

Colourless anti-reflective coating

ARunic®	Water- and oil-repellent, UV filter, highly wear-resistant, anti-static, high-level of hardness, achromatic	2
ARuv	UV filter, anti-static, achromatic	4
ARdur®	Water- and oil-repellent, anti-static, high-level of hardness, achromatic	6
ARdur® 1 side	Anti-static, high-level of hardness, achromatic	8
ARcroma®	Achromatic	10
ARcroma® 1 side	Achromatic	12

Over the past 20 years, ECONORM's anti-reflective coatings have been widely used to provide watch glasses with a high-quality finish. Building on this advanced expertise, ECONORM is now venturing into the production of functional products that go beyond simple anti-reflective coatings.

In 2017, ECONORM developed anti-reflective coating ranges designed to meet new requirements such as colour preservation, resistance to electrostatic effects and even achromatic properties.

Coloured anti-reflective coating

ARunic® Bleu-Violet	Water- and oil-repellent, UV filter, highly wear-resistant, anti-static, high-level of hardness, achromatic	14
ARuv Bleu-Violet	UV filter, anti-static, achromatic	16
ARdur® Bleu-Violet	Water- and oil-repellent, anti-static, high-level of hardness, achromatic	18
ARdur® Bleu-Violet 1 side	High-level of hardness, highly wear-resistant, achromatic, anti-static	20
ARcroma® Bleu-Violet	Achromatic	22
ARcroma® Bleu-Violet 1 side	Achromatic	24
AR Bleu-Violet		26
AR Bleu-Violet 1 side		28
AR Jaune		30
AR Jaune 1 side		32
AR Rouge		34
AR Rouge 1 side		36
AR Vert		38
AR Vert 1 side		40

The single- and multi-layer coloured anti-reflective coatings have been renamed in line with the one- and two-sided product ranges.

The old treatment designations – MgF2, SC and IC – are still available and can be used. For more information, please contact the customer service team, who will be happy to answer any questions you may have.

Contacts	42
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ARunic®



Colourless



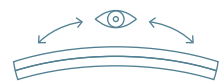
High level
of hardness



UV filter



Highly
wear-resistant



Achromatic

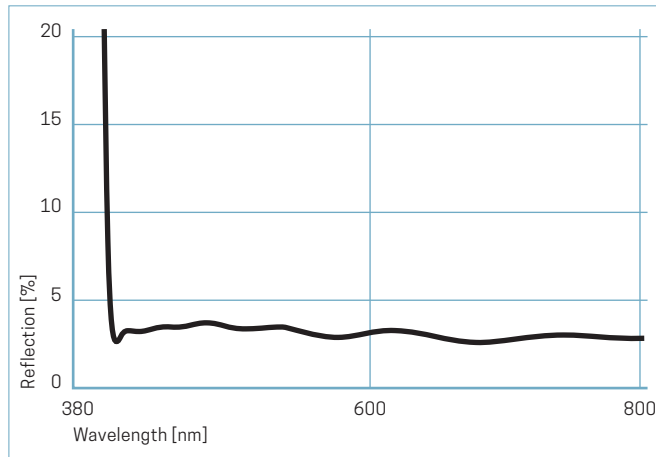


Anti-static



Water- and
oil-repellent

Reflection curve



Product structure



Properties

Optical

Reflection ≤3%	●
UV filter	●
Achromatic	●

Mechanical

Hard	●
Highly wear-resistant	●
Anti-static	●

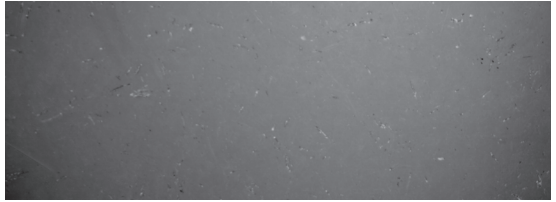
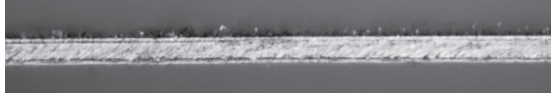
Chemical

Water- and oil-repellent	●
Resistant to solvents	●
Low-temperature process	—
Alkali-resistant	—
Resistant to ultrasound	●

Geometric

Drilling, opening	—
Highly convex	●

Quality tests

Mechanical resistance	Description	Results
Vibratory finishing (chemical-mechanical polishing)	2 hours in a vibrating bowl with cylindrical ceramic abrasives (Al ₂ O ₃)	Class 1 
Scratch-Test	Test to establish the hardness and adhesiveness of the coating using a diamond tip and variable loads	
Compliance with DIN-ISO 9211-4-02-02	Rapid pull off testing (~1 s) using adhesive tape 12-13 mm wide. Adhesive strength >9.8 N per 25 mm	Class 0 "OK"

Chemical resistance

"Thermal shock" test DIN-ISO 9211-4-04-12	3× 2-minute cycles in de-mineralised water at 100 °C. 1 minute in de-mineralised water at room temperature	Class 0 "OK"
Solubility DIN-ISO 9211-4-04-06	96 hours in a saline solution (45 g/l) at room temperature	Class 0 "OK"
Solvent resistance DIN-ISO 9211-3-12-3 and 9022-87-04-1	1 h hour in acetone (CH ₃ COCH ₃) at room temperature	Class 0 "OK"
Resistance to ultrasound	Alkali bath (3% "Galvex") for 2 hours at 60 °C and 50 W of ultrasonic power	Class 1 "Minimal colour change"
Resistance to sweat DIN-ISO 9022-86-02-1	7 days in an artificial sweat solution	Class 0 "OK"

Resistance to climatic conditions

Cold DIN-ISO 9022-10-09-1	16 hours at -55 °C	Class 0 "OK"
Dry heat DIN-ISO 9022-11-06-1	6 hours at 85 °C with relative humidity of <40%	Class 0 "OK"

Cleaning instructions

Please observe the following instructions on how to clean glasses that have been treated with an anti-reflective coating:

– Glasses can be cleaned easily in a neutral solution using ultrasound and at temperatures of up to 60 °C.

– If cleaning by hand, we recommend wearing single-use, powder-free latex gloves and using a lint-free cloth.

– Use one of the following approved cleaning alcohols:
Ethanol with 5% isopropyl alcohol (F25-A+IPA), Alcosuisse, Bern
Ethanol Absolute A 15 0 (02883), Sigma-Aldrich, Buchs SG

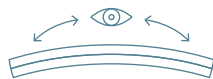
ARuv



Colourless



UV filter

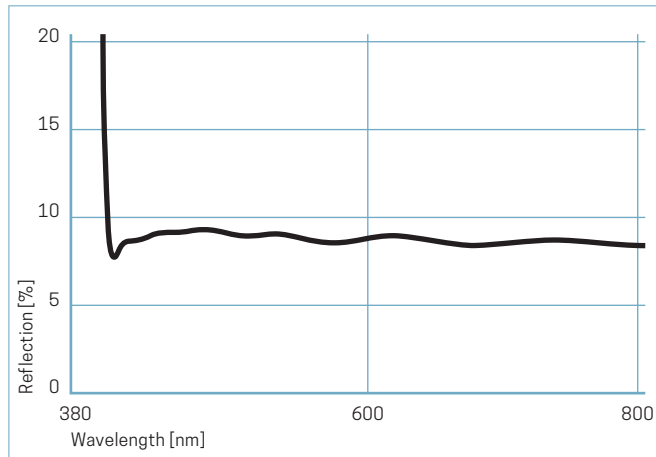


Achromatic



Anti-static

Reflection curve



Product structure



Properties

Optical

Reflection ≤3%	—
UV filter	●
Achromatic	●

Mechanical

Hard	—
Highly wear-resistant	—
Anti-static	●

Chemical

Water- and oil-repellent	—
Resistant to solvents	●
Low-temperature process	—
Alkali-resistant	—
Resistant to ultrasound	●

Geometric

Drilling, opening	●
Highly convex	●

Quality tests

Mechanical resistance	Description	Results
Vibratory finishing (chemical-mechanical polishing)	2 hours in a vibrating bowl with cylindrical ceramic abrasives (Al ₂ O ₃)	—
Scratch-Test	Test to establish the hardness and adhesiveness of the coating using a diamond tip and variable loads	—
Compliance with DIN-ISO 9211-4-02-02	Rapid pull off testing (~1 s) using adhesive tape 12-13 mm wide. Adhesive strength > 9.8 N per 25 mm	Class 0 "OK"

Chemical resistance

"Thermal shock" test DIN-ISO 9211-4-04-12	3× 2-minute cycles in de-mineralised water at 100 °C. 1 minute in de-mineralised water at room temperature	Class 0 "OK"
Solubility DIN-ISO 9211-4-04-06	96 hours in a saline solution (45 g/l) at room temperature	—
Solvent resistance DIN-ISO 9211-3-12-3 and 9022-87-04-1	1 h hour in acetone (CH ₃ COCH ₃) at room temperature	Class 0 "OK"
Resistance to ultrasound	Alkali bath (3% "Galvex") for 2 hours at 60 °C and 50 W of ultrasonic power	Class 1 "Minimal colour change"
Resistance to sweat DIN-ISO 9022-86-02-1	7 days in an artificial sweat solution	—

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Cleaning instructions

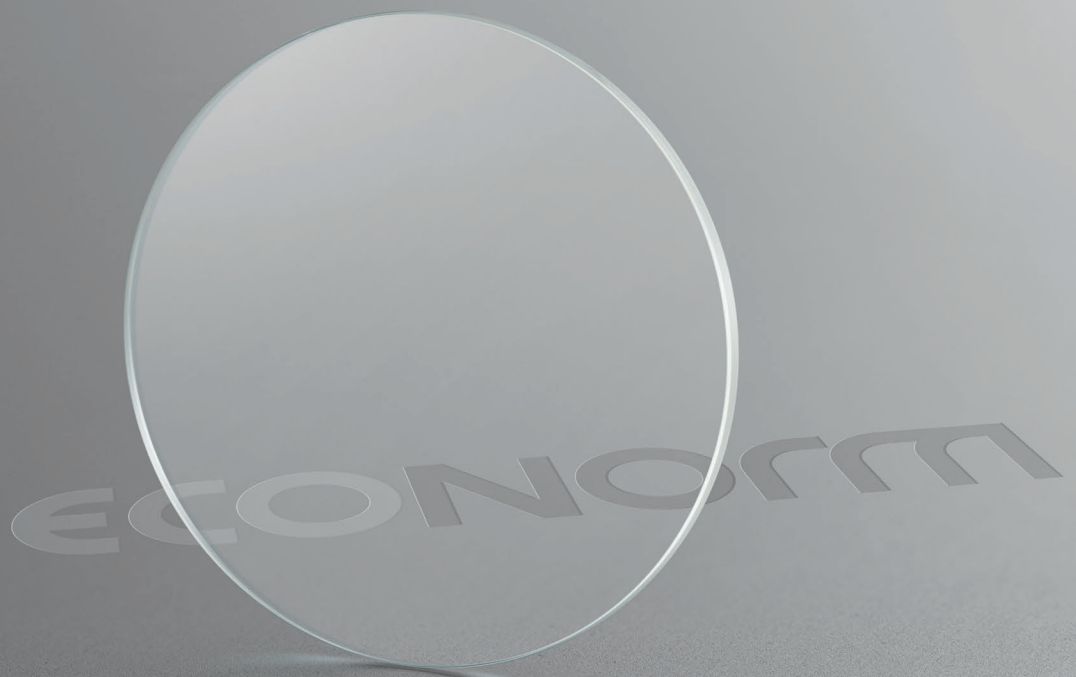
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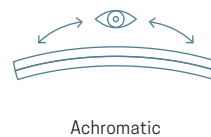
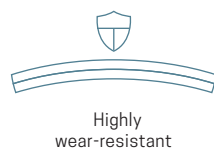
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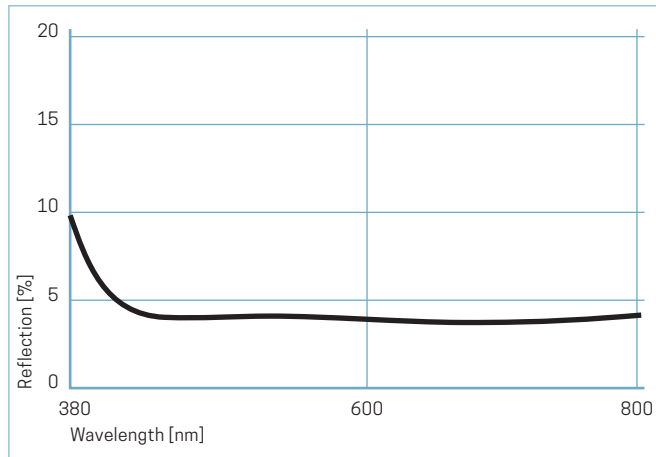
ARdur[®]



