

# TOP-Coat-System 700

## The innovative solution for clean room surfaces

Special care must be taken when selecting the appropriate materials needed for all those surfaces involved on which even the highest demands are made whether for walls or ceilings.

Functionality is a must and long life is an added bonus. The safety of the operator, staff and production staff is always of paramount importance.



More than 25 years of development and experience with many thousands of square metres have led to *TOP-Coat-System 700*. One can achieve seamless, smooth and easily to clean surfaces. The processing is simple and problem free and almost unlimited colour shades are possible. The surfaces are durable and highly resistant to both mechanical stress and chemicals.

The high tear coefficient of the glass fabric provides good adhesion values and the bridging of cracks ensures a safe anchorage with the substrate.

In order to guarantee a permanent protection against the colonization or settlement of micro organisms on hard-to-reach areas, our *TOP-Coat-System 700* uses a system known of for over 1000 years. It is the proven efficacy of elemental silver – a protection which does not require toxic substances. *TOP-Coat-System 700* is effective against MRSA (multi resistant staphylococcus aureas strains) and does not develop any resistance.

Every well-established process can be used for disinfecting and every approved aqueous and solvent based agent can be used even for wall surfaces which is amenable to epidemic control acts. Furthermore, the resistance has been tested in the case of gas disinfection using H<sub>2</sub>O<sub>2</sub> or formaldehyde.

The *TOP-Coat-System 700* optimally combines the positive properties of glass textile fabrics, levelling and wall coating. It is based on the latest development standards and fulfils the highest demands. Numerous test certificates provide planners and users with the necessary assurance in deciding upon the correct system for long term consideration. It is both time saving and inexpensive to renovate the coating when it reaches its optimum age.

Coatings with *TOP-Coat-System 700* yield a mechanically resilient, tenaciously-flexible and smooth surface, ideal wherever hygiene comes first. The *TOP-Coat-System 700* simultaneously includes a wide varied scope for design with an almost unlimited and vibrant colour palette.

## TOP-COAT 700

A patent has been applied for *TOP-Coat-System 700* as a coating for wall and ceiling surfaces and consisting of a combination of glass fibre sheathing with fillers and an exceptional 2-component-PU-coating. All components are solvent free and consequently especially environmentally safe.

Harmful emissions are absent during both processing and usage. Furthermore a contamination with micro organisms is blocked entirely.

Demands	TOP-Coat-System 700	Comments
Surface	smooth + seamless	
Gloss	semi gloss or semi matte	
Resistance to cleaning agents	very good	
Disinfection resistance	very high	see test certificate
Mechanical resilience	high	
Chemical resilience	very high	
Adhesion values	very high	> 6
Over-bridging of cracks / sheathing	very good	ca. 1.500 N/5cm
Combustion	DIN 4102 B1	+ BS 476 + EN 13501-1
Surface hardness	high	
Work load / working time	low to medium	

## SUBSTRATES

*TOP-Coat 700* can be applied on various types of substrate. Cement bound materials are preferred in the case of mineral substrates as their hardness and ruggedness against humidity offers additional safety.

The substrate should be slightly absorbent, smooth and free from materials which hinder an adhesion. A primer is advantageous in the case of strongly absorbent substrate.

## SURFACES

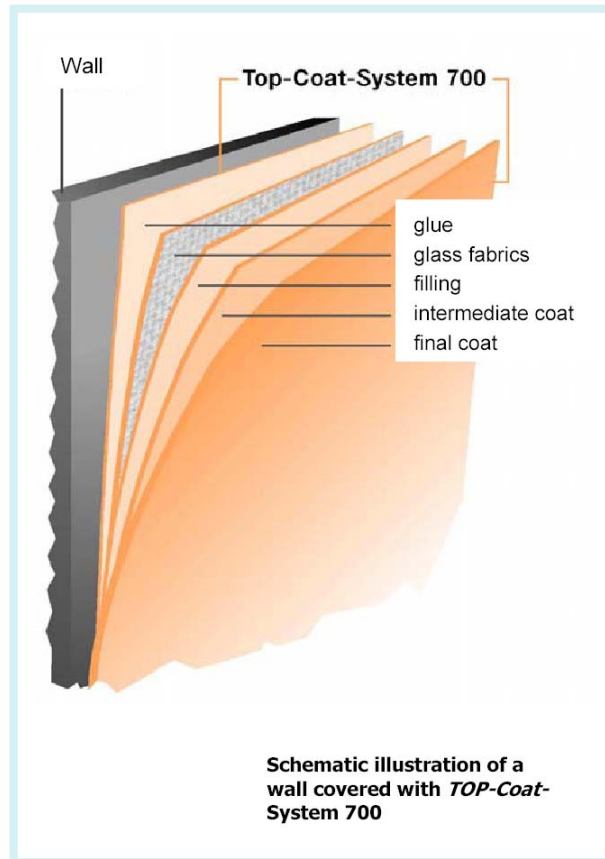
Surfaces coated with the *TOP-Coat-System 700* system are easily distinguished as they have a smooth, seamless surface structure which is free from pores and are stable up to temperatures of 90°C. The tendency of the particles to stick is considerably reduced due to the special formulation. Consequently such areas are easy to clean and maintain this attribute for a span of many years.

