

CO 2209 ZnS 8-12

High efficiency radioactive free antireflection coating on Zinc Sulphide 8 - 11.5 μm

DESCRIPTION

This coating is designed to maximise transmission for applications in the thermal spectral band.

This coating does not contain any radioactive materials.

SPECTRAL PERFORMANCE

Transmission values are for a 1 mm thick Zinc Sulphide substrate which has been coated on both surfaces with CO 2209.

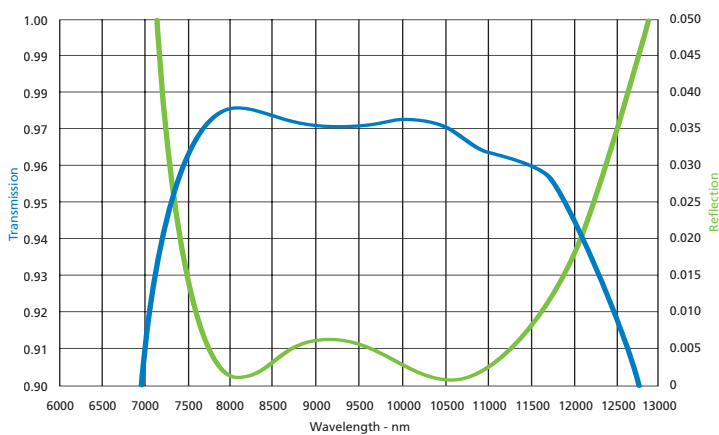
TRANSMISSION > 97% (average) from 8 - 11.5 μm

Reflection values are for a single Zinc Sulphide surface coated with CO 2209.

REFLECTION < 0.5% (average) from 8 - 11.5 μm

ENVIRONMENTAL PERFORMANCE

This coating will withstand the following environmental tests which will be carried out on a representative witness piece coated in the same batch.



ADHESION	MIL-C-48497 TS1888	para 4.5.3.1 para 5.1
HUMIDITY	MIL-C-48497 TS1888	para 4.5.3.2 para 5.2.1.2
ABRASION	MIL-C-48497 TS1888	para 4.5.3.2 para 5.4.1

CO 2214EN ZnS 8-12

Non-radioactive rain erosion resistant antireflection coating for Zinc Sulphide 8 - 12 μm

DESCRIPTION

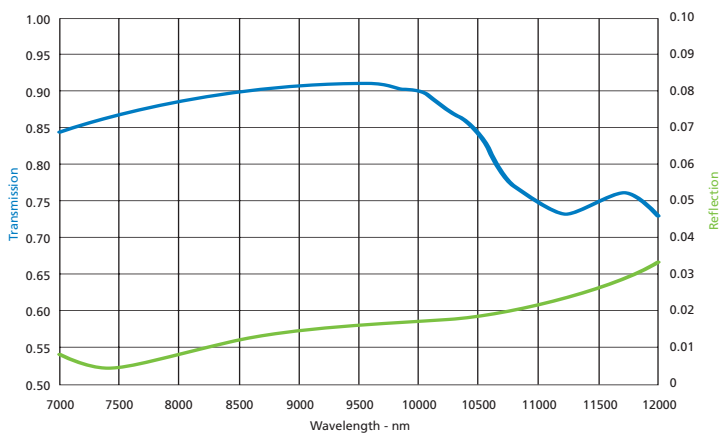
An improved rain erosion resistant coating for external surfaces, offering high transmission in the 8 - 12 μm waveband. It is particularly suitable for dome applications, where the same coating is applied to both faces. This coating does not contain any radioactive materials.

SPECTRAL PERFORMANCE

Transmission values are for a 6 mm thick Zinc Sulphide substrate which has been coated on both surfaces with CO 2214EN.
TRANSMISSION > 91% (average) from 7.8 - 10.2 μm
TRANSMISSION \geq 87% (absolute) from 7.8 - 10.2 μm
TRANSMISSION > 73% (average) from 10.2 - 12.1 μm
TRANSMISSION > 65% (absolute) from 10.2 - 12.1 μm

ENVIRONMENTAL PERFORMANCE

The coating will withstand the following environmental tests which will be carried out on a representative witness piece coated in the same batch.