Colourless



Reflection curve



Product structure



Properties

Optical

Reflection $\leq 3\%$	—
UV filter	—
Achromatic	●

Mechanical

Hard	●
Highly wear-resistant	●
Anti-static	●

Chemical

Water- and oil-repellent	●
Resistant to solvents	●
Low-temperature process	—
Alkali-resistant	—
Resistant to ultrasound	●

Geometric

Drilling, opening	—
Highly convex	●

Quality tests

Mechanical resistance	Description	Results
Vibratory finishing (chemical-mechanical polishing)	2 hours in a vibrating bowl with cylindrical ceramic abrasives (Al_2O_3)	Class 1
Scratch-Test	Test to establish the hardness and adhesiveness of the coating using a diamond tip and variable loads	
Compliance with DIN-ISO 9211-4-02-02	Rapid pull off testing (~1 s) using adhesive tape 12–13 mm wide. Adhesive strength > 9.8 N per 25 mm	Class 0 "OK"

Chemical resistance

"Thermal shock" test DIN-ISO 9211-4-04-12	3 × 2-minute cycles in de-mineralised water at 100 °C. 1 minute in de-mineralised water at room temperature	Class 0 "OK"
Solubility DIN-ISO 9211-4-04-06	96 hours in a saline solution (45 g/l) at room temperature	Class 0 "OK"
Solvent resistance DIN-ISO 9211-3-12-3 and 9022-87-04-1	1 h hour in acetone (CH_3COCH_3) at room temperature	Class 0 "OK"
Resistance to ultrasound	Alkali bath (3% "Galvex") for 2 hours at 60 °C and 50 W of ultrasonic power	Class 1 "Minimal colour change"
Resistance to sweat DIN-ISO 9022-86-02-1	7 days in an artificial sweat solution	Class 0 "OK"

Resistance to climatic conditions

Cold DIN-ISO 9022-10-09-1	16 hours at -55 °C	Class 0 "OK"
Dry heat DIN-ISO 9022-11-06-1	6 hours at 85 °C with relative humidity of < 40%	Class 0 "OK"

Cleaning instructions

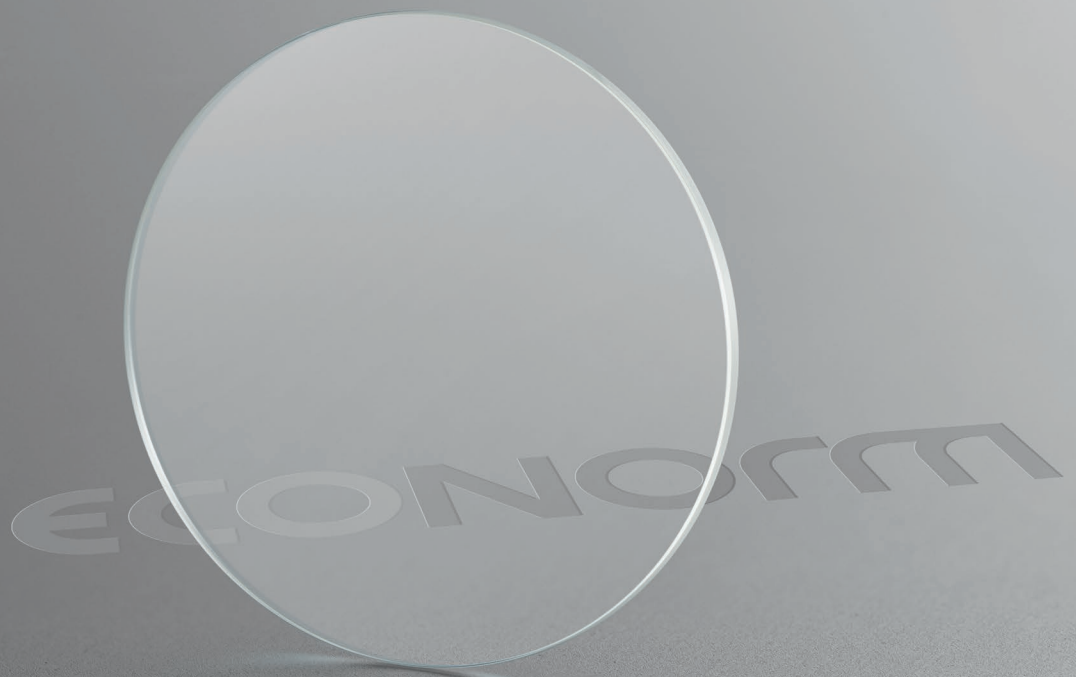
Please observe the following instructions on how to clean glasses that have been treated with an anti-reflective coating:

– Glasses can be cleaned easily in a neutral solution using ultrasound and at temperatures of up to 60 °C.

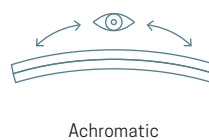
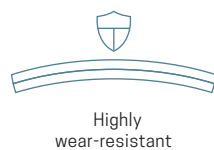
– If cleaning by hand, we recommend wearing single-use, powder-free latex gloves and using a lint-free cloth.

– Use one of the following approved cleaning alcohols:
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Ethanol Absolute A 15 0 (02883), Sigma-Aldrich, Buchs SG

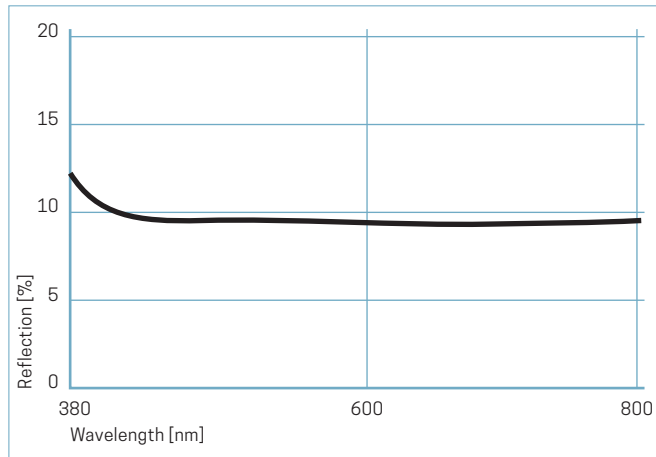
ARdur[®] 1 side



Colourless



Reflection curve



Product structure



Properties

Optical

Reflection ≤3%	—
UV filter	—
Achromatic	●

Mechanical

Hard	●
Highly wear-resistant	●
Anti-static	●

Chemical

Water- and oil-repellent	—
Resistant to solvents	●
Low-temperature process	—
Alkali-resistant	—
Resistant to ultrasound	●

Geometric

Drilling, opening	—
Highly convex	●

Quality tests

Mechanical resistance	Description	Results
Vibratory finishing (chemical-mechanical polishing)	2 hours in a vibrating bowl with cylindrical ceramic abrasives (Al ₂ O ₃)	—
Scratch-Test	Test to establish the hardness and adhesiveness of the coating using a diamond tip and variable loads	—
Compliance with DIN-ISO 9211-4-02-02	Rapid pull off testing (~1 s) using adhesive tape 12-13 mm wide. Adhesive strength > 9.8 N per 25 mm	Class 0 "OK"

Chemical resistance

"Thermal shock" test DIN-ISO 9211-4-04-12	3× 2-minute cycles in de-mineralised water at 100 °C. 1 minute in de-mineralised water at room temperature	Class 0 "OK"
Solubility DIN-ISO 9211-4-04-06	96 hours in a saline solution (45 g/l) at room temperature	—
Solvent resistance DIN-ISO 9211-3-12-3 and 9022-87-04-1	1 h hour in acetone (CH ₃ COCH ₃) at room temperature	Class 0 "OK"
Resistance to ultrasound	Alkali bath (3% "Galvex") for 2 hours at 60 °C and 50 W of ultrasonic power	Class 1 "Minimal colour change"
Resistance to sweat DIN-ISO 9022-86-02-1	7 days in an artificial sweat solution	—

Resistance to climatic conditions

Cold DIN-ISO 9022-10-09-1	16 hours at -55 °C	Class 0 "OK"
Dry heat DIN-ISO 9022-11-06-1	6 hours at 85 °C with relative humidity of <40%	Class 0 "OK"

Cleaning instructions

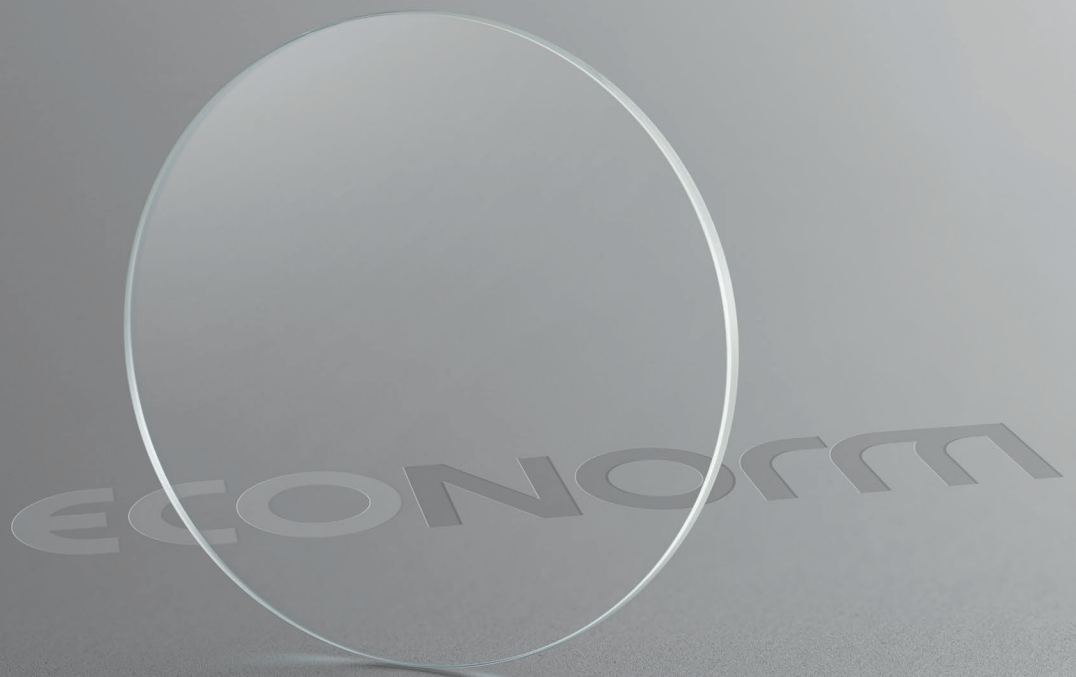
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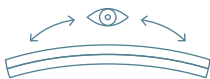
– If cleaning by hand, we recommend wearing single-use, powder-free latex gloves and using a lint-free cloth.

