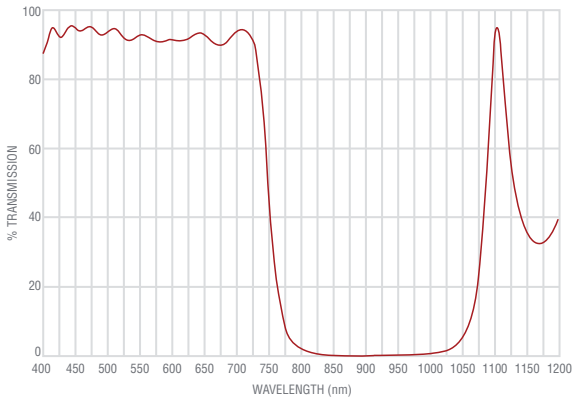
The hot mirror is produced to separate the heat from the visible light. The part of the infrared radiation (heat) is reflected and the visible light is transmitted.
The hot mirror allows the use of high intensity radiation sources with heat sensitive materials.
The coating can be applied to most optical substrates from the ultraviolet to the near infrared.

HRM-E



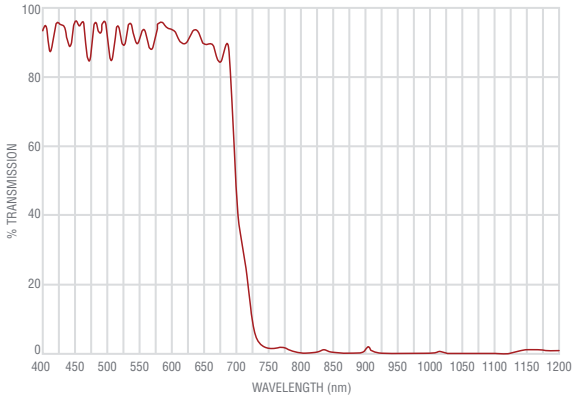
T avg ≥ 90% for 400-700 nm
T avg ≤ 40% for 800-1100 nm
AOI = 0°