ADHESION	MIL-C-48497	para 4.5.3.1
	TS1888	para 5.1
HUMIDITY	MIL-C-48497	para 4.5.3.2
	TS1888	para 5.2.1.2
SALT SOLUTION	MIL-C-48497	para 4.5.5.2
	TS1888	para 5.2.1.1
WIPER ABRASION	TS1888	para 5.4.3
	5000 wipes	

Rain Erosion Resistance
TRANSMISSION LOSS < 4% (average) from 8.0-11.5 μm
Under the following test conditions:

PERIOD OF EROSION: 1 hour
RAIN DROPS: 2 mm mean diameter
IMPACT ANGLE: 60° to the surface
SPEED: 500 mph/223 m/s
RATE OF RAIN: 25 mm/hour

CO 2409 ZnSe 8-12

High efficiency radioactive free antireflection coating for Zinc Selenide 8 - 12 μm

DESCRIPTION

This coating is designed for internal surface (I.S.) applications and offers maximum transmission combined with minimum reflection. Typically used in thermal imaging systems. This coating does not contain any radioactive materials.

SPECTRAL PERFORMANCE

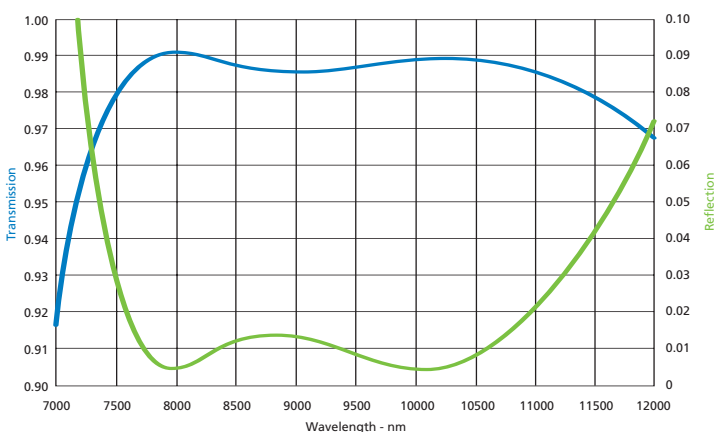
Transmission values are for a 1 mm thick Zinc Selenide substrate which has been coated on both surfaces with CO 2409.
TRANSMISSION > 98% (average) from 8 - 12 μm

Reflection values are from a single Zinc Selenide surface coated with CO 2409.
REFLECTION < 0.5% (average) from 8 - 11 μm

This coating can be produced to meet any other "industry standard" spectral specification for the 7.5 - 12.0 μm band.

ENVIRONMENTAL PERFORMANCE

The coating will withstand the following environmental tests which will be carried out on a representative witness piece coated in the same batch.



ADHESION MIL-C-48497 para 4.5.3.1
TS1888 para 5.1

HUMIDITY MIL-C-48497 para 4.5.3.2
TS1888 para 5.2.1.2

ABRASION MIL-C-48497 para 4.5.3.3
TS1888 para 5.4.1

This coating is also unaffected by the following environmental tests which will be performed upon request.

SALT SOLUTION MIL-C-48497 para 4.5.5.2
TS1888 para 5.2.1.1

TEMPERATURE CYCLE MIL-M-13508C para. 4.4.4

CO 2411 ZnSe 8-12

Antinarciuss antireflection coating
for Zinc Selenide
8 - 12 μm

DESCRIPTION

This coating is designed for internal surface (I.S.) applications and offers maximum transmission combined with extremely low reflection. Typically used in thermal imaging systems. The coating does not transmit in the visible part of the spectrum and does not therefore facilitate laser alignment. This coating does not contain any radioactive materials.