– Use one of the following approved cleaning alcohols:
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ARcroma®

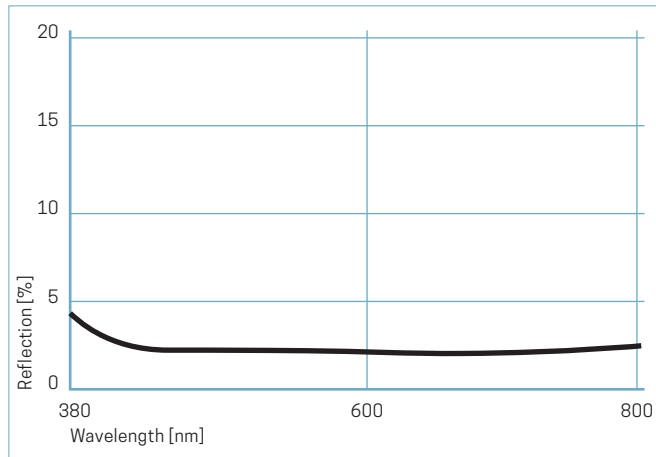


Colourless



Achromatic

Reflection curve



Properties

Optical

Reflection ≤3%	●
UV filter	—
Achromatic	●

Mechanical

Hard	—
Highly wear-resistant	—
Anti-static	—

Chemical

Water- and oil-repellent	—
Resistant to solvents	●
Low-temperature process	—
Alkali-resistant	●
Resistant to ultrasound	●



Geometric

Drilling, opening	●
Highly convex	●

Product structure



Quality tests

Mechanical resistance	Description	Results
Vibratory finishing (chemical-mechanical polishing)	2 hours in a vibrating bowl with cylindrical ceramic abrasives (Al ₂ O ₃)	Class 2 
Scratch-Test	Test to establish the hardness and adhesiveness of the coating using a diamond tip and variable loads	
Compliance with DIN-ISO 9211-4-02-02	Rapid pull off testing (~1 s) using adhesive tape 12-13 mm wide. Adhesive strength > 9.8 N per 25 mm	Class 0 "OK"

Chemical resistance

"Thermal shock" test DIN-ISO 9211-4-04-12	3× 2-minute cycles in de-mineralised water at 100 °C. 1 minute in de-mineralised water at room temperature	Class 0 "Effect only visible upon measurement"
Solubility DIN-ISO 9211-4-04-06	96 hours in a saline solution (45 g/l) at room temperature	Class 0 "Effect only visible upon measurement"
Solvent resistance DIN-ISO 9211-3-12-3 and 9022-87-04-1	1 h hour in acetone (CH ₃ COCH ₃) at room temperature	Class 0 "OK"
Resistance to ultrasound	Alkali bath (3% "Galvex") for 2 hours at 60 °C and 50 W of ultrasonic power	Class 0 "OK"
Resistance to sweat DIN-ISO 9022-86-02-1	7 days in an artificial sweat solution	Class 0 "Effect only visible upon measurement"

Resistance to climatic conditions

Cold DIN-ISO 9022-10-09-1	16 hours at -55 °C	Class 0 "OK"
Dry heat DIN-ISO 9022-11-06-1	6 hours at 85 °C with relative humidity of <40%	Class 0 "OK"

Cleaning instructions

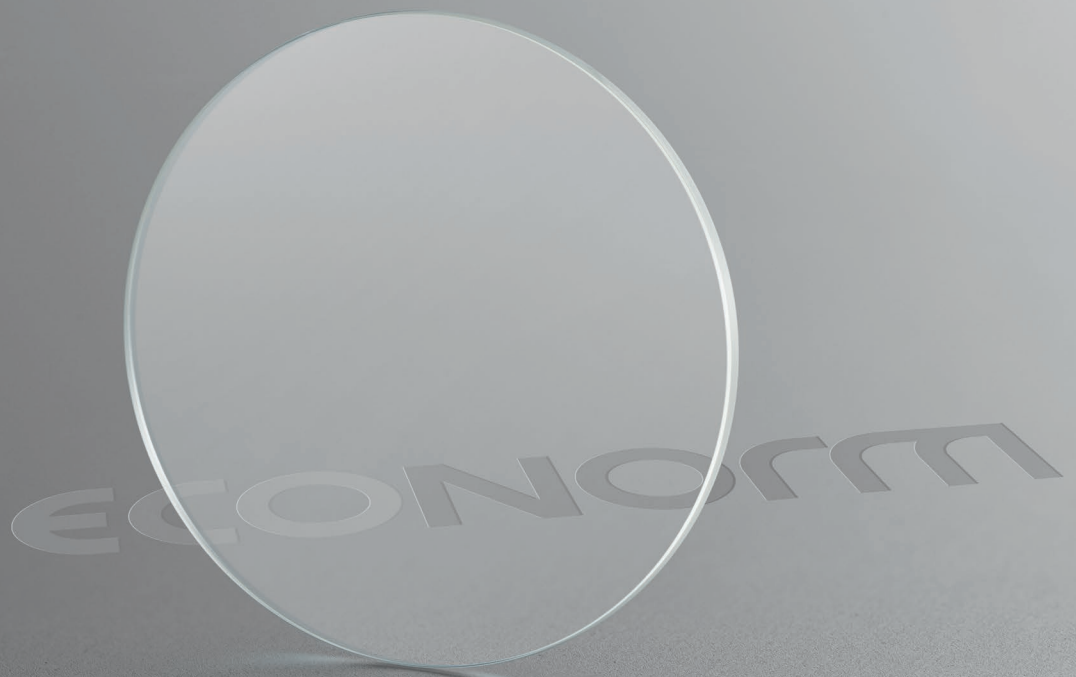
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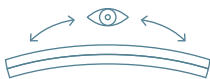
- If cleaning by hand, we recommend wearing single-use, powder-free latex gloves and using a lint-free cloth.

- Use one of the following approved cleaning alcohols:
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ARcroma[®] 1 side

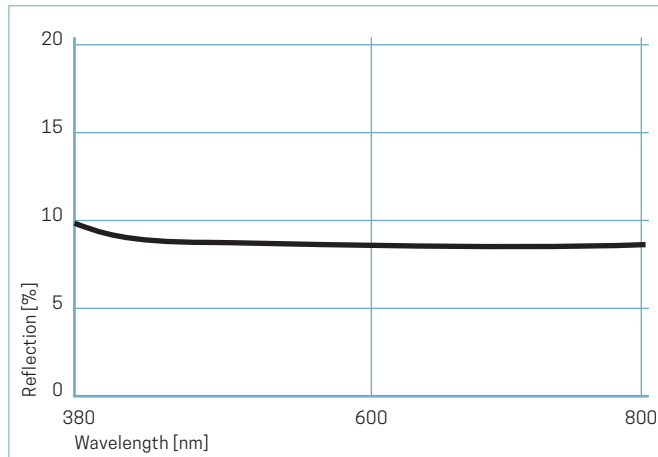


Colourless



Achromatic

Reflection curve



Product structure



Properties

Optical

Reflection ≤3%	—
UV filter	—
Achromatic	●

Mechanical

Hard	—
Highly wear-resistant	—
Anti-static	—

Chemical

Water- and oil-repellent	—
Resistant to solvents	●
Low-temperature process	—
Alkali-resistant	●
Resistant to ultrasound	●

Geometric

Drilling, opening	●
Highly convex	●

Quality tests

Mechanical resistance	Description	Results
Vibratory finishing (chemical-mechanical polishing)	2 hours in a vibrating bowl with cylindrical ceramic abrasives (Al ₂ O ₃)	—
Scratch-Test	Test to establish the hardness and adhesiveness of the coating using a diamond tip and variable loads	—
Compliance with DIN-ISO 9211-4-02-02	Rapid pull off testing (~1 s) using adhesive tape 12-13 mm wide. Adhesive strength > 9.8 N per 25 mm	Class 0 "OK"

Chemical resistance

"Thermal shock" test DIN-ISO 9211-4-04-12	3× 2-minute cycles in de-mineralised water at 100 °C. 1 minute in de-mineralised water at room temperature	Class 0 "Effect only visible upon measurement"
Solubility DIN-ISO 9211-4-04-06	96 hours in a saline solution (45 g/l) at room temperature	—
Solvent resistance DIN-ISO 9211-3-12-3 and 9022-87-04-1	1 h hour in acetone (CH ₃ COCH ₃) at room temperature	Class 0 "OK"
Resistance to ultrasound	Alkali bath (3% "Galvex") for 2 hours at 60 °C and 50 W of ultrasonic power	Class 0 "OK"
Resistance to sweat DIN-ISO 9022-86-02-1	7 days in an artificial sweat solution	—

Resistance to climatic conditions

Cold DIN-ISO 9022-10-09-1	16 hours at -55 °C	Class 0 "OK"
Dry heat DIN-ISO 9022-11-06-1	6 hours at 85 °C with relative humidity of <40%	Class 0 "OK"

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ARunic[®] Bleu-Violet



Blue-Violet



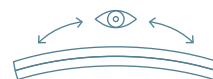
High level
of hardness



UV filter



Highly
wear-resistant



Achromatic

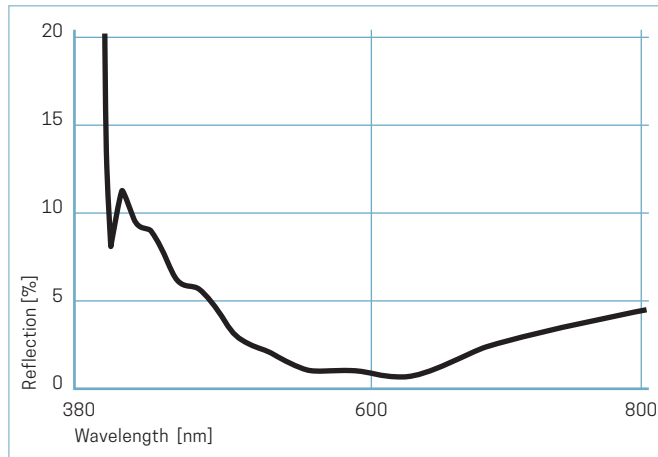


Anti-static



Water- and
oil-repellent

Reflection curve



Product structure



Properties

Optical

Reflection ≤3%	●
UV filter	●
Achromatic	●

Mechanical

Hard	●
Highly wear-resistant	●
Anti-static	●



Chemical

Water- and oil-repellent	●
Resistant to solvents	●
Low-temperature process	—
Alkali-resistant	—
Resistant to ultrasound	●

Geometric

Drilling, opening	—
Highly convex	●

Quality tests

Mechanical resistance	Description	Results
Vibratory finishing (chemical-mechanical polishing)	2 hours in a vibrating bowl with cylindrical ceramic abrasives (Al ₂ O ₃)	Class 1 
Scratch-Test	Test to establish the hardness and adhesiveness of the coating using a diamond tip and variable loads	
Compliance with DIN-ISO 9211-4-02-02	Rapid pull off testing (~1 s) using adhesive tape 12-13 mm wide. Adhesive strength > 9.8 N per 25 mm	Class 0 "OK"

Chemical resistance

"Thermal shock" test DIN-ISO 9211-4-04-12	3× 2-minute cycles in de-mineralised water at 100 °C. 1 minute in de-mineralised water at room temperature	Class 0 "OK"
Solubility DIN-ISO 9211-4-04-06	96 hours in a saline solution (45 g/l) at room temperature	Class 0 "Effect only visible upon measurement"
Solvent resistance DIN-ISO 9211-3-12-3 and 9022-87-04-1	1 h hour in acetone (CH ₃ COCH ₃) at room temperature	Class 0 "OK"
Resistance to ultrasound	Alkali bath (3% "Galvex") for 2 hours at 60 °C and 50 W of ultrasonic power	Class 1 "Minimal colour change"
Resistance to sweat DIN-ISO 9022-86-02-1	7 days in an artificial sweat solution	Class 0 "OK"

Resistance to climatic conditions

Cold DIN-ISO 9022-10-09-1	16 hours at -55 °C	Class 0 "OK"
Dry heat DIN-ISO 9022-11-06-1	6 hours at 85 °C with relative humidity of <40%	Class 0 "OK"

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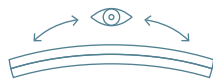
ARuv Bleu-Violet



Blue-Violet



UV filter

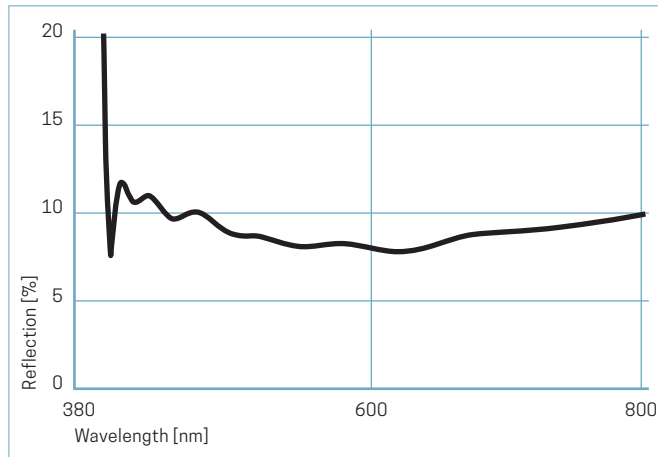


Achromatic

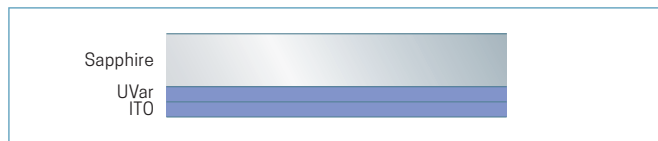


Anti-static

Reflection curve



Product structure



Properties

Optical

Reflection $\leq 3\%$	—
UV filter	●
Achromatic	●

Mechanical

Hard	—
Highly wear-resistant	—
Anti-static	●

Chemical

Water- and oil-repellent	—
Resistant to solvents	●
Low-temperature process	—
Alkali-resistant	—
Resistant to ultrasound	●

