



VETRO
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TESTINGS & CERTIFICATIONS



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Confirmation

Vetro Power products for natural wood materials have the following characteristics

	Test institute	Tested norm	Conclusion
	CBA Chemische Produkte-Beratung und Analyse GmbH Chemical Products Consulting and Analysis GmbH	Food safety	The institute confirms that the conditions of §§ 30 and 31 of the German food and feed code (Lebensmittel, Bedarfsgegenstände und Futtermittelgesetzbuch LFGB) issued on 26.04.2006 (BGBl. I, S.2618) are met by the natural wood coating. The testing results of the coating meet furthermore the requirements of the VO (EC) 1935/2004 for consumer goods.
	Insitut für Farben und Lacke e.V. Insittute for paint and varnish	Measuring contact angle of water drop after abrasive action.	<p>The institute confirms that after 1000 abrasive cycles with a hog-bristle brush, the contact angle of water on the treated surfaces changes from 109,3° before testing to 89,8° after 1000 cycles. In comparison, contact angle on the unprotected surface changes from 66,5° to 62,4° after only 500 cycles.</p> <p>This proves that the effect of the nano-tech wood treatment is still given after 1,000 abrasive cycles.</p>

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Confirmation

Vetro Power products for stone surfaces have the following characteristics

	Test institute	Tested norm	Conclusion
	Hochschule Kaiserslautern University of Applied Science	Artificial weathering with Xenon arc lamps according to DIN EN ISO 4892-1:2006 550h (five weathering years)	The examination confirms that the nanocoating remains functional after a simulated weathering period of 5 years.
	Dr. Tombers & Partner Gesellschaft für Bauschadensforschung Materialprüfung und Umweltanalytik mbH Association for research of structural damage, material examination and environmental analysis	Frost-thaw-changes according DIN EN 12371:2010-07 (frost resistance) for 100 cycles. Frost-de-icing salt resistance according to TL Pflaster-StB 06 for 100 cycles. Water vapour diffusion according DIN EN SIO 12572:2001. tested substance: SAN SEBASTIAN, fossiliferous limestone (dolomitic biosparite) from Brač, Croatia.	The investigation confirms that the mass loss that occurred after 100 freeze-thaw salt changes was significantly lower in the case of the treated material than the untreated sample. The mass loss was 38%. The examination confirms that the effectiveness of the nanocoating treatment is still given after 100 test cycles. The examination confirms that the protective coating is not causing any reduction in water vapour diffusion - the μ value remained unchanged.
	CSIRO Industrial Research Services	CSIRO BEST-2:1998 Determination of water absorption. AS/NZS 4456.10:2003 Resistance to salt attack. ASTM C1353:1996 Abrasion resistance (Taber abrasion). Tested substance: Sandstone: Guinea Gold Sandstone from Gosford Quarries.	The test confirms an average water absorption value of 3.87 % (by weight) for the treated sample. The test confirms that the sample treated with nanocoating is considered resistant to salt attack. The test confirms an average abrasion index of 11.36 for the nanocoating treated sample.
	CBA Chemische Produkte-Beratung und Analyse GmbH	Food safety	The institute confirms the physiological harmlessness according §§30 and 31 Foodstuffs and Consumer Goods Act - Law concerning the handling of foodstuffs, tobacco products, cosmetic products and other consumer goods - Foodstuffs and Consumer Goods Act - in the version of the communication of 9 September 1997 (BGBl. I, S 2296), last amendment of 13.05.2004.
	Institut für Baustoffe und Sanierungsplanung Institute for Building Materials and Renovation Planning.	Hydrophobic effect	The institute confirms the good hydrophobic effect of the treated product on red sandstone, including the fact that the nanocoating layer only forms on the surface and does not penetrate the sandstone, which may be a benefit when ageing to prevent sanding and chipping.
	Dr. Eberhard Wendler Fachlabor für Konservierungsfragen in der Denkmalpflege Specialist laboratory for conservation issues in monument preservation	Ageing test for marble, tuff and limestone (frost-thaw cycle (25 cycles); water drop penetration test	The institute confirms that the materials show constant values, also with regard to water absorption and contact angle measurement, which are not affected by freeze-thaw exposure of 25 cycles.

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Vetro Power nanocoating products for textile materials have the following characteristics

	Test institute	Tested norm	Conclusion
	Università degli studi di Modena e Reggio Emilia - Dipartimento di Scienze della vita	UNI CEN/TS 15968:2010	The institute confirms that the nanocoating is PFC-free.
	Isega - Forschungs- und Untersuchungsgesellschaft mbH Aschaffenburg	Food safety	The institute confirms the physiological harmlessness according §§30 and 31 Foodstuffs and Consumer Goods Act - Law concerning the handling of foodstuffs, tobacco products, cosmetic products and other consumer goods - Foodstuffs and Consumer Goods Act - in the version of the communication of 9 September 1997, last amendment of 6 August 2002, state of 15 October 2002.
	Intertek Testing Services Hong Kong Limited	Reference to AfPS GS 2019:01 PAK; Solvent extraction and GC-MS Dissolution in organic solvent and GC-MS Reference to ISO 18254-1; dissolution in organic solvent and LC-MS	The institute confirms that the requirements according to ZDHC MRSL version 2.0 are kept for the nanocoating treatment.
	Bureau Veritas Consumer Products Services Germany GmbH	Perfluorinated and polyfluorinated chemicals (PFCs): draft CEN /BT/TS 15968, Methanol extraction 2h 60°C ultra sonic, Detection with Gc-MS / LC/QQQQ/LC-Q-TOF	The institute confirms that the Vetro Power product is PFC-free.
	Forschungsinstitut Hohenstein Prüfbericht Nr. 04.5.0100	DIN EN ISO 12 947-2:1999-04 (5000 cycles) DIN EN 24920 (08.92) (Spray Test) Stain repellent coating - durability of effect in a daily routine, at using conditions.	The institute confirms that the PES fabric, treated with the nanocoating shows an abrasion resistance of 5000 cycles. The hydrophobic effect remains after testing. The institute confirms that the PES fabric treated with the protective coating shows hydrophobic features. Result: Grade 4 (no wetting, only adherence of small drops at the sprayed area). The institute confirms that the PES fabric treated with the nanocoating shows a durability of the repellent effect towards red wine, motor oil, frying fat and salad dressing after up to 50 washing cycles.
	Hochschule Kaiserslautern University of Applied Science	Artificial weathering with Xenon arc lamps according to DIN EN ISO 4892-1:2006 - 550h (five weathering years)	The examination confirms that the nanocoating treatment remains functional after a simulated weathering period of 5 years.
	Ostthüringische Materialprüfgesellschaft für Textil und Kunststoffe mbH	Measurement of the oil resistance using hydrocarbons (double test) according DIN EN ISO 14419	The institute confirms that the treated fabric shows an oil repellency degree of 7. The fabric has a very good oil repellency.