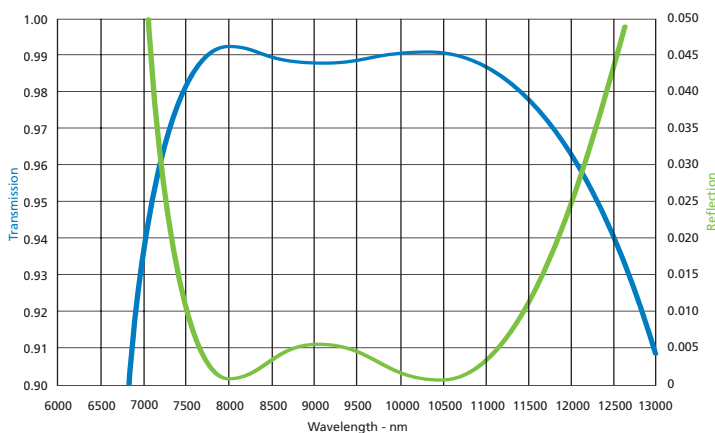
SPECTRAL PERFORMANCE

Transmission values are for a 1 mm thick Zinc Selenide substrate which has been coated on both surfaces with CO 2411.
TRANSMISSION > 98% (average) from 7.5 - 11.5 μm
TRANSMISSION > 96% (absolute) from 7.5 - 11.5 μm

Reflection values are for a single Zinc Selenide surface coated with CO 2411.
REFLECTION < 0.3% (average) from 7.5 - 11.5 μm
REFLECTION < 0.2% (average weighted to typical system response) from 7.5 - 11.5 μm

ENVIRONMENTAL PERFORMANCE

The coating will withstand the following environmental tests which will be carried out on a representative witness piece coated in the same batch.



ADHESION	MIL-C-48497 TS1888	para 4.5.3.1 para 5.1
HUMIDITY	MIL-C-48497 TS1888	para 4.5.3.2 para 5.2.1.2
ABRASION	MIL-C-48497 TS1888	para 4.5.3.3 para 5.4.1
SALT SOLUTION	MIL-C-48497 TS1888	para 4.5.5.2 para 5.2.1.1

CO 2609 GASIR™ 8-12

High efficiency antireflection coating
on GASIR™
8 - 12 μm

DESCRIPTION

This coating is designed for internal surface (I.S.) applications and offers maximum transmission combined with minimum reflection. Typically used in thermal imaging systems. This coating does not contain any radioactive materials.

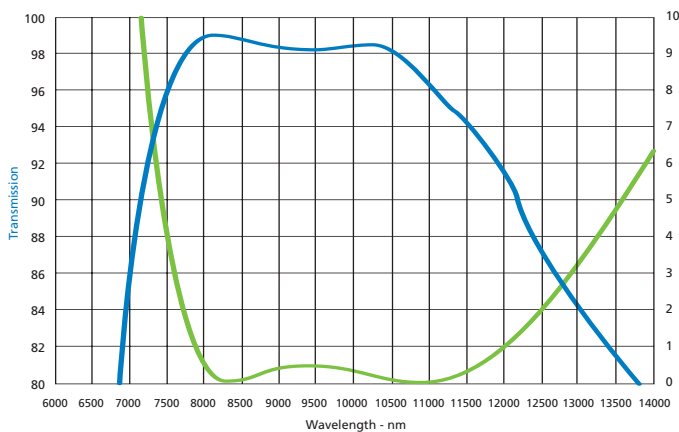
SPECTRAL PERFORMANCE

Transmission values are for a 1 mm thick GASIR™ substrate which has been coated on both surfaces with CO 2609
TRANSMISSION > 97.5% (average) for 7.5 to 11.5 microns
TRANSMISSION > 91.0% (average) for 11.5 to 12.3 microns

Reflection values are from a single GASIR™ surface coated with CO 2609
REFLECTION < 0.4% (average) for 8.0 to 12.0 microns

ENVIRONMENTAL PERFORMANCE

This coating will withstand the following environmental tests which will be carried out on a representative witness piece coated in the same batch.



ADHESION	MIL-C-48497 TS1888	para 4.5.3.1 para 5.1
HUMIDITY	MIL-C-48497 TS1888	para 4.5.3.2 para 5.2.1.2
ABRASION	MIL-C-48497 TS1888	para 4.5.3.3 para 5.4.1

CO 3209 GaAs 8-12

High efficiency radioactive free antireflection coating for Gallium Arsenide 8 - 12 μm

DESCRIPTION

This coating is designed for internal surface (I.S.) applications and offers maximum transmission combined with low reflection. Typically used in thermal imaging systems. The coating does not contain any radioactive materials.