Geometric

Drilling, opening	●
Highly convex	●

Quality tests

Mechanical resistance	Description	Results
Vibratory finishing (chemical-mechanical polishing)	2 hours in a vibrating bowl with cylindrical ceramic abrasives (Al_2O_3)	—
Scratch-Test	Test to establish the hardness and adhesiveness of the coating using a diamond tip and variable loads	—
Compliance with DIN-ISO 9211-4-02-02	Rapid pull off testing (~ 1 s) using adhesive tape 12–13 mm wide. Adhesive strength > 9.8 N per 25 mm	Class 0 "OK"

Chemical resistance

"Thermal shock" test DIN-ISO 9211-4-04-12	3 × 2-minute cycles in de-mineralised water at 100 °C. 1 minute in de-mineralised water at room temperature	Class 0 "OK"
Solubility DIN-ISO 9211-4-04-06	96 hours in a saline solution (45 g/l) at room temperature	—
Solvent resistance DIN-ISO 9211-3-12-3 and 9022-87-04-1	1 h hour in acetone (CH_3COCH_3) at room temperature	Class 0 "OK"
Resistance to ultrasound	Alkali bath (3% "Galvex") for 2 hours at 60 °C and 50 W of ultrasonic power	Class 1 "Minimal colour change"
Resistance to sweat DIN-ISO 9022-86-02-1	7 days in an artificial sweat solution	—

Resistance to climatic conditions

Cold DIN-ISO 9022-10-09-1	16 hours at -55 °C	Class 0 "OK"
Dry heat DIN-ISO 9022-11-06-1	6 hours at 85 °C with relative humidity of $< 40\%$	Class 0 "OK"

Cleaning instructions

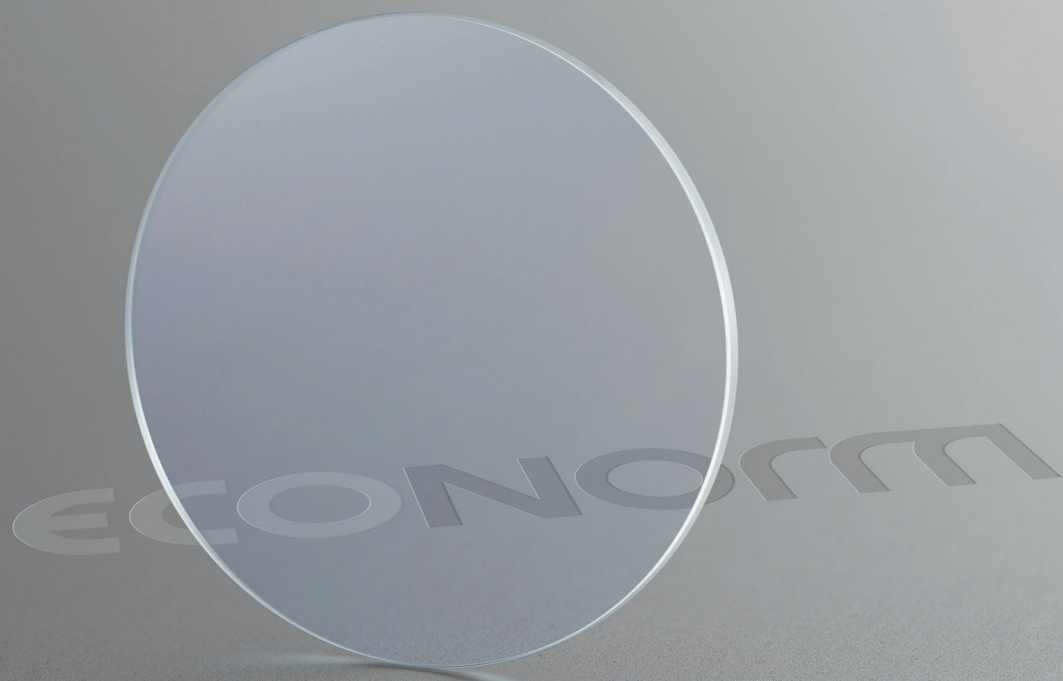
Please observe the following instructions on how to clean glasses that have been treated with an anti-reflective coating:

- Glasses can be cleaned easily in a neutral solution using ultrasound and at temperatures of up to 60 °C.

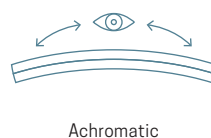
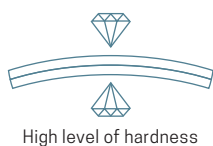
- If cleaning by hand, we recommend wearing single-use, powder-free latex gloves and using a lint-free cloth.

- Use one of the following approved cleaning alcohols:
Ethanol with 5% isopropyl alcohol (F25-A+IPA), Alcosuisse, Bern
Ethanol Absolute A 15 0 (02883), Sigma-Aldrich, Buchs SG

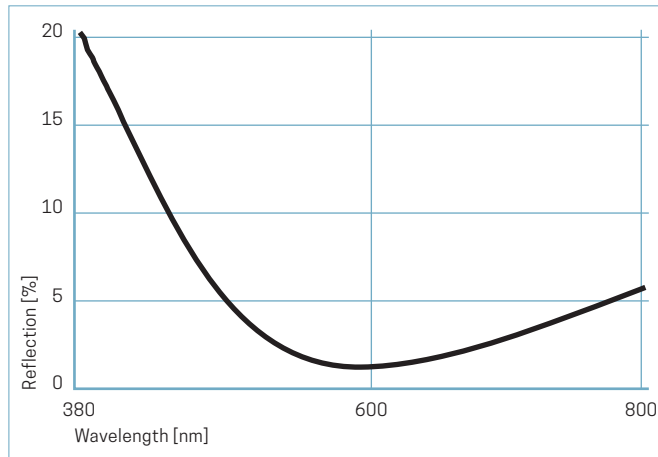
ARdur® Bleu-Violet



Blue-Violet



Reflection curve



Product structure



Properties

Optical

Reflection $\leq 3\%$	—
UV filter	—
Achromatic	●

Mechanical

Hard	●
Highly wear-resistant	●
Anti-static	●



Chemical

Water- and oil-repellent	●
Resistant to solvents	●
Low-temperature process	—
Alkali-resistant	—
Resistant to ultrasound	●

Geometric

Drilling, opening	—
Highly convex	●

Quality tests

Mechanical resistance	Description	Results
Vibratory finishing (chemical-mechanical polishing)	2 hours in a vibrating bowl with cylindrical ceramic abrasives (Al_2O_3)	Class 1 
Scratch-Test	Test to establish the hardness and adhesiveness of the coating using a diamond tip and variable loads	
Compliance with DIN-ISO 9211-4-02-02	Rapid pull off testing (~1 s) using adhesive tape 12–13 mm wide. Adhesive strength > 9.8 N per 25 mm	Class 0 "OK"

Chemical resistance

"Thermal shock" test DIN-ISO 9211-4-04-12	3× 2-minute cycles in de-mineralised water at 100 °C. 1 minute in de-mineralised water at room temperature	Class 0 "OK"
Solubility DIN-ISO 9211-4-04-06	96 hours in a saline solution (45 g/l) at room temperature	Class 0 "OK"
Solvent resistance DIN-ISO 9211-3-12-3 and 9022-87-04-1	1 h hour in acetone (CH_3COCH_3) at room temperature	Class 0 "OK"
Resistance to ultrasound	Alkali bath (3% "Galvex") for 2 hours at 60 °C and 50 W of ultrasonic power	Class 1 "Minimal colour change"
Resistance to sweat DIN-ISO 9022-86-02-1	7 days in an artificial sweat solution	Class 0 "OK"

Resistance to climatic conditions

Cold DIN-ISO 9022-10-09-1	16 hours at -55 °C	Class 0 "OK"
Dry heat DIN-ISO 9022-11-06-1	6 hours at 85 °C with relative humidity of <40%	Class 0 "OK"

Cleaning instructions

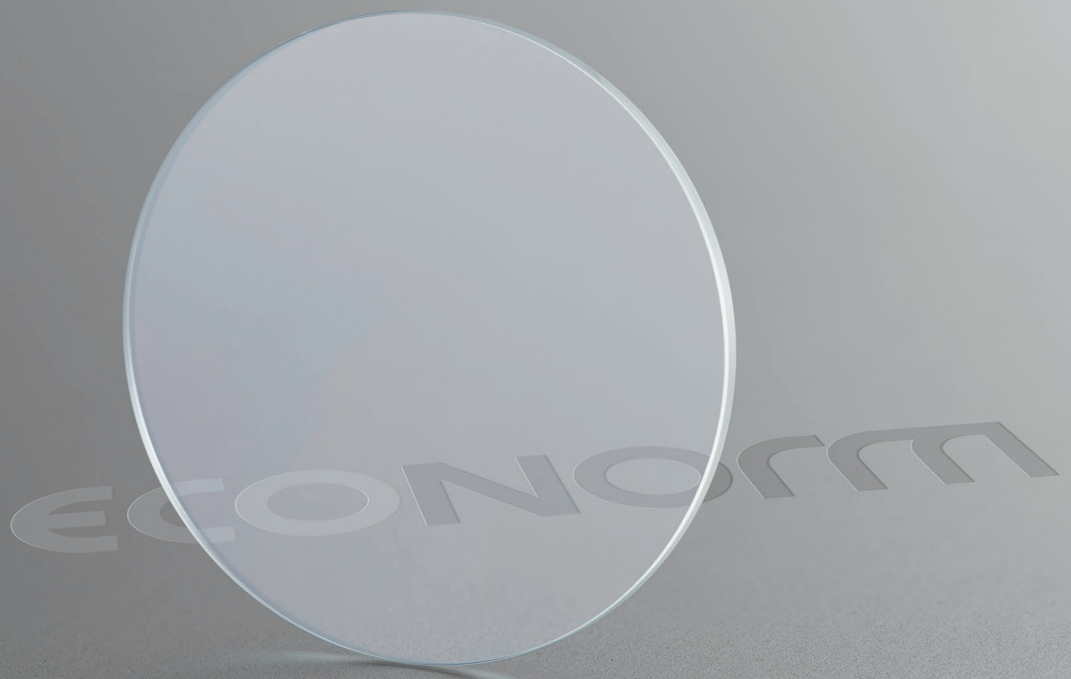
Please observe the following instructions on how to clean glasses that have been treated with an anti-reflective coating:

- Glasses can be cleaned easily in a neutral solution using ultrasound and at temperatures of up to 60 °C.

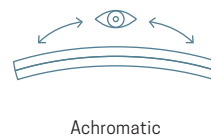
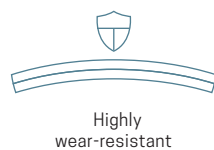
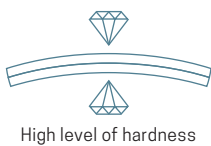
- If cleaning by hand, we recommend wearing single-use, powder-free latex gloves and using a lint-free cloth.