HRM



T avg ≥ 90% for 400-700 nm
T avg ≤ 5% for 800-1000 nm
AOI = 0°

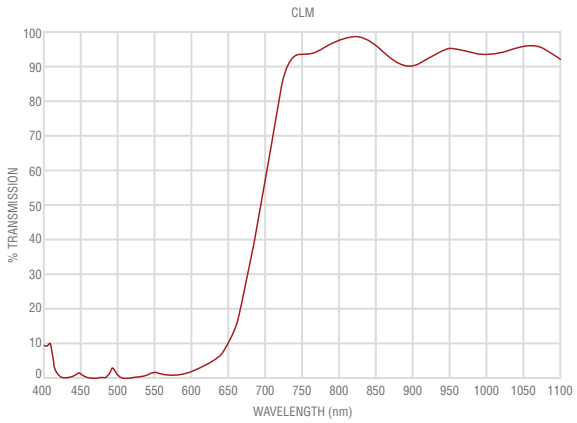
HRM-S



T avg ≥ 90% for 400-700 nm
T avg ≤ 2% for 800-1150 nm
AOI = 0°

SPECCHI FREDDI
COLD LIGHT MIRRORS





R avg ≥ 92% for 420-670 nm
T avg ≥ 80% for 750-2500 nm
AOI = 45°

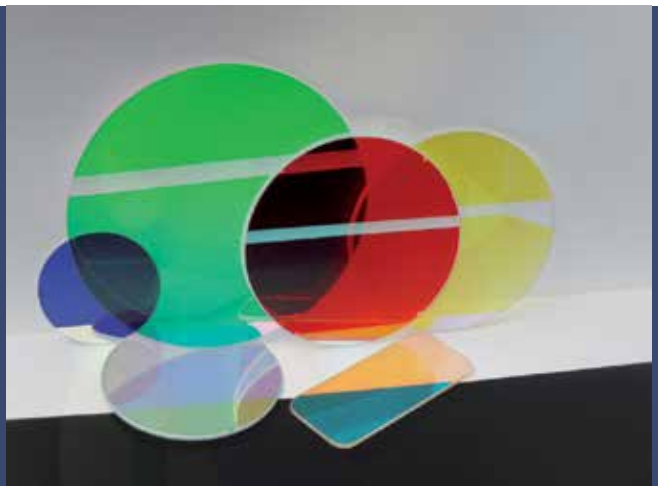
Questo specchio frontale realizzato con multistrati dielettrici ha un'alta riflessione della luce visibile ed un'alta trasmissione della radiazione infrarossa.
Gli specchi a luce fredda sono quindi utilizzati in quelle applicazioni in cui l'oggetto illuminato deve essere protetto dalla radiazione termica.

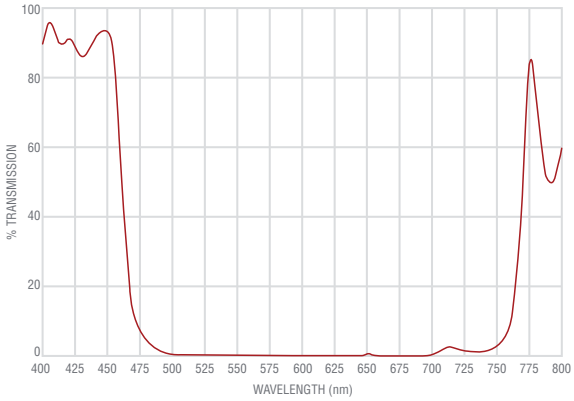
This dielectric front surface mirror, which is made up of a multilayer system, has a high reflection for the visible light and a high transmission for the infrared radiation. The cold light mirrors are therefore used in those applications where the illuminated item must be protected from the thermal radiation.

FILTRI DICROICI
DICHROIC FILTERS

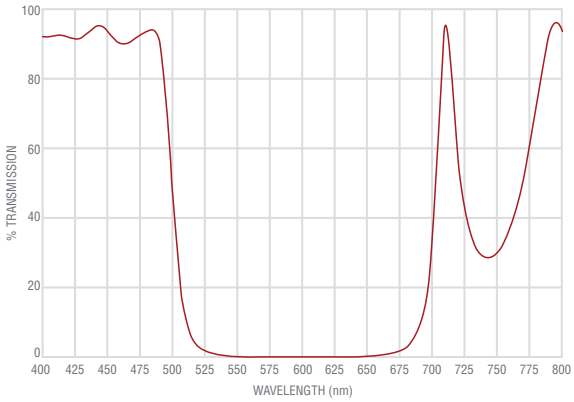
I filtri dicroici sono specchi rivestiti con strati dielettrici che trasmettono una certa parte della luce visibile e riflettono l'altra parte. Hanno un alto grado di efficienza.

The dichroic filters are dielectric coated interference mirrors which transmit certain areas of the visible spectrum and reflect others. They have a great degree of efficiency.