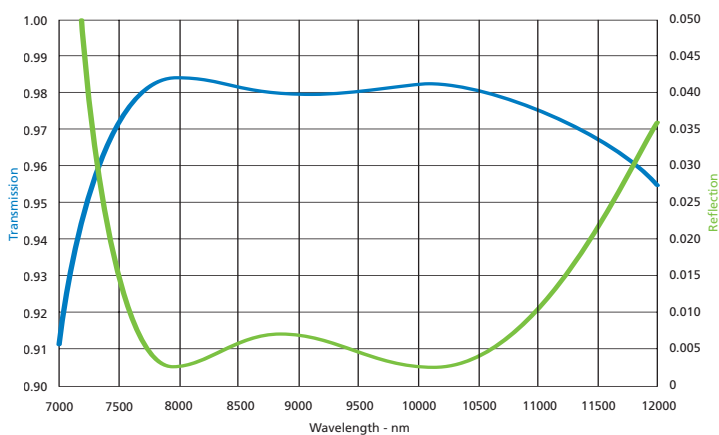
SPECTRAL PERFORMANCE

Transmission values are for a 1 mm thick GaAs substrate which has been coated on both surfaces with CO 3209
TRANSMISSION > 98% (average) from 8 - 11.5 μm

Reflection values are for a single GaAs surface coated with CO 3209
REFLECTION < 0.5% (average) from 8 - 11.5 μm

ENVIRONMENTAL PERFORMANCE

The coating will withstand the following environmental tests which will be carried out on a representative witness piece coated in the same batch.



ADHESION	MIL-C-48497 TS1888	para 4.5.3.1 para 5.1
HUMIDITY	MIL-C-48497 TS1888	para 4.5.3.2 para 5.2.1.2
ABRASION	MIL-C-48497 TS1888	para 4.5.3.3 para 5.4.1

CO 4004 Ge 8-12

Hard Carbon antireflection coating
for Germanium
8 - 12 μm

DESCRIPTION

This coating is designed for outer surface (O.S.) applications where severe environmental conditions are likely to be encountered.

The coating will operate undamaged under conditions such as:
 exposed optical surfaces of hand-held or vehicle-mounted thermal imaging systems;
 exposed optical surfaces of airborne or naval FLIR systems;
 exposed window surfaces where windscreen wiper or chemical attack is to be endured.

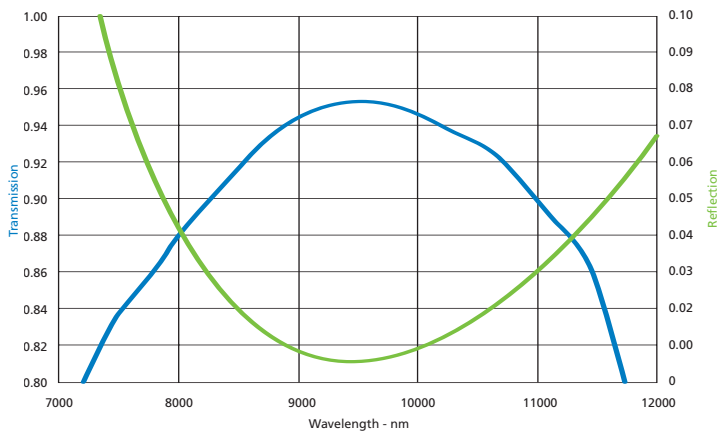
SPECTRAL PERFORMANCE

Transmission values are for a 1 mm thick Germanium substrate which has been coated on one surface with CO 4004 and on the second surface with CO 4009 (High Efficiency coating).
 TRANSMISSION > 90% (average) from 8 - 11.5 μm

Reflection values are for a single Germanium surface coated with CO 4004.
 REFLECTION < 3% (average) from 8 - 11.5 μm

ENVIRONMENTAL PERFORMANCE

The coating will withstand the following environmental tests which will be carried out on a representative witness piece coated in the same batch.