- Use one of the following approved cleaning alcohols:
Ethanol with 5% isopropyl alcohol (F25-A+IPA), Alcosuisse, Bern
Ethanol Absolute A 15 O (02883), Sigma-Aldrich, Buchs SG

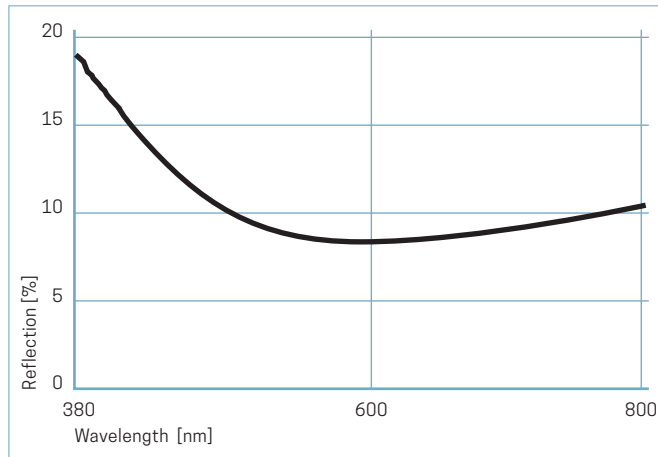
ARdur[®] Bleu-Violet ^{1 side}



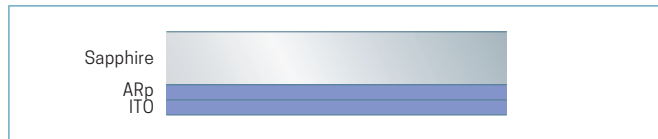
Blue-Violet



Reflection curve



Product structure



Properties

Optical

Reflection $\leq 3\%$	—
UV filter	—
Achromatic	●

Mechanical

Hard	●
Highly wear-resistant	●
Anti-static	●

Chemical

Water- and oil-repellent	—
Resistant to solvents	●
Low-temperature process	—
Alkali-resistant	—
Resistant to ultrasound	●

Geometric

Drilling, opening	—
Highly convex	●

Quality tests

Mechanical resistance	Description	Results
Vibratory finishing (chemical-mechanical polishing)	2 hours in a vibrating bowl with cylindrical ceramic abrasives (Al_2O_3)	—
Scratch-Test	Test to establish the hardness and adhesiveness of the coating using a diamond tip and variable loads	—
Compliance with DIN-ISO 9211-4-02-02	Rapid pull off testing (~ 1 s) using adhesive tape 12–13 mm wide. Adhesive strength > 9.8 N per 25 mm	Class 0 "OK"

Chemical resistance

"Thermal shock" test DIN-ISO 9211-4-04-12	3 × 2-minute cycles in de-mineralised water at 100 °C. 1 minute in de-mineralised water at room temperature	Class 0 "OK"
Solubility DIN-ISO 9211-4-04-06	96 hours in a saline solution (45 g/l) at room temperature	—
Solvent resistance DIN-ISO 9211-3-12-3 and 9022-87-04-1	1 h hour in acetone (CH_3COCH_3) at room temperature	Class 0 "OK"
Resistance to ultrasound	Alkali bath (3% "Galvex") for 2 hours at 60 °C and 50 W of ultrasonic power	Class 1 "Minimal colour change"
Resistance to sweat DIN-ISO 9022-86-02-1	7 days in an artificial sweat solution	—

Resistance to climatic conditions

Cold DIN-ISO 9022-10-09-1	16 hours at -55 °C	Class 0 "OK"
Dry heat DIN-ISO 9022-11-06-1	6 hours at 85 °C with relative humidity of $< 40\%$	Class 0 "OK"

Cleaning instructions

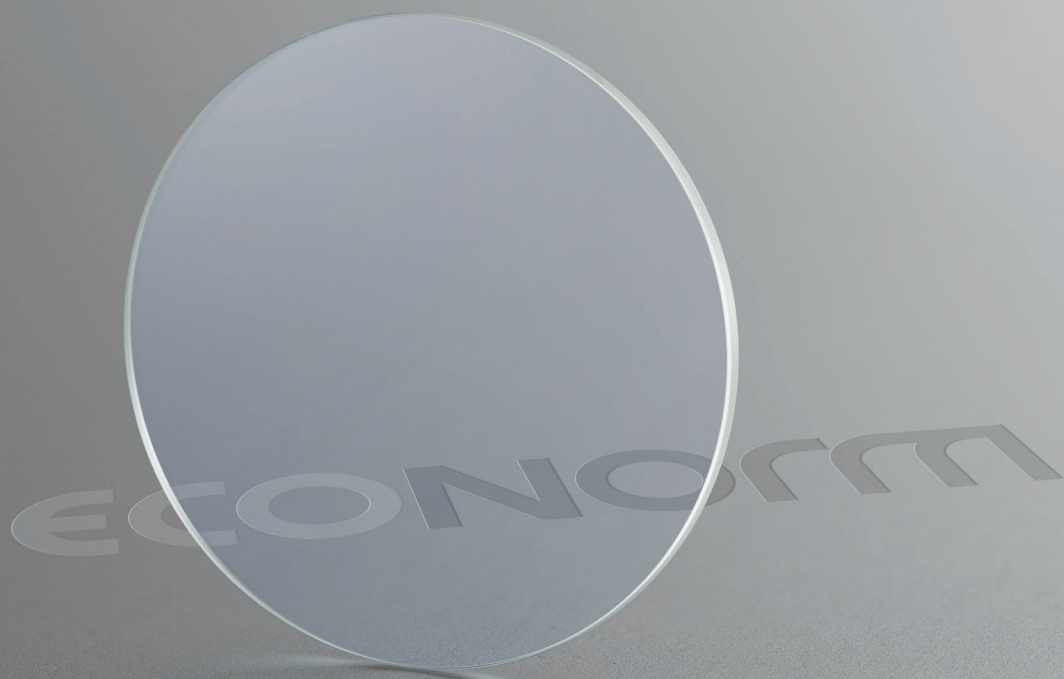
Please observe the following instructions on how to clean glasses that have been treated with an anti-reflective coating:

- Glasses can be cleaned easily in a neutral solution using ultrasound and at temperatures of up to 60 °C.

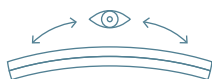
- If cleaning by hand, we recommend wearing single-use, powder-free latex gloves and using a lint-free cloth.

- Use one of the following approved cleaning alcohols:
Ethanol with 5% isopropyl alcohol (F25-A+IPA), Alcosuisse, Bern
Ethanol Absolute A 15 0 (02883), Sigma-Aldrich, Buchs SG

ARcroma® Bleu-Violet

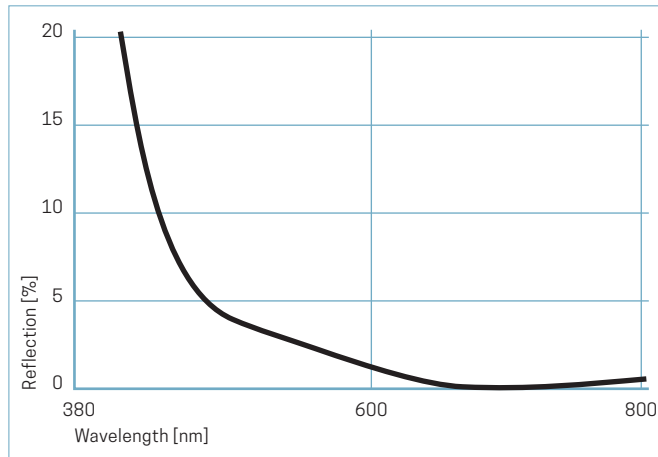


Blue-Violet



Achromatic

Reflection curve



Properties

Optical

Reflection ≤3%	●
UV filter	—
Achromatic	●

Mechanical

Hard	—
Highly wear-resistant	—
Anti-static	—

Chemical

Water- and oil-repellent	—
Resistant to solvents	●
Low-temperature process	—
Alkali-resistant	●
Resistant to ultrasound	●

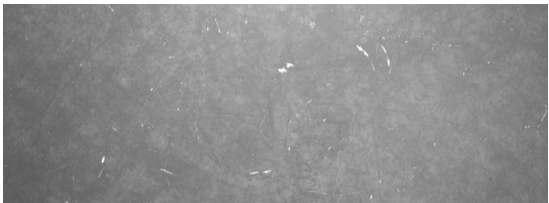
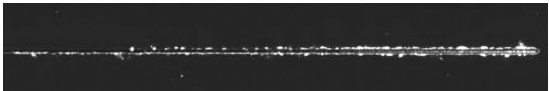
Geometric

Drilling, opening	●
Highly convex	●

Product structure



Quality tests

Mechanical resistance	Description	Results
Vibratory finishing (chemical-mechanical polishing)	2 hours in a vibrating bowl with cylindrical ceramic abrasives (Al ₂ O ₃)	Class 2 
Scratch-Test	Test to establish the hardness and adhesiveness of the coating using a diamond tip and variable loads	
Compliance with DIN-ISO 9211-4-02-02	Rapid pull off testing (~1 s) using adhesive tape 12-13 mm wide. Adhesive strength > 9.8 N per 25 mm	Class 0 "OK"

Chemical resistance

"Thermal shock" test DIN-ISO 9211-4-04-12	3× 2-minute cycles in de-mineralised water at 100 °C. 1 minute in de-mineralised water at room temperature	Class 0 "Effect only visible upon measurement"
Solubility DIN-ISO 9211-4-04-06	96 hours in a saline solution (45 g/l) at room temperature	Class 0 "Effect only visible upon measurement"
Solvent resistance DIN-ISO 9211-3-12-3 and 9022-87-04-1	1 h hour in acetone (CH ₃ COCH ₃) at room temperature	Class 0 "OK"
Resistance to ultrasound	Alkali bath (3% "Galvex") for 2 hours at 60 °C and 50 W of ultrasonic power	Class 1 "Minimal colour change"
Resistance to sweat DIN-ISO 9022-86-02-1	7 days in an artificial sweat solution	Class 1 "Minimal colour change"

Resistance to climatic conditions

Cold DIN-ISO 9022-10-09-1	16 hours at -55 °C	Class 0 "OK"
Dry heat DIN-ISO 9022-11-06-1	6 hours at 85 °C with relative humidity of <40%	Class 0 "OK"

Cleaning instructions

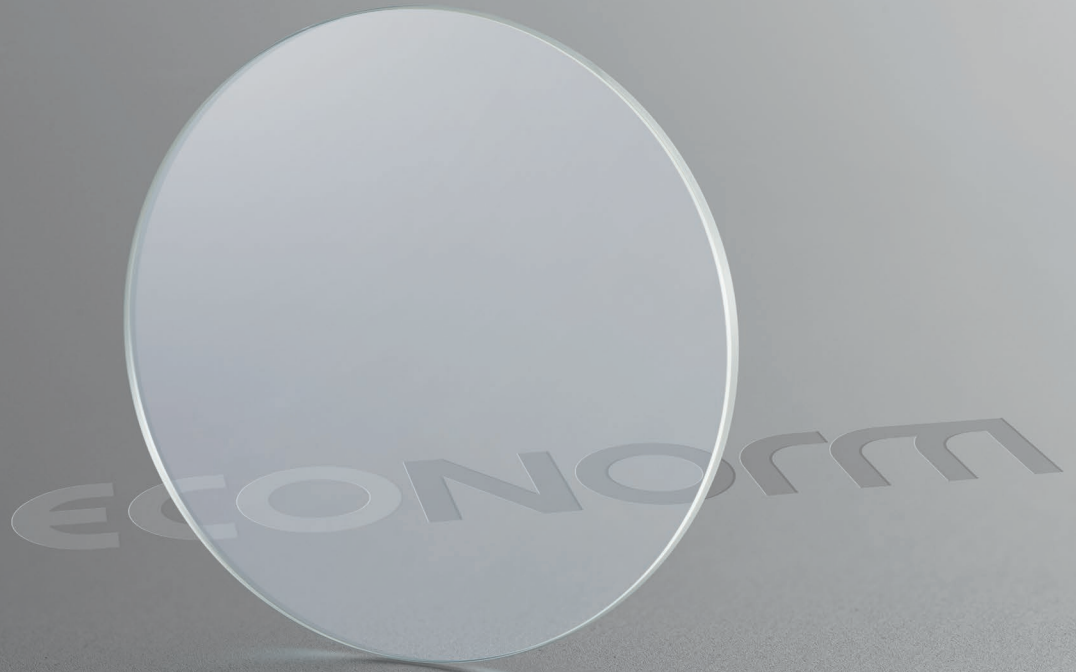
Please observe the following instructions on how to clean glasses that have been treated with an anti-reflective coating:

- Glasses can be cleaned easily in a neutral solution using ultrasound and at temperatures of up to 60 °C.

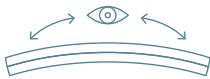
- If cleaning by hand, we recommend wearing single-use, powder-free latex gloves and using a lint-free cloth.