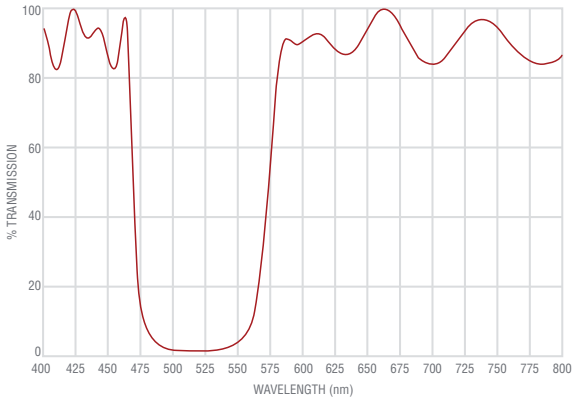




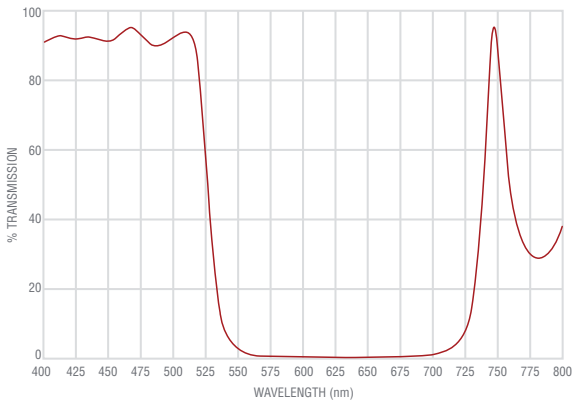
B46 BLU SCURO - DARK BLUE



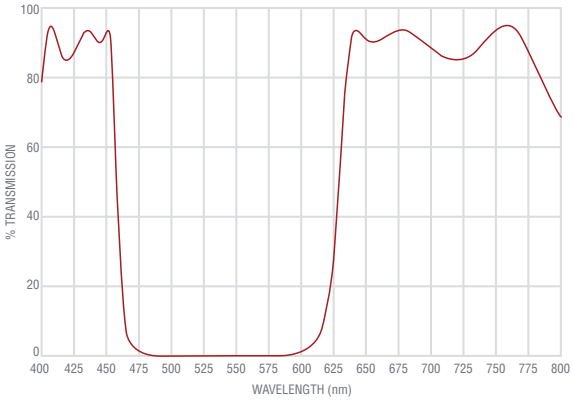
B50 BLU - BLUE



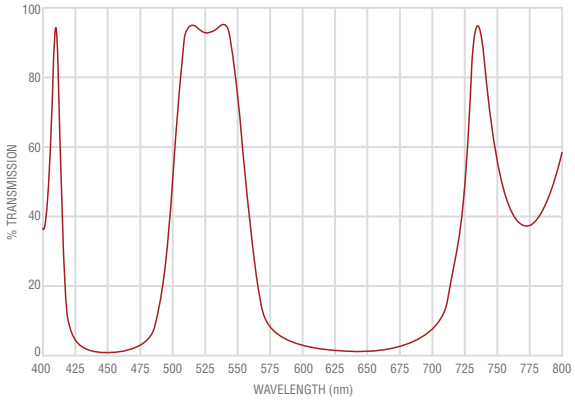
P4758 ROSA - PINK



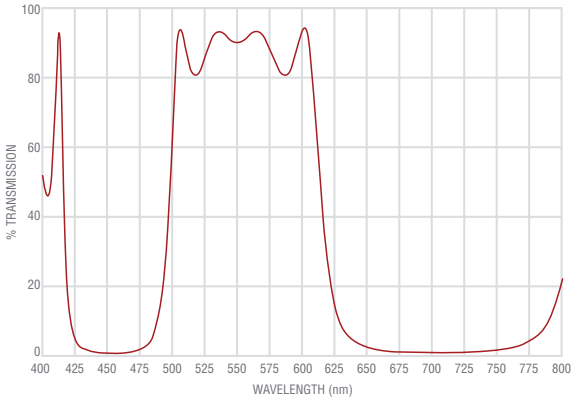
B52 BLU CHIARO - LIGHT BLUE



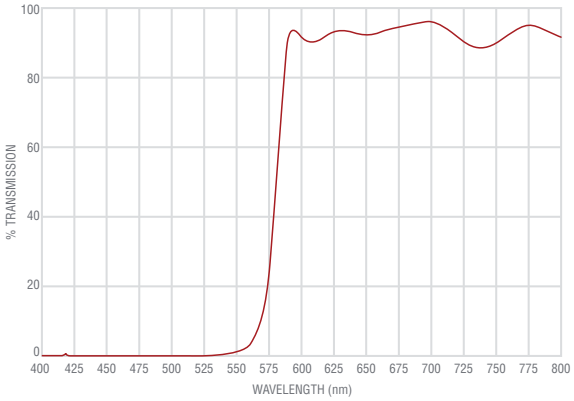
M4763 MAGENTA



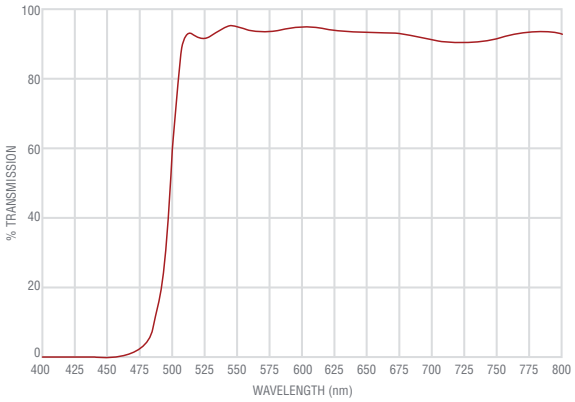
G50 VERDE - GREEN



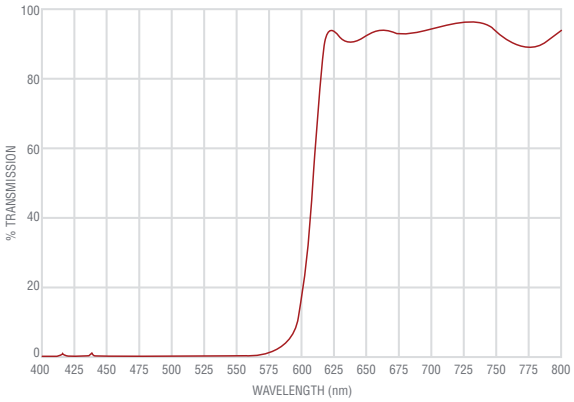
G62 VERDE CHIARO - LIGHT GREEN



