Technical Data Sheet

G-Bio®

G-Bio® is produced by a nano-technology which has antibacterial properties providing extra protection against the forming and existing of bacterias.

G-Bio® is an indispensable product for the areas where hygienic protection is essential. Antibacterial properties of G-Bio® ensure the elimination of 99% of bacterias within 24 hours; this claim is scientifically proven and certificated.

It has become a product which is used safely and increasingly in day to day applications such as kitchens, surgery rooms, swimming pools, saunas, toilets, countertops and benches. It is an incisive choice for hospitals, medical centers, houses and public buildings.

EN Classification		VGS, HGS, CGS
EN 438 3/4	Thickness Range	0,8mm - 20mm
	Dimensions	1400x3660mm / 1540x3660mm

WATER REPELLANT | DRY HEAT RESISTANCE | SCRATCH & ABRASION RESISTANCE | LOW LIGHT REFLECTIVITY | ANTI BACTERIAL | HEAT & COLD RESISTANCE | EASY TO CLEAN | ULTRA COLOR INTENSITY | IMPACT RESISTANCE | RESISTANCE TO HOUSEHOLD AND LABRATORY CHEMICAL

Characteristics	Test Method	Test Value	Required Value
Thickness	EN 438-2 section 5	According to the required thickness	2.0 ≤ t < 3.0 mm : ± 0.20 mm 3.0 ≤ t < 5.0 mm : ± 0.3 mm 5.0 ≤ t < 8.0 mm : ± 0.4 mm 8.0 ≤ t < 12.0 mm : ± 0.5 mm 12.0 ≤ t < 16.0 mm : ± 0.6 mm 16.0 ≤ t < 20.0 mm : ± 0.7 mm 20.0 ≤ t < 25.0 mm : ± 0.8 mm 25.0 ≤ t : According To Agreement customer / producer
Density	ISO 1183 - 1	1.4 gr/cm^3	Min. 1.35 gr/cm^3
Wear Resistance	EN 438-2[1] section 10 CGS[2]	IP = 185 Rev. Wear Value = 485 Rev.	Initial Point ≥ 150 Rev. Wear Value ≥ 350 Rev.
Scratch Resistance	EN 438-2 section 25 CGS	3 N 4 N	Flat Surface Min. 2 N Textured Surface Min. 3 N
Impact Resistance	EN 438-2 Big Ball section 21 CGS 2.0 ≤ t < 6.0 mm t ≥ 6.0 mm	No Crack , 4.5 mm No Crack , 3.5 mm	1400 mm height : no crack, 10 mm Max. 1800 mm height : no crack, 10 mm Max.
Resistance To Crazing (20 Hours @ 80°c)	EN 438-2 section 24 CGS	Level 4	Min. level 4
Resistance to Dry Heat at 180°c	EN 438-2 section 16 CGS Flat / Textured Surface Finish	Level 5	Min. level 4
Resistance to Boiling Water	EN 438-2 section 12 CGS 2.0 ≤ t < 5.0 mm t ≥ 5.0 mm Flat / Textured Surface Finish	2.2% 3.1% 0.55% 0.65% Level 5	Max. 5% in weight Max. 6% in thickness Max. 2% in weight Max. 2% in thickness Min. Level 4

Characteristics	Test Method	Test Value	Required Value
Resistance to Water Vapor	EN 438-2 section 14 CGS Flat / Textured Surface Finish	 Level 5	 Min. Level 4
Resistance to Cigarette Burn	EN 438-2 section 30 CGS	Level 4	Min. Level 3
Resistance to Staining	EN 438-2 section 26 CGS Group 1 + 2 Group 3	 Level 5 Level 5	 Min. level 5 Min. level 4
Resistance against chemicals (Acid / Base / Organic solvent / Inorganic Salt)	SEFA 8 - 1999	See attached List	-----
Resistance against detergents, disinfectants[9] and Anti Microbial Agent[11]	SEFA 8 - 1999	See attached List	-----
Flatness	EN 438-2 section 9 CGS 2.0 ≤ t < 6.0 mm 6.0 ≤ t < 10.0 mm t ≥ 10.0 mm	 1.23 mm 1.46 mm 1.87 mm	 Max. 8 mm / 1 M length Max. 5 mm / 1 M length Max. 3 mm / 1 M length
Light Fastness	EN 438-2 section 27 CGS Grey Scale	 Level 5	 Min. level 4
High Temp. Stability 70°c	EN 438-2 section 17 CGS 2.0 ≤ t ≤ 5.0 mm t ≥ 5.0 mm	 L : 0.22 mm W : 0.35 mm L : 0.18 mm W : 0.23 mm	 L : Max. 0.4 mm W : Max. 0.8 mm L : Max. 0.3 mm W : Max. 0.6 mm
Tensile Strength	EN ISO 527 – 2 CGS	85 MPa	Min. 60 MPa
Flexural Strength	EN ISO 178 CGS	114 MPa	Min. 80 MPa
Flexural Modulus	EN ISO 178 CGS	16,522 MPa	Min. 9000 MPa
Thermal Conductivity	ASTM C 518	0.416 W/mK	---