- Use one of the following approved cleaning alcohols:
Ethanol with 5% isopropyl alcohol (F25-A+IPA), Alcosuisse, Bern
Ethanol Absolute A 15 O (02883), Sigma-Aldrich, Buchs SG

ARcroma® Bleu-Violet^{1 side}

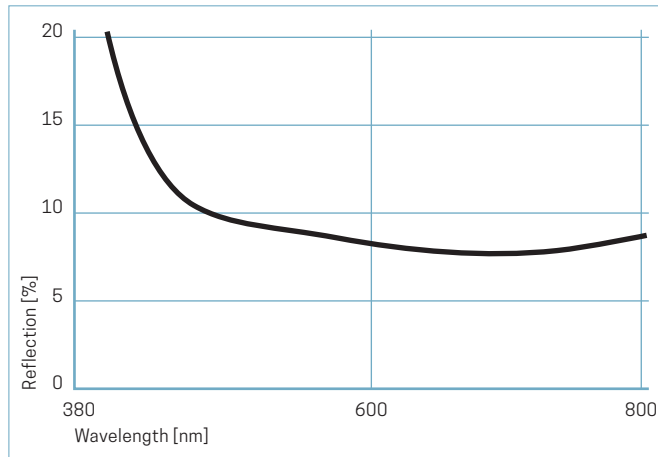


Blue-Violet

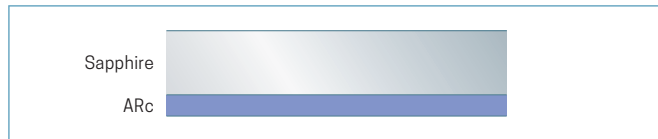


Achromatic

Reflection curve



Product structure



Properties

Optical

Reflection ≤3%	—
UV filter	—
Achromatic	●

Mechanical

Hard	—
Highly wear-resistant	—
Anti-static	—

Chemical

Water- and oil-repellent	—
Resistant to solvents	●
Low-temperature process	—
Alkali-resistant	●
Resistant to ultrasound	●

Geometric

Drilling, opening	●
Highly convex	●

Quality tests

Mechanical resistance	Description	Results
Vibratory finishing (chemical-mechanical polishing)	2 hours in a vibrating bowl with cylindrical ceramic abrasives (Al ₂ O ₃)	—
Scratch-Test	Test to establish the hardness and adhesiveness of the coating using a diamond tip and variable loads	—
Compliance with DIN-ISO 9211-4-02-02	Rapid pull off testing (~1 s) using adhesive tape 12–13 mm wide. Adhesive strength > 9.8 N per 25 mm	Class 0 "OK"

Chemical resistance

"Thermal shock" test DIN-ISO 9211-4-04-12	3 × 2-minute cycles in de-mineralised water at 100 °C. 1 minute in de-mineralised water at room temperature	Class 0 "Effect only visible upon measurement"
Solubility DIN-ISO 9211-4-04-06	96 hours in a saline solution (45 g/l) at room temperature	—
Solvent resistance DIN-ISO 9211-3-12-3 and 9022-87-04-1	1 h hour in acetone (CH ₃ COCH ₃) at room temperature	Class 0 "OK"
Resistance to ultrasound	Alkali bath (3% "Galvex") for 2 hours at 60 °C and 50 W of ultrasonic power	Class 1 "Minimal colour change"
Resistance to sweat DIN-ISO 9022-86-02-1	7 days in an artificial sweat solution	—

Resistance to climatic conditions

Cold DIN-ISO 9022-10-09-1	16 hours at -55 °C	Class 0 "OK"
Dry heat DIN-ISO 9022-11-06-1	6 hours at 85 °C with relative humidity of <40%	Class 0 "OK"

Cleaning instructions

Please observe the following instructions on how to clean glasses that have been treated with an anti-reflective coating:

- Glasses can be cleaned easily in a neutral solution using ultrasound and at temperatures of up to 60 °C.

- If cleaning by hand, we recommend wearing single-use, powder-free latex gloves and using a lint-free cloth.

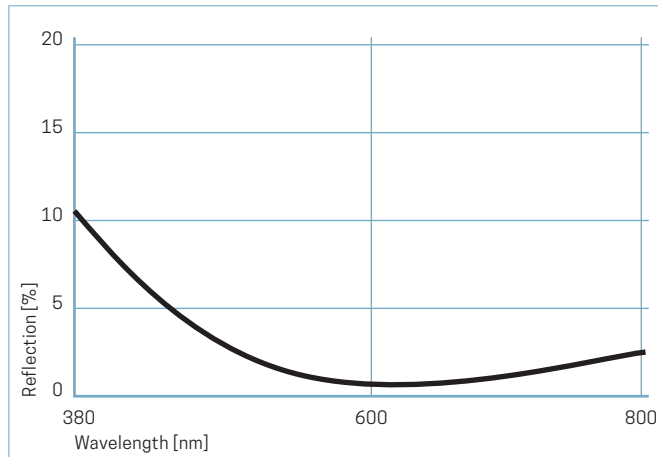
- Use one of the following approved cleaning alcohols:
Ethanol with 5% isopropyl alcohol (F25-A+IPA), Alcosuisse, Bern
Ethanol Absolute A 15 0 (02883), Sigma-Aldrich, Buchs SG

AR Bleu-Violet



Blue-Violet

Reflection curve



Properties

Optical

Reflection ≤3%	●
UV filter	—
Achromatic	—

Mechanical

Hard	—
Highly wear-resistant	—
Anti-static	—

Chemical

Water- and oil-repellent	—
Resistant to solvents	●
Low-temperature process	—
Alkali-resistant	●
Resistant to ultrasound	●

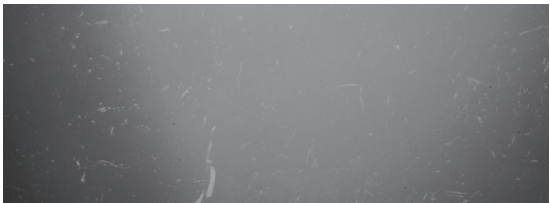
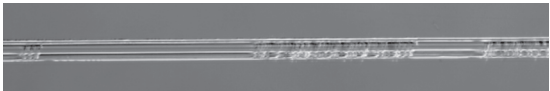
Geometric

Drilling, opening	●
Highly convex	—

Product structure



Quality tests

Mechanical resistance	Description	Results
Vibratory finishing (chemical-mechanical polishing)	2 hours in a vibrating bowl with cylindrical ceramic abrasives (Al ₂ O ₃)	Class 2 
Scratch-Test	Test to establish the hardness and adhesiveness of the coating using a diamond tip and variable loads	
Compliance with DIN-ISO 9211-4-02-02	Rapid pull off testing (~1 s) using adhesive tape 12-13 mm wide. Adhesive strength > 9.8 N per 25 mm	Class 0 "OK"

Chemical resistance

"Thermal shock" test DIN-ISO 9211-4-04-12	3× 2-minute cycles in de-mineralised water at 100 °C. 1 minute in de-mineralised water at room temperature	Class 0 "Effect only visible upon measurement"
Solubility DIN-ISO 9211-4-04-06	96 hours in a saline solution (45 g/l) at room temperature	Class 1 "Sous lampe de visitage, taches perceptibles"
Solvent resistance DIN-ISO 9211-3-12-3 and 9022-87-04-1	1 h hour in acetone (CH ₃ COCH ₃) at room temperature	Class 0 "OK"
Resistance to ultrasound	Alkali bath (3% "Galvex") for 2 hours at 60 °C and 50 W of ultrasonic power	Class 0 "OK"
Resistance to sweat DIN-ISO 9022-86-02-1	7 days in an artificial sweat solution	Class 0 "Effect only visible upon measurement"

Resistance to climatic conditions

Cold DIN-ISO 9022-10-09-1	16 hours at -55 °C	Class 0 "OK"
Dry heat DIN-ISO 9022-11-06-1	6 hours at 85 °C with relative humidity of <40%	Class 0 "OK"

Cleaning instructions

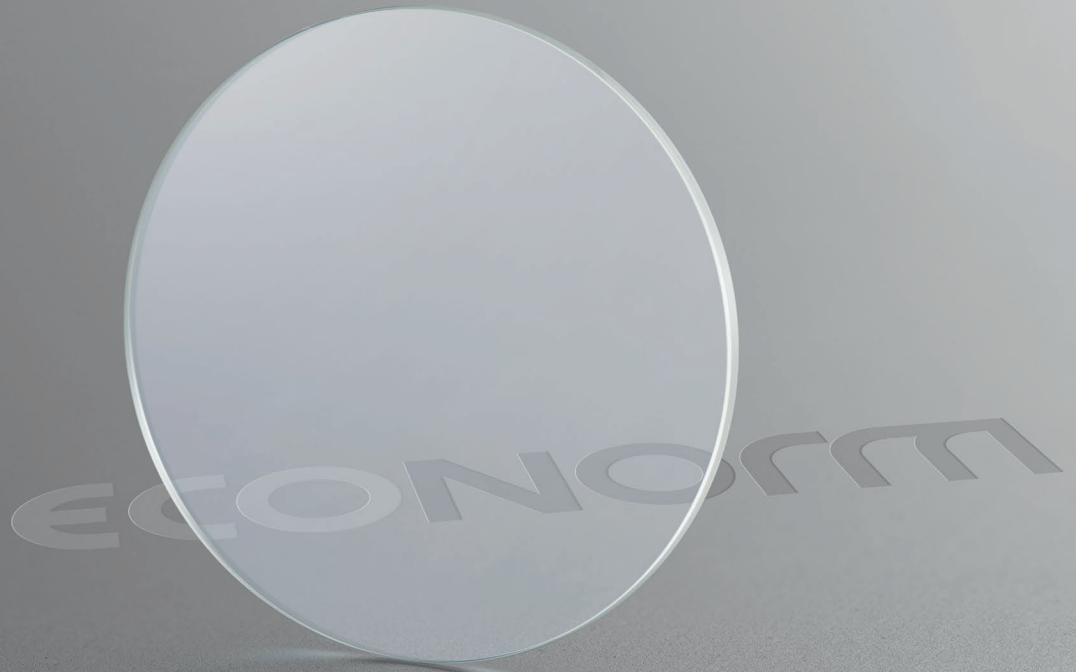
Please observe the following instructions on how to clean glasses that have been treated with an anti-reflective coating:

- Glasses can be cleaned easily in a neutral solution using ultrasound and at temperatures of up to 60 °C.

- If cleaning by hand, we recommend wearing single-use, powder-free latex gloves and using a lint-free cloth.

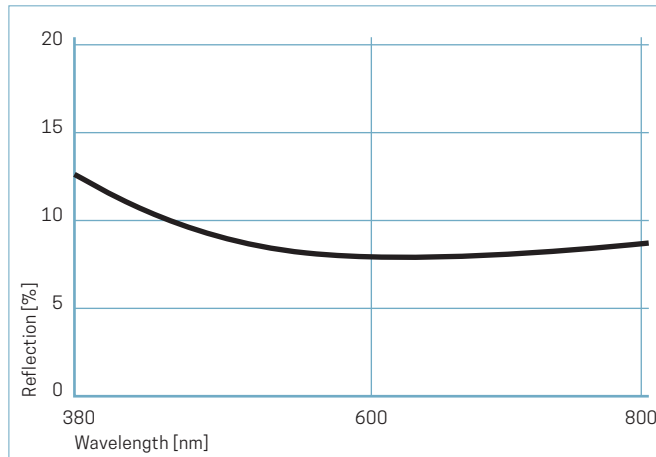
- Use one of the following approved cleaning alcohols:
Ethanol with 5% isopropyl alcohol (F25-A+IPA), Alcosuisse, Bern
Ethanol Absolute A 15 O (02883), Sigma-Aldrich, Buchs SG

AR Bleu-Violet^{1 side}



Blue-Violet

Reflection curve



Product structure



Properties

Optical

Reflection ≤3%	—
UV filter	—
Achromatic	—

Mechanical

Hard	—
Highly wear-resistant	—
Anti-static	—

Chemical

Water- and oil-repellent	—
Resistant to solvents	●
Low-temperature process	—
Alkali-resistant	●
Resistant to ultrasound	●

Geometric

Drilling, opening	●
Highly convex	—

Quality tests

Mechanical resistance	Description	Results
Vibratory finishing (chemical-mechanical polishing)	2 hours in a vibrating bowl with cylindrical ceramic abrasives (Al ₂ O ₃)	—
Scratch-Test	Test to establish the hardness and adhesiveness of the coating using a diamond tip and variable loads	—
Compliance with DIN-ISO 9211-4-02-02	Rapid pull off testing (~1 s) using adhesive tape 12-13 mm wide. Adhesive strength > 9.8 N per 25 mm	Class 0 "OK"

Chemical resistance

"Thermal shock" test DIN-ISO 9211-4-04-12	3× 2-minute cycles in de-mineralised water at 100 °C. 1 minute in de-mineralised water at room temperature	Class 0 "Effect only visible upon measurement"
Solubility DIN-ISO 9211-4-04-06	96 hours in a saline solution (45 g/l) at room temperature	—
Solvent resistance DIN-ISO 9211-3-12-3 and 9022-87-04-1	1 h hour in acetone (CH ₃ COCH ₃) at room temperature	Class 0 "OK"
Resistance to ultrasound	Alkali bath (3% "Galvex") for 2 hours at 60 °C and 50 W of ultrasonic power	Class 0 "OK"
Resistance to sweat DIN-ISO 9022-86-02-1	7 days in an artificial sweat solution	—

Resistance to climatic conditions

Cold DIN-ISO 9022-10-09-1	16 hours at -55 °C	Class 0 "OK"
Dry heat DIN-ISO 9022-11-06-1	6 hours at 85 °C with relative humidity of <40%	Class 0 "OK"