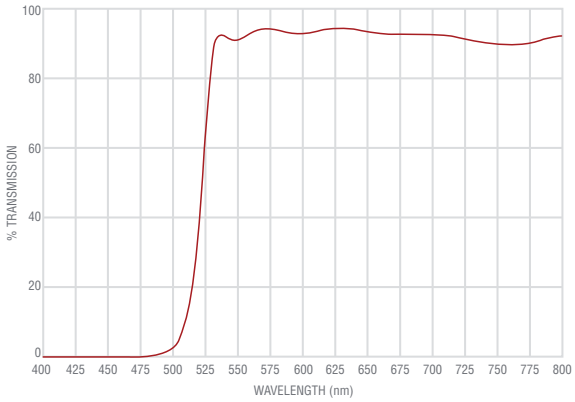
O58 ARANCIO - ORANGE



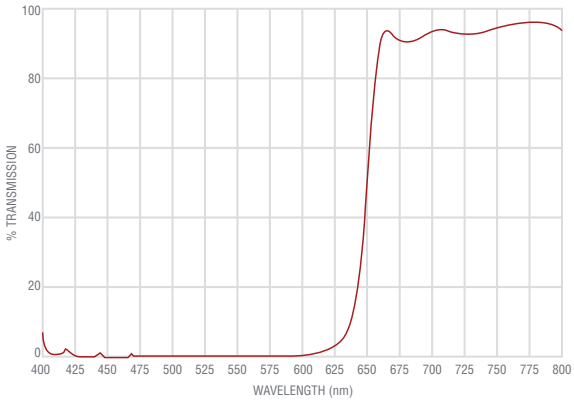
Y50 GIALLO CHIARO - LIGHT YELLOW



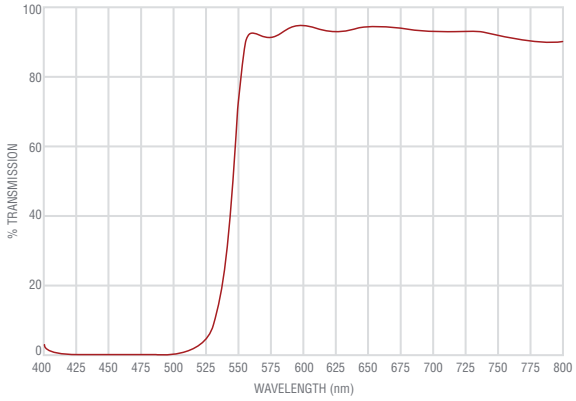
R61 ROSSO - RED



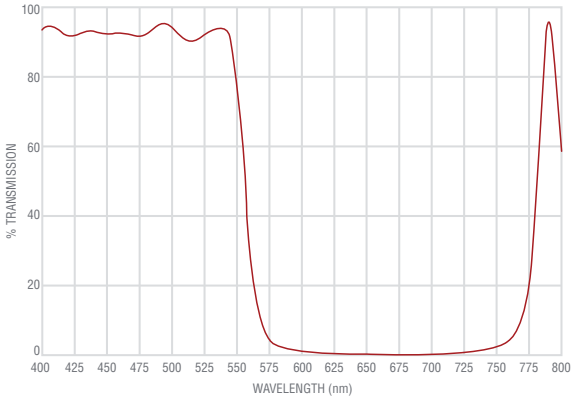
Y52 GIALLO - YELLOW



R65 ROSSO SCURO - DARK RED



Y54 GIALLO SCURO - DARK YELLOW



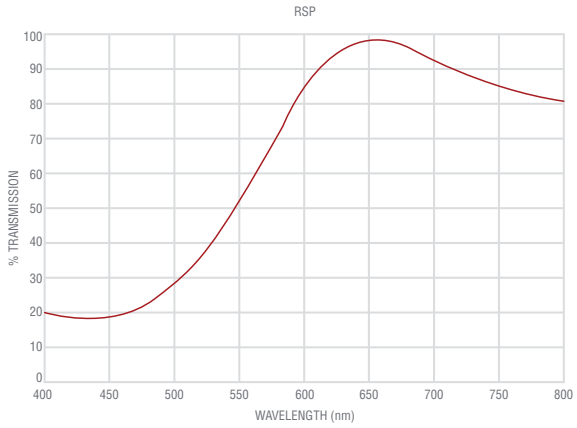
C56 CIANO - CYAN

FILTRI CONVERTITORI
CONVERSION FILTERS

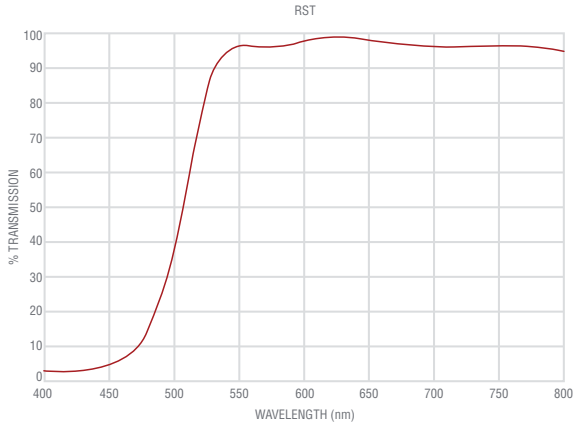