ADHESION	MIL-C-48497 TS1888	para 4.5.3.1 para 5.1
HUMIDITY 7 days	MIL-C-48497 TS1888	para 4.5.3.2 para 5.2.1.2
ABRASION windscreen wiper	TS1888 (O.S)	para 5.4.3
SALT FOG For 24 hours	MIL-STD-810C	para 509.1

CO 4004C Ge 8-12

'Covert' Hard Carbon coating
for Germanium
8 - 12 μm

DESCRIPTION

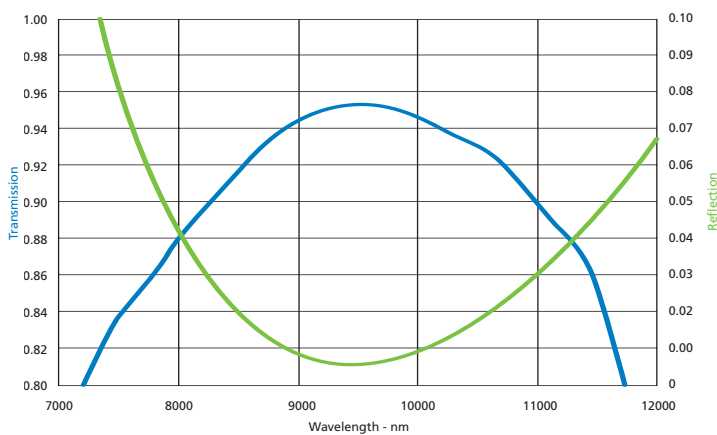
The standard hard carbon coating (CO 4004) is post-treated with a visible antireflection process. This reduces visible reflectance from around 17% average to < 2% average. This coating is applicable in situations where glint would be disadvantageous.

SPECTRAL PERFORMANCE

Infrared performance is as specified for CO 4004. Additionally REFLECTION is < 2% from 400 - 700 nm.

ENVIRONMENTAL PERFORMANCE

Performance of the basic hard carbon coating is as specified for CO 4004. The overcoat will not fully pass the windscreen wiper test so this process is not indicated for applications in which wiper blades are used to clean the window.



An overcoated witness piece will be tested to the following specifications:-

ADHESION	MIL-C-48497	para 4.5.3.1
HUMIDITY	MIL-C-48497	para 4.5.3.2
ABRASION	MIL-C-48497	para 4.5.5.1

Additionally, an untreated hard carbon coated witness piece will be tested per CO 4004.

CO 4005 Ge 8-12

High durability antireflection coating
for Germanium
8 - 12 μm

DESCRIPTION

This coating is designed for modular interface surface (M.I.S.) applications where maximum external durability is required whilst maintaining high transmission.

SPECTRAL PERFORMANCE

Transmission values are for a 1 mm thick Germanium substrate which has been coated on both surfaces with CO 4005.

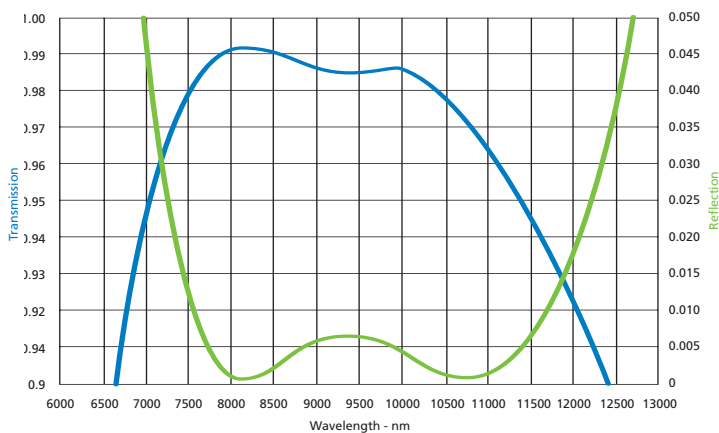
TRANSMISSION > 97% (average) from 8 - 11.5 μm

Reflection values are for a single Germanium surface coated with CO 4005.