Cleaning instructions

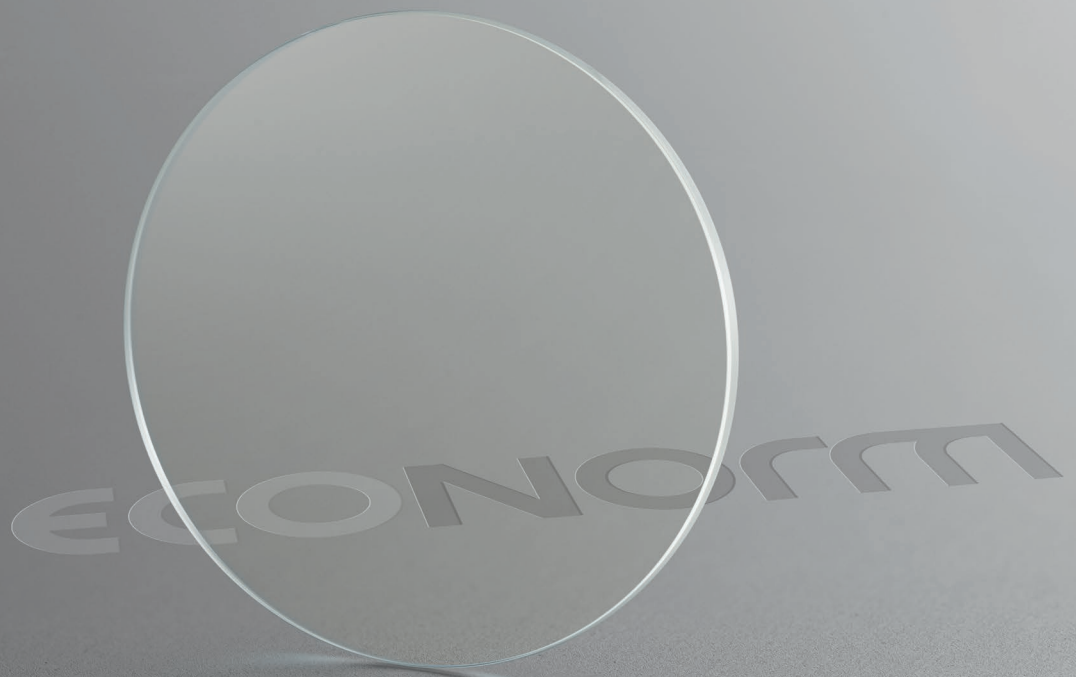
Please observe the following instructions on how to clean glasses that have been treated with an anti-reflective coating:

– Glasses can be cleaned easily in a neutral solution using ultrasound and at temperatures of up to 60 °C.

– If cleaning by hand, we recommend wearing single-use, powder-free latex gloves and using a lint-free cloth.

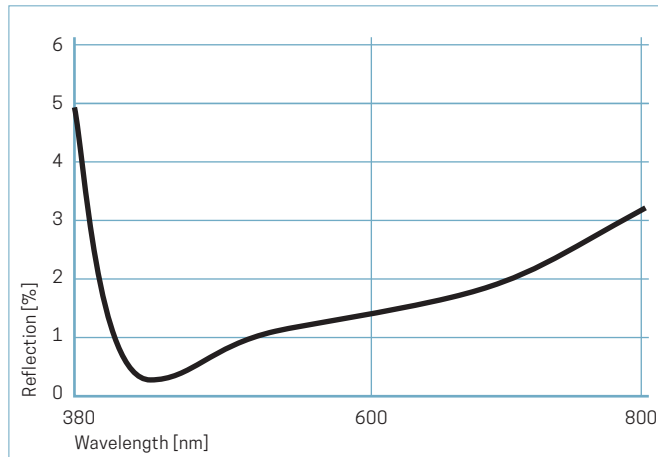
– Use one of the following approved cleaning alcohols:
Ethanol with 5% isopropyl alcohol (F25-A+IPA), Alcosuisse, Bern
Ethanol Absolute A 15 O (02883), Sigma-Aldrich, Buchs SG

AR Jaune



Yellow

Reflection curve



Properties

Optical

Reflection ≤3%	●
UV filter	—
Achromatic	—

Mechanical

Hard	—
Highly wear-resistant	—
Anti-static	—

Chemical

Water- and oil-repellent	—
Resistant to solvents	●
Low-temperature process	—
Alkali-resistant	●
Resistant to ultrasound	●

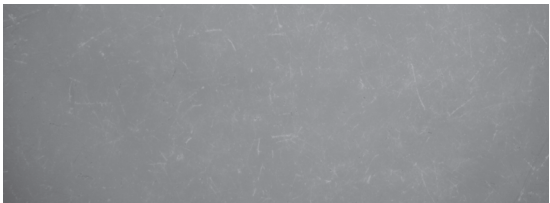

Geometric

Drilling, opening	●
Highly convex	—

Product structure



Quality tests

Mechanical resistance	Description	Results
Vibratory finishing (chemical-mechanical polishing)	2 hours in a vibrating bowl with cylindrical ceramic abrasives (Al ₂ O ₃)	Class 2 
Scratch-Test	Test to establish the hardness and adhesiveness of the coating using a diamond tip and variable loads	
Compliance with DIN-ISO 9211-4-02-02	Rapid pull off testing (~1 s) using adhesive tape 12-13 mm wide. Adhesive strength > 9.8 N per 25 mm	Class 0 "OK"

Chemical resistance

"Thermal shock" test DIN-ISO 9211-4-04-12	3× 2-minute cycles in de-mineralised water at 100 °C. 1 minute in de-mineralised water at room temperature	Class 0 "Effect only visible upon measurement"
Solubility DIN-ISO 9211-4-04-06	96 hours in a saline solution (45 g/l) at room temperature	Class 0 "Effect only visible upon measurement"
Solvent resistance DIN-ISO 9211-3-12-3 and 9022-87-04-1	1 h hour in acetone (CH ₃ COCH ₃) at room temperature	Class 0 "OK"
Resistance to ultrasound	Alkali bath (3% "Galvex") for 2 hours at 60 °C and 50 W of ultrasonic power	Class 0 "OK"
Resistance to sweat DIN-ISO 9022-86-02-1	7 days in an artificial sweat solution	Class 0 "Effect only visible upon measurement"

Resistance to climatic conditions

Cold DIN-ISO 9022-10-09-1	16 hours at -55 °C	Class 0 "OK"
Dry heat DIN-ISO 9022-11-06-1	6 hours at 85 °C with relative humidity of <40%	Class 0 "OK"

Cleaning instructions

Please observe the following instructions on how to clean glasses that have been treated with an anti-reflective coating:

- Glasses can be cleaned easily in a neutral solution using ultrasound and at temperatures of up to 60 °C.

- If cleaning by hand, we recommend wearing single-use, powder-free latex gloves and using a lint-free cloth.

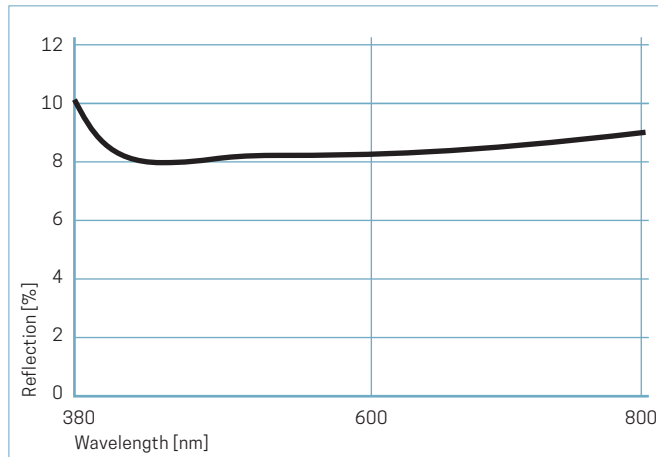
- Use one of the following approved cleaning alcohols:
Ethanol with 5% isopropyl alcohol (F25-A+IPA), Alcosuisse, Bern
Ethanol Absolute A 15 O (02883), Sigma-Aldrich, Buchs SG

AR Jaune^{1 side}

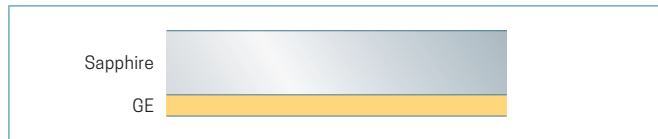


Yellow

Reflection curve



Product structure



Properties

Optical

Reflection ≤3%	—
UV filter	—
Achromatic	—

Mechanical

Hard	—
Highly wear-resistant	—
Anti-static	—

Chemical

Water- and oil-repellent	—
Resistant to solvents	●
Low-temperature process	—
Alkali-resistant	●
Resistant to ultrasound	●

Geometric

Drilling, opening	●
Highly convex	—

Quality tests

Mechanical resistance	Description	Results
Vibratory finishing (chemical-mechanical polishing)	2 hours in a vibrating bowl with cylindrical ceramic abrasives (Al ₂ O ₃)	—
Scratch-Test	Test to establish the hardness and adhesiveness of the coating using a diamond tip and variable loads	—
Compliance with DIN-ISO 9211-4-02-02	Rapid pull off testing (~1 s) using adhesive tape 12-13 mm wide. Adhesive strength > 9.8 N per 25 mm	Class 0 "OK"

Chemical resistance

"Thermal shock" test DIN-ISO 9211-4-04-12	3× 2-minute cycles in de-mineralised water at 100 °C. 1 minute in de-mineralised water at room temperature	Class 0 "Effect only visible upon measurement"
Solubility DIN-ISO 9211-4-04-06	96 hours in a saline solution (45 g/l) at room temperature	—
Solvent resistance DIN-ISO 9211-3-12-3 and 9022-87-04-1	1 h hour in acetone (CH ₃ COCH ₃) at room temperature	Class 0 "OK"
Resistance to ultrasound	Alkali bath (3% "Galvex") for 2 hours at 60 °C and 50 W of ultrasonic power	Class 0 "OK"
Resistance to sweat DIN-ISO 9022-86-02-1	7 days in an artificial sweat solution	—

Resistance to climatic conditions

Cold DIN-ISO 9022-10-09-1	16 hours at -55 °C	Class 0 "OK"
Dry heat DIN-ISO 9022-11-06-1	6 hours at 85 °C with relative humidity of <40%	Class 0 "OK"

Cleaning instructions

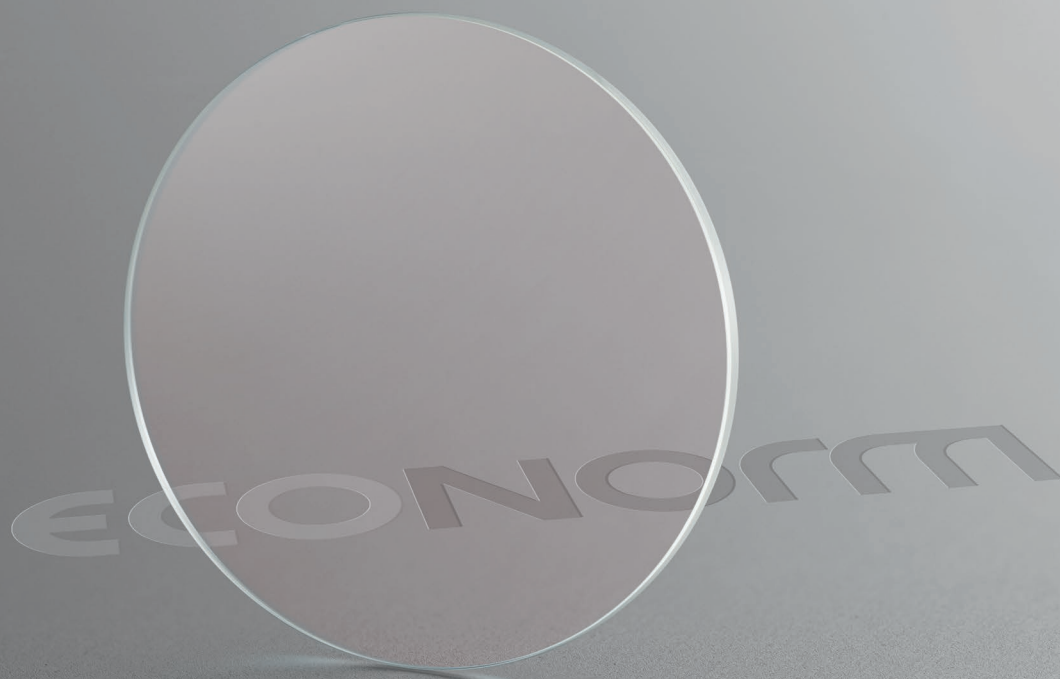
Please observe the following instructions on how to clean glasses that have been treated with an anti-reflective coating:

– Glasses can be cleaned easily in a neutral solution using ultrasound and at temperatures of up to 60 °C.