I filtri conversione colore vengono utilizzati per correggere lo spettro di emissione di una sorgente luminosa, adeguandola alla necessità di illuminazione. Il loro impiego è nel settore espositivo degli alimentari e dell'abbigliamento, nonché nel settore medicale, fotografico e teatrale.

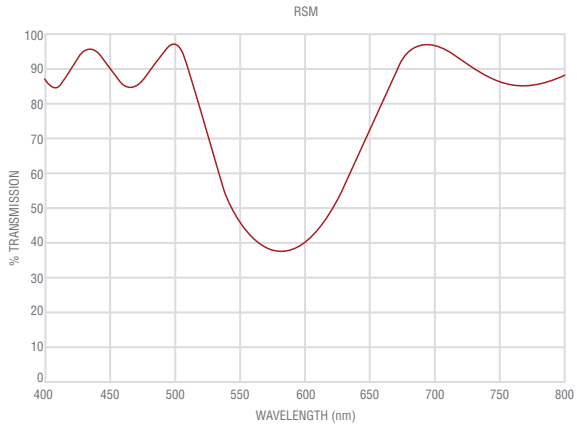
The colour conversion filters are used to correct the emission spectrum of a light source, adjusting it to the lighting requirements. Their applications are: food and clothing shop windows, medical, theater and photography industry.