REFLECTION < 0.5% (average) from 8 - 11.5 μm (typical)

ENVIRONMENTAL PERFORMANCE

The coating will withstand the following environmental tests which will be carried out on a representative witness piece coated in the same batch.



ADHESION	MIL-C-48497 TS1888	para 4.5.3.1 para 5.1
HUMIDITY	MIL-C-48497 TS1888	para 4.5.3.2 para 5.2.1.2
ABRASION	MIL-C-48497 TS1888	para 4.5.5.1 para 5.4.2
SALT SOLUTION	MIL-C-48497 TS 1888	para 4.5.5.2 para 5.2.1.1

CO 4005EN Non-Thoriated Ge 8-12

High durability antireflection coating
for Germanium
8 - 12 μm

DESCRIPTION

This coating is designed for modular interface surface (M.I.S.) applications where maximum external durability is required whilst maintaining high transmission.

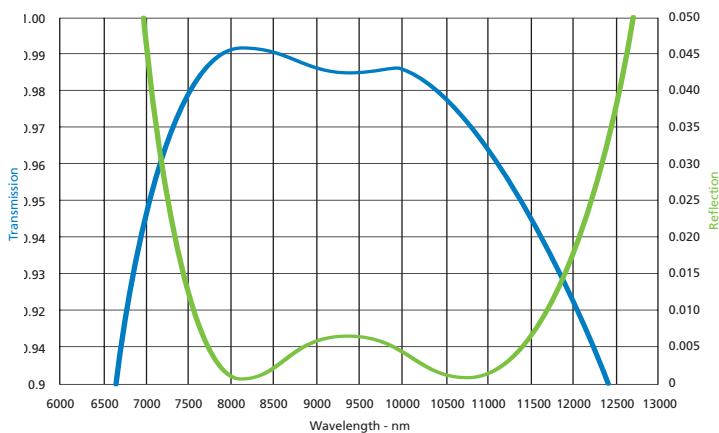
SPECTRAL PERFORMANCE

Transmission values are for a 1 mm thick Germanium substrate which has been coated on both surfaces with CO 4005EN.
TRANSMISSION > 97% (average) from 8 - 11.5 μm

Reflection values are for a single Germanium surface coated with CO 4005EN.
REFLECTION < 0.5% (average) from 8 - 11.5 μm (typical)

ENVIRONMENTAL PERFORMANCE

The coating will withstand the following environmental tests which will be carried out on a representative witness piece coated in the same batch.



ADHESION	MIL-C-48497 TS1888	para 4.5.3.1 para 5.1
HUMIDITY	MIL-C-48497 TS1888	para 4.5.3.2 para 5.2.1.2
ABRASION	MIL-C-48497 TS1888	para 4.5.5.1 para 5.4.2
SALT SOLUTION	MIL-C-48497 TS 1888	para 4.5.5.2 para 5.2.1.1
SALT FOG For 24 hours	MIL-STD-810C	para 509.1

CO 4009 Ge 8-12

High efficiency radioactive free antireflection coating for Germanium 8 - 12 μm

DESCRIPTION

This coating is designed for internal surface (I.S.) applications and offers maximum transmission combined with low reflection. Typically used in thermal imaging systems. This coating does not contain any radioactive materials.

SPECTRAL PERFORMANCE

Transmission values are for a 1 mm thick Germanium substrate which has been coated on both surfaces with CO 4009.

TRANSMISSION > 98% (average) from 7.5 - 11.5 μm
TRANSMISSION > 96% (absolute) from 7.5 - 11.5 μm
TRANSMISSION > 94% (average) from 11.5 - 12.3 μm