The water vapour diffusion is approximately  $1,2 \times 10$  to the power of 4 and the CO<sub>2</sub> diffusion is approximately  $2,2 \times 10$  to the power of 8 when the total coat level is already 350 µm.

The impact and scratch resistance is equals 70 inch pound and is tested in accordance with ASTM D 2794-93.

## SYSTEM STRUCTURE

The *TOP-Coat-System 700* can be applied on nearly all supportable smooth substrates. Cement bound materials are however given preference depending on the end use due to the higher humidity resistance and surface hardness. A primer coating is then recommended as a preparation depending on the substrate in order to lower the absorption of the substrate and thereby increase the adhesion.



The *TOP-Coat* adhesive is rolled onto the prepared substrate. The glass fabric is then hung edge to edge and pressed down ensuring there are no air bubbles. After sufficient drying, (at least 24 hours) the filler is applied until full smoothness is reached. After drying the desired degree of smoothness can be obtained either manually or by machine.

## FINISH COAT

Primer 711 is used as an intermediate finish for these surfaces. The *TOP-Coat 735* is normally applied twice after drying and perhaps a light intermediate sanding. The result is an excellent chemical resistant, semi-gloss surface finish. If needed you can choose either semi-matte or full gloss finishes in almost unlimited colour shades matching the RAL, RAL-Design, NCS or BS standards. Even non-standard shades are possible. The silver contained in the finishes prevents the contamination with micro organisms, even MRSA, the same as it does in modern refrigerators and in sportswear.

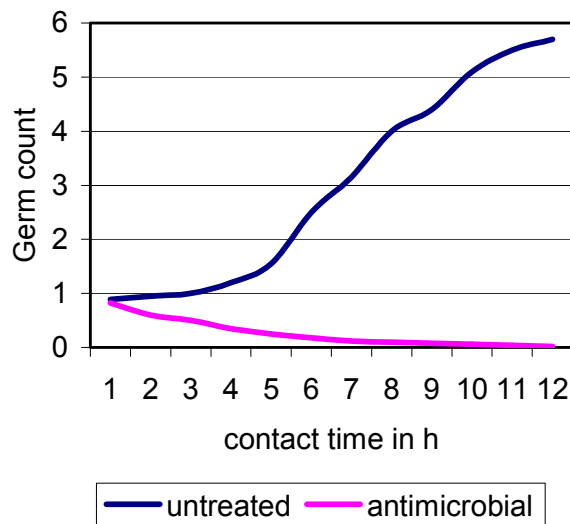
## OVER-BRIDGING OF CRACKS AND SEAMLESS WALL COATINGS

The sheathing ability of fibre glass fabrics is well known and these fabrics are widely used. The glass fibre fabric used in the *TOP-Coat-System 700* system absorbs the surface tensions in the various substrates. When combined with a special adhesive and the 2-coat filler an optimum composite, hard without being brittle, and ideal for intermediate and top coatings. Thus there is scarcely any residual stress and no shrinkage. An adhesion value of  $> 6 \text{ N/mm}^2$  (resp.  $> 840 \text{ Lb/sq. inch}$ ) is tested in accordance with ASTM 4541 and a tensile strength of more than  $1000 \text{ N/5cm}$  tested in accordance with DIN EN ISO 13934-1b support this.