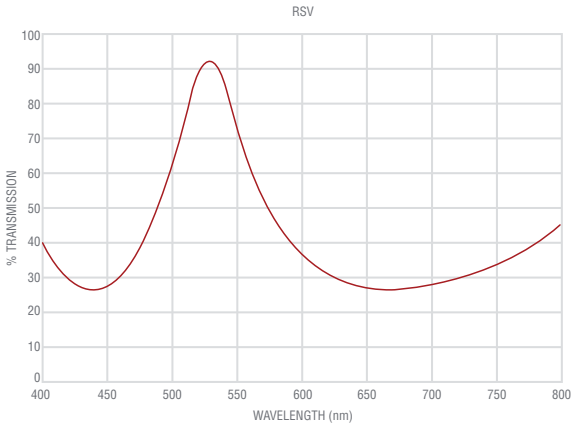
RSP



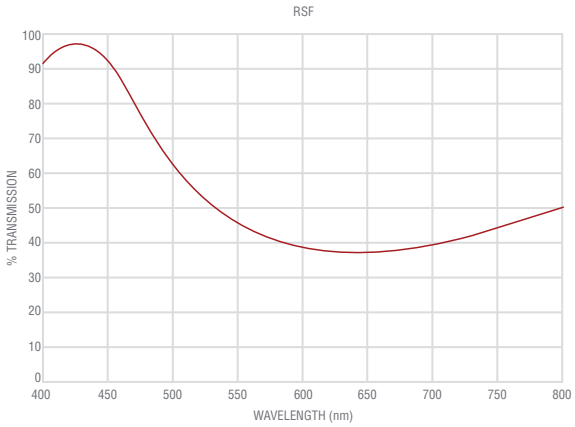
RST



RSM

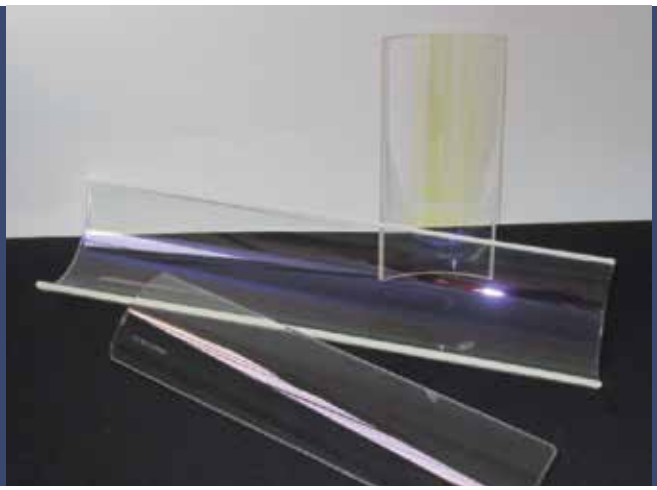


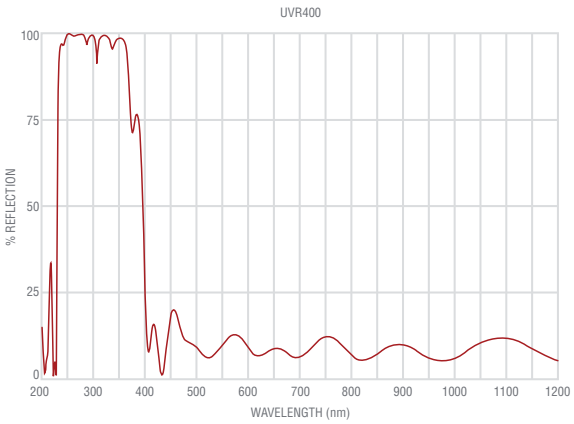
RSV



RSF

DEPOSITI UV
UV COATINGS



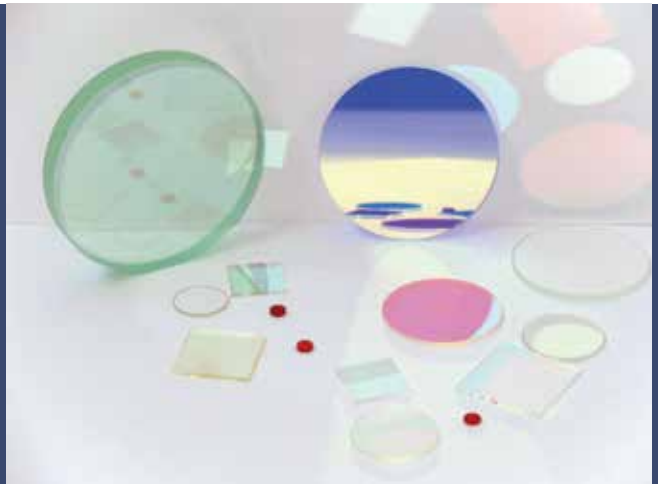


R avg ≥ 92% for 240-450 nm
T avg ≥ 80% for 450-1400 nm
AOI = 45°

Questi depositi multistrato hanno la proprietà di avere un'alta riflessione della radiazione ultravioletta ed un'alta trasmissione dello spettro visibile ed infrarosso. La riflessione e la trasmissione possono essere adeguate a particolari richieste.

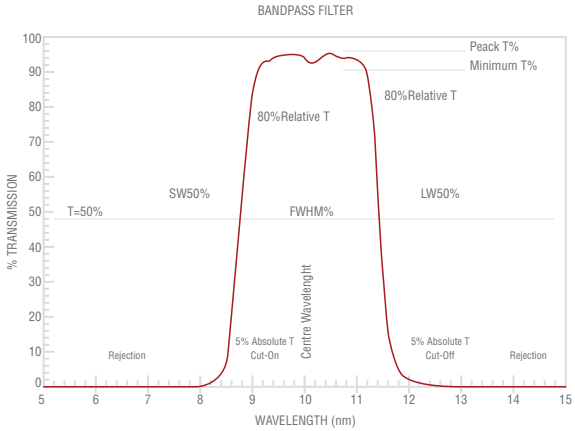