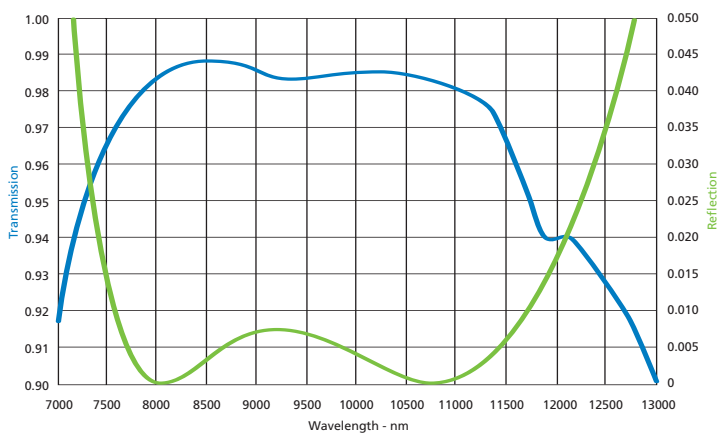
Reflection values are for a single Germanium surface coated with CO 4009.

REFLECTION < 0.9% (average) from 7.5 - 8 μm
REFLECTION < 0.3% (average) from 8 - 11.5 μm
REFLECTION < 1.3% (average) from 11.5 - 12.3 μm

This coating can be produced to meet any other "industry standard" spectral specification in the 7.5 - 12 μm band.

ENVIRONMENTAL PERFORMANCE

The coating will withstand the following environmental tests which will be carried out on a representative witness piece coated in the same batch.



ADHESION MIL-C-48497 para 4.5.3.1
TS1888 para 5.1

HUMIDITY MIL-C-48497 para 4.5.3.2
TS1888 para 5.2.1.2

ABRASION MIL-C-48497 para 4.5.3.3
TS1888 para 5.4.1

This coating is also unaffected by the following environmental tests which will be performed upon request.

SALT SOLUTION MIL-C-48497 para 4.5.5.2
TS1888 para 5.2.1.1

TEMPERATURE CYCLE MIL-M-13508C para. 4.4.4

CO 4019 Ge 8-12

High durability radioactive free antireflection coating for Germanium 8 - 12 μm

DESCRIPTION

This coating is designed for modular interface surface (M.I.S.) applications where maximum durability is required whilst maintaining high transmission.

This coating does not contain any radioactive materials.

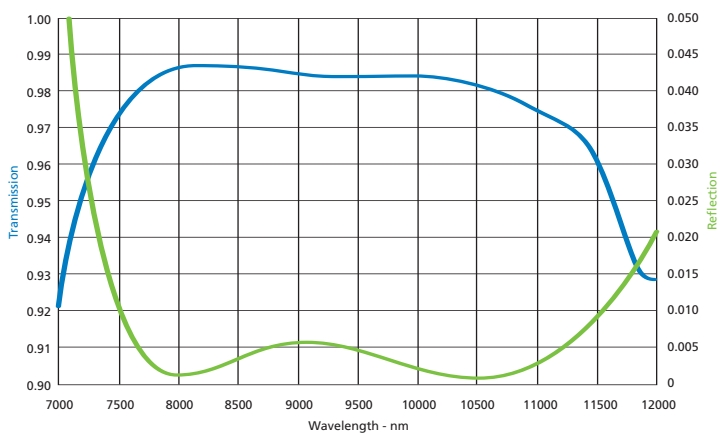
SPECTRAL PERFORMANCE

Transmission values are for a 1 mm thick Germanium substrate which has been coated on one surface with CO 4019 and on the second surface with CO 4009 (high efficiency coating).
TRANSMISSION > 98% (average) from 8 - 11.5 μm

Reflection values are for a single Germanium surface coated with CO 4019.
REFLECTION < 0.5% (average) from 8 - 11.5 μm

ENVIRONMENTAL PERFORMANCE

The coating will withstand the following environmental tests which will be carried out on a representative witness piece coated in the same batch.



ADHESION	MIL-C-48497 TS1888	para 4.5.3.1 para 5.1
HUMIDITY	MIL-C-48497 TS1888	para 4.5.3.2 para 5.2.1.2
ABRASION	MIL-C-48497 TS1888	para 4.5.5.1 para 5.4.2
SALT SOLUTION	MIL-C-48497 TS 1888	para 4.5.5.2 para 5.2.1.1
TEMPERATURE CYCLE	MIL-M-13508C	para 4.4.4