Characteristics	Test Method	Test Value	Required Value
Coefficient Of Linear Thermal Expansion (COTE)	ASTM D696-08[3]	6.0×10^{-6} mm / mm °c	–
Total Volatile Organic Compound Emission	ASTM D5116	< 0.010 mg/m²/hr	< 0.5 mg/m²/hr
Antibacterial Activity[3]	JIS Z 2801 : 2000		
	Staphylococcus Aureus (ATCC 6538p)[6]	R[4] = 2.84	R[4] ≥ 2.00
	Pseudomonas Aeruginosa (ATCC 12924)[6]	R[4] = 3.00	R[4] ≥ 2.00
	E. Coli (ATCC 25922)[6]	R[4] = 3.11	R[4] ≥ 2.00
	Salmonella Cholearesuis (ATCC 10708)[6]	R[4] = 2.90	R[4] ≥ 2.00
	ISO 22196 : 2011		
	Escherichia Coli (ATCC 25922)[6]	R[7] ≥ 4.1	R[7] ≥ 2.0
	MRSA NCTS(8) 13142	R[7] ≥ 4.1	R[7] ≥ 2.0
	Staphylococcus Aureus (ATCC 6538p)[6]	R[7] = 4.0	R[7] ≥ 2.0
	Pseudomonas Aeruginosa (ATCC 9027)[6]	R[7] ≥ 4.1	R[7] ≥ 2.0
	Salmonella Cholearesuis (ATCC 10708)[6]	R[4] = 2.90	R[7] ≥ 2.0
Fire Classification[10]	EN 13501-1 10 mm	B s1 d0	B s2 d0
Available Decors[5]	- Snow White 3000 - Office Grey 3153	---	---

Remarks :
(1) Required Values Based on 438-4
(2) CGS = Compact Grade Standard Laminate
(3) The Antibacterial activity is tested with 4 & 5 different types in each test method of bacteria and test reports are available upon request
(4) R = Value of Antimicrobial Activity
(5) For any other décor – only after technical approval
(6) ATCC = American Type Culture Collection
(7) Log10 reduction from initial CFU cm^{-2}
(8) NCTC = National Collection of Type Cultures
(9) Surface resistance against most common detergents and disinfectants used in hospitals , surgery room And Biological laboratories .
(10) FR grade is produced only upon customer request
(11) 5 Types of Anti Microbial Agent commonly used in hospital , chemical lab and biological lab . Test Method according to SEFA 8 1999
(12) Cleaning recommendations : See Attached

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Chemical Resistance According To SEFA 8-1999 (Ref. 2006) & SEFA 3-2010 (1):

Test No	Chemical Reagent	Test Method[(1),(2)]	Test Result[(3)]
1	Acetate , Amyl	A	0
2	Acetate , Ethyl	A	0
3	Acetic Acid , 98%	B	0
4	Acetone	A	0
5	Acid Dichromate , 5%	B	0
6	Alcohol , Butyl	A	0
7	Alcohol , Ethyl	A	0
8	Alcohol , Methyl	A	0
9	Ammonium Hydroxide , 28%	B	1
10	Benzene	A	0
11	Chloroform	A	0
12	Chromic Acid , 60%	B	1
13	Dichloracetic Acid	A	0
14	Dimethylformamide	A	0
15	Ferric (III) Chloride 10%	B	0
16	Formaldehyde , 37%	A	0
17	Formic Acid , 90%	B	0
18	Furfural	A	0
19	Gasoline	A	0
20	Hydrochloric Acid , 37%	B	0
21	Hydrofluoric Acid , 37%	B	0
22	Hydrofluoric Acid , 48%	B	0
23	Hydrogen Peroxide , 3%	B	0
24	Hydrogen Peroxide , 30%	B	0
25	Iodine Tincture	B	2
26	Methyl Ethyl Ketone	A	0
27	Methylene Blue 1%	B	1
28	Methylene Chloride	A	0
29	Methyl Isobutyl Ketone	A	0
30	Methyl Violet 2B 1%	B	1
31	Mono Chlorobenzene	A	0
32	Naphtalene	A	0
33	Nitric Acid , 30%	B	0
34	Nitric Acid , 70%	B	0
35	Phenol , 90%	A	0
36	Phosphoric Acid , 85%	B	0
37	Potassium Permanganate 5%	B	1
38	Silver Nitrate , Saturated	B	0
39	Sodium Hydroxide , 10%	B	0
40	Sodium Hydroxide , 40%	B	0