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Vetro Power products with BactoProtect have the following characteristics

	Test institute	Tested norm	Conclusion
	Ostthüringische Materialprüfgesellschaft für Textil und Kunststoffe mbH	Determination of antibacterial activity according to DIN EN ISO 20743:2013.	The institute confirms a strong antibacterial efficacy of the Vetro Power BactoProtect coating refinement against S. aureus DSM 799 as well as K. pneumoniae DSM 789.
	CBA Chemische Produkte Beratung und Analyse GmbH	Food safety	The institute confirms that the test results of the nanocoating protected sample meet the requirements of Regulation (EC) No 1935/2004 for consumer goods.
	Universita Di Pisa	Declaration of anti-SARS-CoV-2 virucidal activity according ISO18184:2019	Certified that nanocoating treatment for textile, provided by Vetro Power BactoProtect, reduces the infectivity of SARS-CoV-2 by 99.99%.

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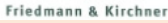


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Vetro Power nanocoating products for glass & ceramic surfaces have the following characteristics:

	Test institute	Tested norm	Conclusion
	Polymer Service GmbH Merseburg	Artificial weathering with fluorescent UV I amps according to ISO 11507, method A 3500h	Vetro Power nanocoating shows only a slight decrease in the contact angle from 116.7° (initial contact angle with distilled water) to 95.3° after 3500 h of artificial weathering. In comparison, the contact angle on a clean glass & ceramic without coating is in a range between 10° and 15°. The contact angle on the nano-coated glass & ceramic after a UV exposure time of 3500 hours is significantly higher.
	Friedmann & Kirchner Gesellschaft für Material- und Bauteilprüfung	Flexural strength according DIN 1249 part 12 DIN 18516 part 4 DIN EN 12150-1	The institute confirms that Vetro Power nanocoating protected single-pane safety glass & ceramic fulfils the normative requirements regarding the characteristic flexural strength.
	IGR Institut für Glas- und Rohstofftechnologie	Measurement of the reflection using FT-IR (AB) Measurement of the transmission using UV-Vis spectrometer	<p>The institute confirms that there was no difference in the "tin side" of the Vetro Power nano-coated and the uncoated sample, as well as no difference in the "air side" of the Vetro Power coated and the uncoated sample.</p> <p>The institute confirms that the measurement of transmission from the visible to the ultraviolet light showed no difference depending on the orientation of the "tin side" in the optical beam at each sample. But from the medium wave area of the visible light to the UV long wave light increased values of transmission at the Vetro Power nano-coated sample - compared to the uncoated sample - could be seen.</p>
	CBA Chemische Produkte-Beratung und Analyse GmbH Chemical Products Consulting and Analysis GmbH	Food safety	The institute confirms that the conditions of §§ 30 and 31 of the German food and feed code (Lebensmittel-, Bedarfsgegenstände und Futtermittelgesetzbuches LFGB) issued on 26.04.2006 (BGBl.I, S.2618) are met by the Vetro Power nanocoating. The testing results of the Vetro Power nanocoating meet furthermore the requirements of the VO (EC) 1935/2004 for consumer goods.

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Vetro Power products with BactoProtect for glass and ceramic surfaces have the following characteristics:

	Test institute	Tested norm	Conclusion
	Institut Fresenius	Determination of the bactericidal effect according to EN 1040 Quantitative determination of the antimicrobial effect according to ASTM Standard E 2180	The institute confirms that according to the microbiological tests carried out, the Vetro Power BactoProtect nanocoating is effective. The institute confirms the strong bactericidal effect of the Vetro Power BactoProtect nanocoating.
	Competence in Microbiology Priv.-Doz. Dr. rer. nat Thomas Jahns Mikrobiologe	Microbiological studies on antimicrobial properties according to JIS Z-2801	The study confirms that, in the tested materials, there was a significant reduction of recoverable viable cells after drying.
	Dr. Brill + Dr. Steinmann Institute for Hygiene and Microbiology	Evaluation of virucidal efficacy according to the DIN EN 14476:2019-10	The institute confirms that the Vetro Power BactoProtect nanocoating tested undiluted demonstrated activity against MVA after an exposure time of 30 seconds under clean conditions. Therefore, the Vetro Power BactoProtect nanocoating can be declared as active against MVA.
	Intertek Consumer Goods GmbH	Food safety	The Institute confirms that the present Vetro Power BactoProtect nanocoating meets the requirements of the Ceramics Directive 2005/31/EC, Regulation (EC) 1935/2004 and the LFGB.

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