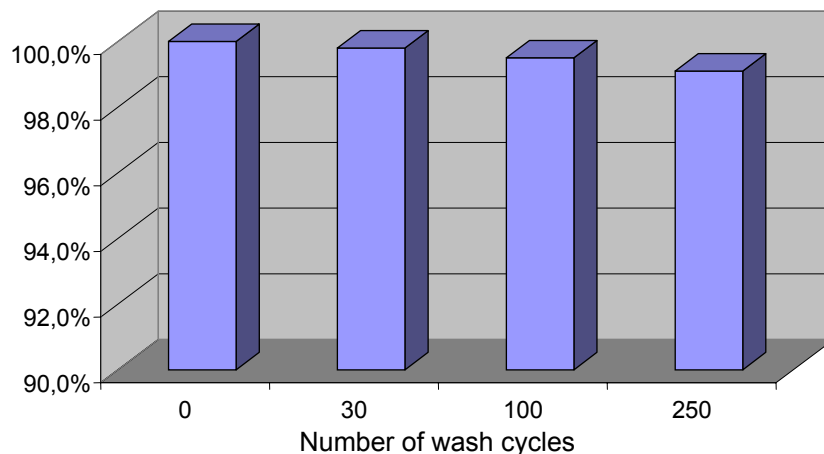
## NO SETTLEMENT OF MICRO ORGANISMS

The settlement of micro organisms, such as mould, mildew, yeasts, and bacteria (even MRSA) are prevented safely and permanently by the use of silver ions, even in poorly accessible areas. This saves costs, takes care of the environment and provides additional safety. An effect of over 99% is still verifiable after 250 cleaning cycles.

### Growth of bacteria



### Wash fastness of antibacterial effect



## LYE-PROOF AND ACID RESISTANCE

A test was undertaken with a 20% Sodium Hydroxide solution and a 20% Phosphoric acid solution

	ROHDE	
Caustic Soda NaOH 20%	<i>TOP-Coat</i> Finish 735	Symbol explanation: M = number of blisters G = size of the blisters E = softness V = discolouration  Total evaluation: 0 = best possible properties 1 = very good properties 2 = good properties 3 = still acceptable properties 4 = with limitations, conditionally justifiable properties 5 = fewest possible, no longer acceptable properties  Layer thickness: 200µm wet film; using Film Applicators with gap heights
5 minutes test	M0	
	G0	
	E0	
	V0	
24 hours test	M0	
	G0	
	E0	
	V0	
Phosphoric Acid H <sub>3</sub> PO <sub>4</sub> 20%		
5 minutes test	M0	
	G0	
	E0	
	V0	
24 hours test	M0	
	G0	
	E1	
	V1	

The appraisal based on the number and size of the blisters showed the performance of the objects which were tested to be either very good or the best possible.

## DECONTAMINATION CAPABILITY

*TOP-Coat-System* 700 possesses a remarkably compactly closed surface which hardly allows any adhesion of particles on the one side but permits dirt to be cleaned without a problem on the other. This test was made by the institute of Nuclear Medicine at the University of Würzburg. The result was that the cleaning power was many times better than in the case of earlier coatings.

This is not at the expense of later renovation. The special formulation ensures that repainting is in no way affected.

## RESISTANCE TO DISINFECTION AGENTS – H<sub>2</sub>O<sub>2</sub> - GAS DISINFECTION

The resistance to all authorised disinfection agents and processes plays a particularly important role. The coating both against waterborne and also against organic disinfection is proven is tested in accordance with DIN EN ISO 2812 – 1. The stipulations of the DGHM and those of the Robert-Koch-Institute (Federal Epidemic Control Act § 10e) are likewise fulfilled.

Besides disinfecting by wiping both water vapour (steam-pressure cleaners) and fuming can be used for disinfecting.

The resistance to formaldehyde is likewise tested besides gas sterilisation with H<sub>2</sub>O<sub>2</sub>. Even considerably higher concentrations up to 2400 ppm and longer contact periods do not lead to any changes in the surface.

## UV RESISTANCE

*TOP-Coat-System 700* was tested by applying a QUV accelerated weathering tester in accordance with DIN EN ISO 11507. The gloss retention and colour shade was evaluated after 100 and 250 hours.