Chemical Resistance According To SEFA 8-1999 (Ref. 2006) & SEFA 3-2010 (2):

Test No	Chemical Reagent	Test Method[(1),(2)]	Test Result[(3)]
41	Sodium Hypochlorite 16%	B	0
42	Sodium Sulfide , Saturated	B	0
43	Sulfuric Acid , 33%	B	1
44	Sulfuric Acid , 77%	B	0
45	Sulfuric Acid , 96%	B	1
46	Sulfuric Acid 77% and Nitric Acid 70% , Equal Parts	B	1
47	TetraHydroFurane (THF)	A	0
48	Toluene	A	0
49	Trichloroethylene	A	0
50	Xylene	A	0
51	Zinc Chloride , Saturated	B	0
52	Chlorine Solution , 10,000 PPM	B	0
53	Hydrogen Peroxide , 30%	B	0

Resistance To Anti Microbial Detergents and Disinfectants According To Test Method SEFA 8-1999 (Ref. 2006) [(4)]

Test No	Anti Microbial Agent	Test Method[(1),(2)]	Test Result[(3)]
1	Benzethonium Chliride 2%	B	0
2	Cetylpyridinum Chloride 4%	B	0
3	Domiphen Bromide 4%	B	0
4	Benzalkonium Chloride 4%	B	0
5	N-(3-aminopropyl)-N-dodecylpropane 1,3-diamine 0.5%	B	1

Remarks :

(1) Method A : Saturate a cotton ball with the chemical reagent. Place the saturated cotton ball on the Surface of the laminate and cover the saturated cotton ball with a watch glass 10 cm Diameter . leave the covered reagent For 24 hours . after 24 hour wash the panel with Water , clean with detergent and rinse With de-ionized water . Leave the tested laminate For 24 hours and evaluate according to the level chart(3) .

(2) Method B : Place 5 drops of the chemical reagent on the decorative surface of the tested laminate and Cover the chemical reagent with a watch glass 10 cm Diameter . leave the covered reagent For 24 hours . after 24 hour wash the panel with water , clean with detergent and rinse With de-ionized water . Leave the tested laminate For 24 hours and evaluate according to The level chart[(3)] .

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(3) Level Chart :

Level No.	Description
0	No detectable stain, loss of gloss or change to the surface of the laminate
1	Slight stain or loss in gloss but no change to the surface of the laminate
2	Severe stain or slight change to the surface of the laminate
3	Swelling, Pitting, cracking or erosion to the surface of the laminate

(4) The test method refers only to the testing procedure

Recommended Cleaning Instructions :

1) The following cleaning instruction is suitable for periodic cleaning / maintaining and for cleaning after installation (Adhesive residue ets.).
2) Use Non abrasive cloth (Cotton Based / Vileda® Microclean Cloth) soaked with one of the following cleaners :
-Regular cleaning soap 5% solution (any household soap is suitable for this purpose)
-Oxivir Plus Spray (Produced by Diversey – www.diverseysolutions.com)
-TASKI Sprint Degerm (Produced by Diversey – www.diverseysolutions.com)
All mechanical cleaning system , e.g. rotating brushes / wiper blades etc., are unsuitable for the surface and may cause a permanent damage to the decorative surface.
3) Wipe the surface with non abrasive cloth from any residue of the cleaner
4) Wipe the surface with Non abrasive clothe soaked with regular water and leave the surface for 5 minutes in order to dry.
5) Clean the surface again with Dry cloth.
6) For cleaners preparation method – follow producer instructions