– If cleaning by hand, we recommend wearing single-use, powder-free latex gloves and using a lint-free cloth.

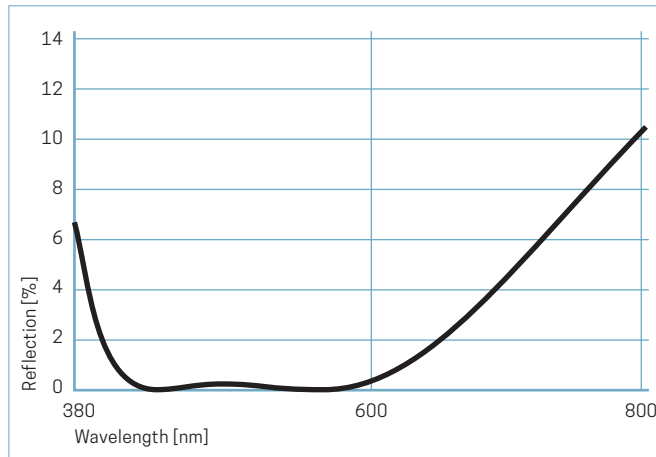
– Use one of the following approved cleaning alcohols:
Ethanol with 5% isopropyl alcohol (F25-A+IPA), Alcosuisse, Bern
Ethanol Absolute A 15 O (02883), Sigma-Aldrich, Buchs SG

AR Rouge



Red

Reflection curve



Properties

Optical

Reflection ≤3%	●
UV filter	—
Achromatic	—

Mechanical

Hard	—
Highly wear-resistant	—
Anti-static	—

Chemical

Water- and oil-repellent	—
Resistant to solvents	●
Low-temperature process	—
Alkali-resistant	●
Resistant to ultrasound	●

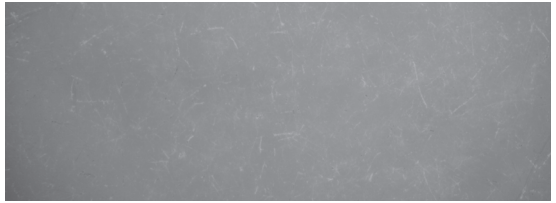

Geometric

Drilling, opening	●
Highly convex	—

Product structure



Quality tests

Mechanical resistance	Description	Results
Vibratory finishing (chemical-mechanical polishing)	2 hours in a vibrating bowl with cylindrical ceramic abrasives (Al ₂ O ₃)	Class 2 
Scratch-Test	Test to establish the hardness and adhesiveness of the coating using a diamond tip and variable loads	
Compliance with DIN-ISO 9211-4-02-02	Rapid pull off testing (~1 s) using adhesive tape 12-13 mm wide. Adhesive strength > 9.8 N per 25 mm	Class 0 "OK"

Chemical resistance

"Thermal shock" test DIN-ISO 9211-4-04-12	3× 2-minute cycles in de-mineralised water at 100 °C. 1 minute in de-mineralised water at room temperature	Class 0 "Effect only visible upon measurement"
Solubility DIN-ISO 9211-4-04-06	96 hours in a saline solution (45 g/l) at room temperature	Class 0 "Effect only visible upon measurement"
Solvent resistance DIN-ISO 9211-3-12-3 and 9022-87-04-1	1 h hour in acetone (CH ₃ COCH ₃) at room temperature	Class 0 "OK"
Resistance to ultrasound	Alkali bath (3% "Galvex") for 2 hours at 60 °C and 50 W of ultrasonic power	Class 0 "OK"
Resistance to sweat DIN-ISO 9022-86-02-1	7 days in an artificial sweat solution	Class 0 "Effect only visible upon measurement"

Resistance to climatic conditions

Cold DIN-ISO 9022-10-09-1	16 hours at -55 °C	Class 0 "OK"
Dry heat DIN-ISO 9022-11-06-1	6 hours at 85 °C with relative humidity of <40%	Class 0 "OK"

Cleaning instructions

Please observe the following instructions on how to clean glasses that have been treated with an anti-reflective coating:

- Glasses can be cleaned easily in a neutral solution using ultrasound and at temperatures of up to 60 °C.

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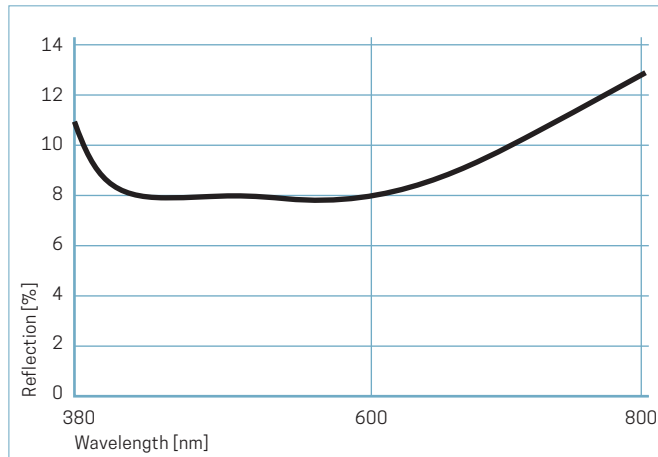
AR Rouge

1 side

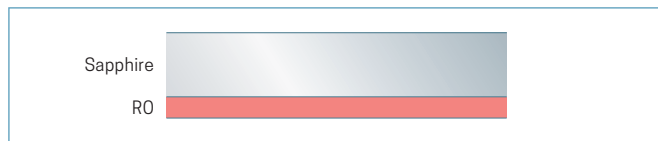


Red

Reflection curve



Product structure



Properties

Optical

Reflection ≤3%	—
UV filter	—
Achromatic	—

Mechanical

Hard	—
Highly wear-resistant	—
Anti-static	—

Chemical

Water- and oil-repellent	—
Resistant to solvents	●
Low-temperature process	—
Alkali-resistant	●
Resistant to ultrasound	●

Geometric

Drilling, opening	●
Highly convex	—

Quality tests

Mechanical resistance	Description	Results
Vibratory finishing (chemical-mechanical polishing)	2 hours in a vibrating bowl with cylindrical ceramic abrasives (Al ₂ O ₃)	—
Scratch-Test	Test to establish the hardness and adhesiveness of the coating using a diamond tip and variable loads	—
Compliance with DIN-ISO 9211-4-02-02	Rapid pull off testing (~1 s) using adhesive tape 12-13 mm wide. Adhesive strength > 9.8 N per 25 mm	Class 0 "OK"

Chemical resistance

"Thermal shock" test DIN-ISO 9211-4-04-12	3× 2-minute cycles in de-mineralised water at 100 °C. 1 minute in de-mineralised water at room temperature	Class 0 "Effect only visible upon measurement"
Solubility DIN-ISO 9211-4-04-06	96 hours in a saline solution (45 g/l) at room temperature	—
Solvent resistance DIN-ISO 9211-3-12-3 and 9022-87-04-1	1 h hour in acetone (CH ₃ COCH ₃) at room temperature	Class 0 "OK"
Resistance to ultrasound	Alkali bath (3% "Galvex") for 2 hours at 60 °C and 50 W of ultrasonic power	Class 0 "OK"
Resistance to sweat DIN-ISO 9022-86-02-1	7 days in an artificial sweat solution	—

Resistance to climatic conditions

Cold DIN-ISO 9022-10-09-1	16 hours at -55 °C	Class 0 "OK"
Dry heat DIN-ISO 9022-11-06-1	6 hours at 85 °C with relative humidity of <40%	Class 0 "OK"

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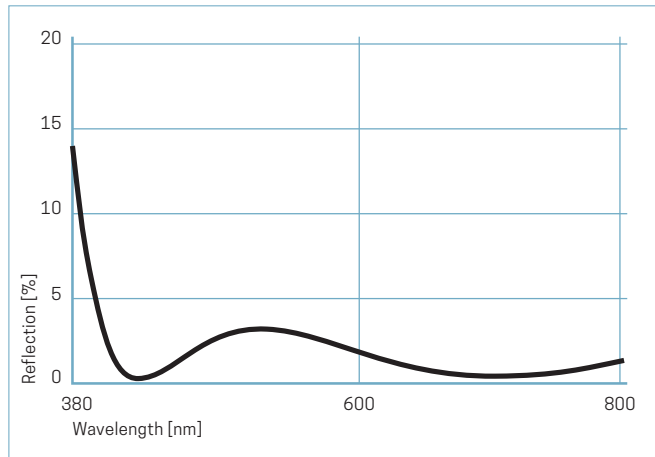
– Use one of the following approved cleaning alcohols:
Ethanol with 5% isopropyl alcohol (F25-A+IPA), Alcosuisse, Bern
Ethanol Absolute A 15 O (02883), Sigma-Aldrich, Buchs SG

AR Vert



Green

Reflection curve



Properties

Optical

Reflection $\leq 3\%$	●
UV filter	—
Achromatic	—

Mechanical

Hard	—
Highly wear-resistant	—
Anti-static	—

Chemical

Water- and oil-repellent	—
Resistant to solvents	●
Low-temperature process	—
Alkali-resistant	●
Resistant to ultrasound	●



Geometric

Drilling, opening	●
Highly convex	—

Product structure



Quality tests

Mechanical resistance	Description	Results
Vibratory finishing (chemical-mechanical polishing)	2 hours in a vibrating bowl with cylindrical ceramic abrasives (Al_2O_3)	Class 2 
Scratch-Test	Test to establish the hardness and adhesiveness of the coating using a diamond tip and variable loads	
Compliance with DIN-ISO 9211-4-02-02	Rapid pull off testing (~1 s) using adhesive tape 12-13 mm wide. Adhesive strength > 9.8 N per 25 mm	Class 0 "OK"

Chemical resistance

"Thermal shock" test DIN-ISO 9211-4-04-12	3× 2-minute cycles in de-mineralised water at 100 °C. 1 minute in de-mineralised water at room temperature	Class 0 "Effect only visible upon measurement"
Solubility DIN-ISO 9211-4-04-06	96 hours in a saline solution (45 g/l) at room temperature	Class 0 "Effect only visible upon measurement"
Solvent resistance DIN-ISO 9211-3-12-3 and 9022-87-04-1	1 h hour in acetone (CH_3COCH_3) at room temperature	Class 0 "OK"
Resistance to ultrasound	Alkali bath (3% "Galvex") for 2 hours at 60 °C and 50 W of ultrasonic power	Class 0 "OK"
Resistance to sweat DIN-ISO 9022-86-02-1	7 days in an artificial sweat solution	Class 0 "Effect only visible upon measurement"

Resistance to climatic conditions

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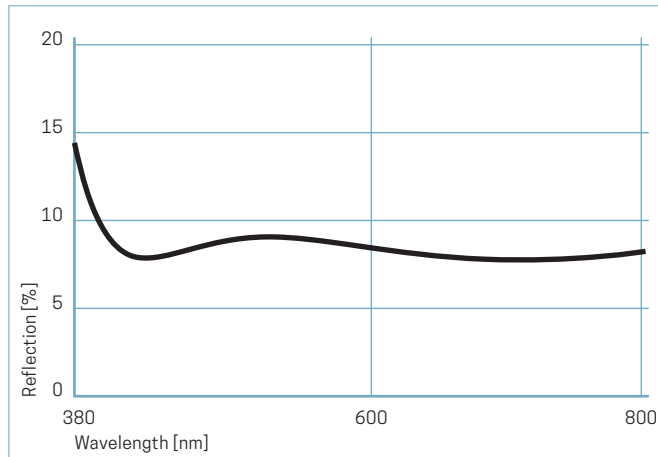
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AR Vert ^{1 side}

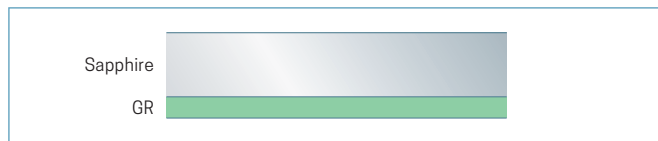


Green

Reflection curve



Product structure



Properties

Optical

Reflection ≤3%	—
UV filter	—
Achromatic	—

Mechanical

Hard	—
Highly wear-resistant	—
Anti-static	—

Chemical

Water- and oil-repellent	—
Resistant to solvents	●
Low-temperature process	—
Alkali-resistant	●
Resistant to ultrasound	●

Geometric

Drilling, opening	●
Highly convex	—

Quality tests

Mechanical resistance	Description	Results
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« De l'innovation naît l'émotion. »