These multilayer coatings have the property of having a high reflection of the ultraviolet radiation and a high transmission of the visible and infrared radiation. The reflection and the transmission can be customized to particular applications.

FILTRI PASSA BANDA
BANDPASS FILTERS



Il filtro passa banda è un dispositivo che trasmette le frequenze ottiche entro una certa gamma e riduce le frequenze al di fuori di questa.

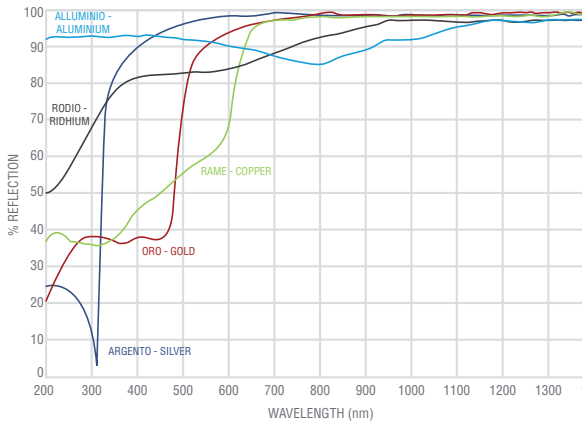
The bandpass filter is a device that passes optical frequencies within a certain range and attenuates frequencies outside that range.



