

Durability at its best – SCHOTT CONTURAN®

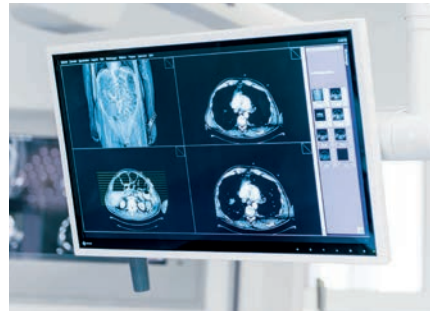
CONTURAN® is an all-rounder. This brilliant, innovative, extra-clear and virtually reflection-free glass enables users in a wide variety of surroundings to view important information quickly and efficiently – from doctors checking the condition of a patient on monitoring devices to commuters checking their train times on station departure boards.

Thanks to the optical interference coating, CONTURAN® offers an impressive 90 % reduction of annoying surface reflections. Using the sol-gel dipping process developed inhouse, nanometer-thin metal oxide layers are baked into the glass surface at high temperatures.

The coating therefore also impresses with top durability values: CONTURAN® is one of the hardest anti-reflective coatings on the market and is extremely resistant to mechanical and chemical loads on the everyday use, which makes it ideal for many applications in sophisticated environments.

The advantages of a dip coated glass compared to a sputtered product:

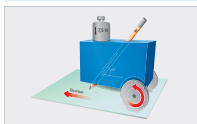
- Baked surface coating via high temperature process (>400°C) essential for very high adhesion to the glass surface
- High mechanical stability of the coating consisting of several layers of different metal oxides
- Exceptional scratch resistance and high abrasion resistance
- High chemical stability ensures high resistance to permanent contaminants
- Easy and regular cleaning possible without problems
- The result is a durable solution for numerous applications



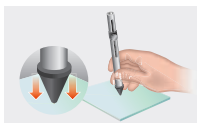
CONTURAN® undergoes a series of strict tests, divided into mechanical and chemical tests:

Mechanical tests	Abrasion resistance of coating	<ul style="list-style-type: none">• Taber-Abraser Process (DIN ISO 3537:2018)• Cheesecloth Rub Test (MIL-C-76 C)	<ul style="list-style-type: none">• Abrasion ≤ class 2• >450.000 cycles
	Adhesion test	<ul style="list-style-type: none">• Tesa Test (ISO 9211-4)	<ul style="list-style-type: none">• No peeling off of coating visible
	Scratch resistance	<ul style="list-style-type: none">• Pencil Hardness Test (DIN EN ISO 15184)• Hardness Pen Test (DIN 55656)	<ul style="list-style-type: none">• No visible damage (9H)• No visible damage (20N)
Chemical tests	Corrosion resistance of coating	<ul style="list-style-type: none">• Copper-accelerated acid salt spray testing (CASS)• Neutral salt spray testing (NSS) (both DIN EN ISO 9227)	<ul style="list-style-type: none">• 21 days / no peeling off of coating visible• 21 days / no peeling off of coating visible
	Resistance to climate of coating	<ul style="list-style-type: none">• Condensation atmosphere with constant humidity (DIN EN ISO 6270-2-CH)	<ul style="list-style-type: none">• 21 days / no peeling off of coating visible
	Hazardous substances	<ul style="list-style-type: none">• EC directive	<ul style="list-style-type: none">• On request

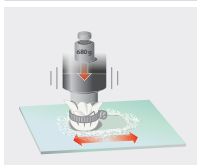
Mechanical Tests



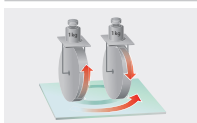
In the standardized **Pencil Hardness Test** (DIN EN ISO 15184) for testing the scratch resistance of the coating, class 9H achieved a significantly higher resistance than previously known from anti-reflective coatings.



In the scratch test with a **hardness pen** (according to DIN 55656) the scratch resistance of the coating is also tested. A metal needle is pressed onto the surface with defined forces (0.5–20 N). The peak value of 20 N was also achieved here.



The **Cheesecloth Rub Test** is a further indicator of the coating's very good abrasion resistance. Based on a US military standard (MIL-C-76 C), in this test a textile cushion is pressed with a defined force onto a coated surface and then moved several times. The surface is then checked for damage. Competitive products perform >90 % worse than SCHOTT products in this test.



Taber Test according to DIN ISO 3537:2018 is used to determine the abrasion resistance of the coating, whereby an abrasion class ≤ 2 was achieved.

Chemical Tests

The test conducted by the Materials Testing Center in Karlsruhe in accordance with UB MED Guideline MFR 890/009 put CONTURAN® to the test in terms of chemical layer resistance. The test included common cleaning agents of various active ingredient classes and tested their effect on CONTURAN®.

Based on this test, we can make recommendations for the majority of the substances tested:

Scope of testing according to MED MFR 890/009

Class of chemical agent	Specific test medium	Result
Alcohol	Incidur-Spray (undiluted), Ethanol (96 % Vol.), Mykrozid liquid (undiluted), Meliseptol rapid (undiluted), Isopropyl (70 %)	✓
Aldehyde	Melsitt (10 % Vol.), Lysoformin (2 % Vol.), Aldasan 2000 (4 % Vol.), Kohrsolin (0.5 % Vol.), Dismozon (0.5 %)	✓
Peroxide compounds	Perform (3 %), Hydrogen Peroxide (3 %)	✓
Pyridine derivative	Spray Aktiv (undiluted)	✓
Benzine	Benzine / Petroleum ether (undiluted)	✓
Dish liquid	Regular dish liquid (1 %)	✓
Organic acids	Bio-AntiBact med	✓
Limewater	–	✓
Alkylamine	Incidin Plus (8.0 % Vol.)	✓
Quaternary compounds	Mykrozid sensitive liquid (undiluted), Morning Mist (1:64 diluted), Terralin protect (2.0 % Vol.), Microbac® Tissues (direct) Taski Sprint DS 5001 (0.5 % Vol.), Sulfanios Fraicheur Citron (0.25 % Vol.)	○
Chlorine derivatives	Sodium hypochlorite (bleach; 10 %) Terralin (0.5 % Vol.)	○
Antiseptic agent	Chlorhexidin (0.5 %) in Isopropyl (70 %)	○
Ammonia	Ammonia hydroxide solution (1.65 % Vol.)	○

✓ = tested as harmless

○ = residues may accumulate on the surface



CASS and NSS Tests (DIN EN ISO 9227) successfully confirm the corrosion resistance of CONTURAN®. It also passes the resistance test against **moisture** (according to DIN EN ISO 6270-2-CH), i.e. it is passed without damage to the coating.

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