DEFINIZIONE FILTRO - FILTER DEFINING

DEPOSITI METALLICI
METALLIC COATINGS

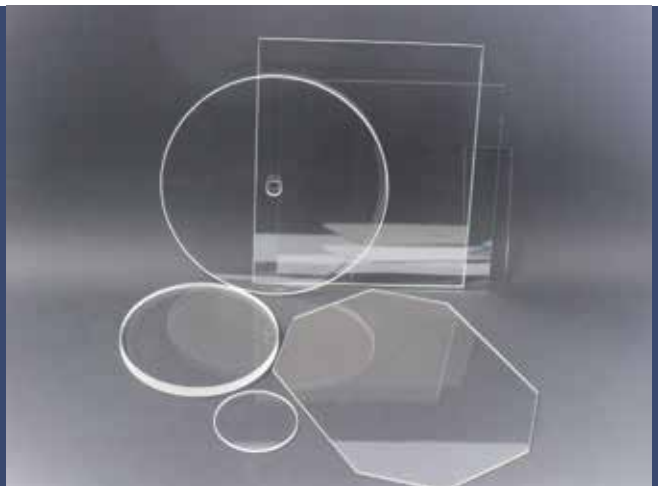


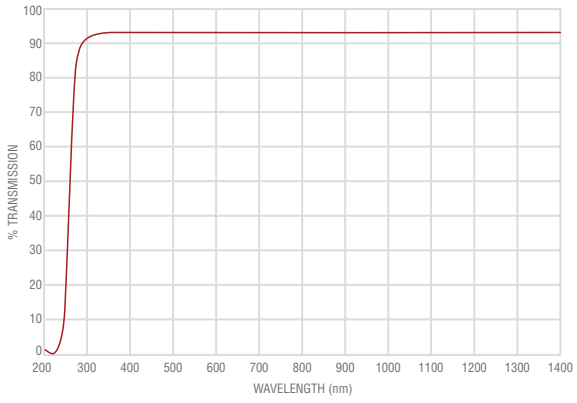


Per particolari applicazioni è possibile eseguire depositi metallici di oro, argento, rodio, rame, alluminio.

For special applications it is possible to do metallic coatings of gold, silver, rhodium, copper, aluminium.

VETRO PER SUBSTRATI
GLASS SUBSTRATE

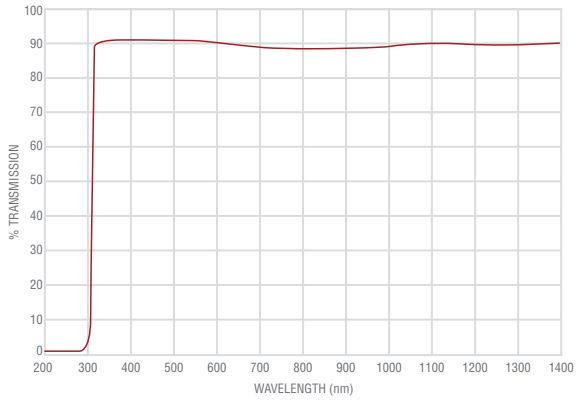




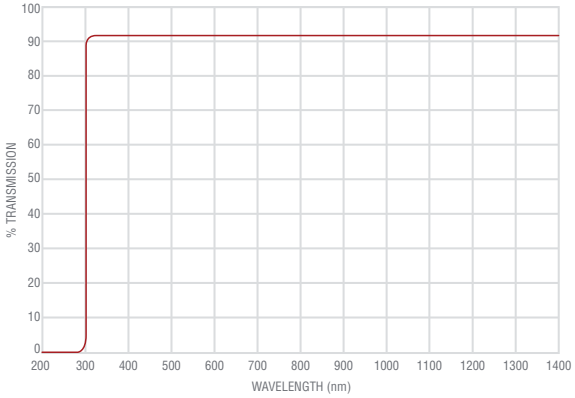
BOROFLOAT

Il vetro trasparente è il supporto più importante per il trattamento di film sottili e viene utilizzato anche neutro per una vasta gamma di applicazioni. Ne forniamo un'ampia scelta, anche temperato.

The white glass is the most important substrate for the thin film coatings, it is also used uncoated. We can supply a wide range, also tempered.



FLOAT



B270

DOVE SIAMO

WHERE WE ARE



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