Gloss grade DIN 67530				
	Angle 60°	Angle 85°	colour shade ΔE Cielab	white shade y value
<b>Initial value</b>	45,0 GE = 100 %	80,0 GE = 100 %		86,69
<b>100 hours</b>	44,5 GE = 98,9 %	80,0 GE = 100 %	0,24	86,92
<b>250 hours</b>	36,0 GE = 80,0 %	75,0 GE = 94 %	0,29	85,53

The result showed a very good UV resistance and would lead to one expecting very good retention figures for colour shade and gloss when subjected to exterior exposure.

## DURABILITY

The *TOP-Coat-System 700* is conceived for use over a prolonged period. The final / end hardness of all components is reached after a period of 28 days. Any further “ageing” does not occur thereafter.

## RENOVATION

Renewing the coating is both simple and quickly performed if required. Remove contaminants such as dirt as well as residues of disinfectants and detergents. Either one or two coats of *TOP-Coat 735* in the required colour shade are then applied if no further damage noticeable. The adhesion of the recoating has to be ensured.

## PROCESSING

Today’s demands on a modern coating system require simple and efficient processing steps. All processing steps in the *TOP-Coat-System 700* are so fine-tuned with each other that the anchorage of the individual coatings is optimal besides providing a visually attractive appearance.

## COLORISTIC

The spectrum of almost limitless colouristic schemes is available when using *TOP-Coat-System 700*. These extend from a brilliant white to delicate pastel shades (mellow tints) and bold colours. The *TOP-Coat-System 700* allows freedom for all types of creative elements and highlights.

## COSTS

The simple and efficient processing process when using *TOP-Coat-System 700* signifies a price structure which was previously impossible to reach for such coatings and therefore opens-up the usage not only in the most critical high safety areas.

## ECOLOGY AND ECONOMY

The *TOP-Coat-System 700* illustrates that ecology and economy do not need to clash each other. Special emphasis was placed on easy and efficient processing when developing the product. Attractively priced production costs are the result.

Environmental pollution is kept to an absolute minimum level. All components are solvent free. No safety protection measures are needed beyond the normal ones during processing. Harmful emissions do not occur either during the processing stage or later on in daily usage.

The VOC content lies well below the threshold value of the EU VOC paint directive which will be in force as from 2010.

## OVERVIEW

Requirement	<i>TOP-Coat-System 700</i>	Comments
Chemical resistance	high	tested in compliance to DIN EN ISO 2812-3 + DIN EN ISO 4628-2
UV resistance	very good	tested in compliance to DIN EN ISO 11507
Tear strength	horizontal: up to 1.500N per 5 cm vertical: up to 1.500N per 5 cm	tested in compliance to DIN EN ISO 13934-1
Disinfection resistance	very high	tested in compliance to DIN EN ISO 2812-1
Xylol resistance	yes	tested in compliance to DIN EN ISO 2812-3
Formaldehyde resistance	yes	
Steam disinfection	yes	
H2O2- gas disinfection	yes	
Formaldehyde vapour disinfection	yes	
Blood resistance	yes	
Resistance to radioactive chemicals and particles	yes	tested by the University-Clinic Würzburg
Dirt repellence	yes	but yet renewable at any time
Biocide properties	yes	
Containing biocides	none	Has biocide effectiveness
Porosity	no	
Combating bacteria	yes	tested in compliance to JIS-Z-2801:2000
Combating fungi	yes	tested in compliance to ASTM G21-96
Impact resistance	yes, specific value A	tested in compliance to DIN 53 154
Elasticity of final coating	yes, 70 inch-pound	tested in compliance to ASTM D 2794-93
Abrasion resistance	very high	tested in compliance to EN ISO 13300 Class 1+ DIN EN 13000 + DIN 68861 Part 4
Combustibility	fire-retardant	tested in compliance to DIN EN ISO 4102B1 & BS 476 Part 6 & Part 7 + EN 13501-1
Suitable for contact with food	yes	meets all requirements for usage in food industry<, GNP & GLP. Intensive Care and Safety Laboratories
Processing temperature	>10°C	can be dried up to 70°C
Colour shades	RAL + NCS + BS 4800	almost unlimited
Economical aspect	high solid	
Ecological aspect	solvent free, water-thinnable	
Surface structure	smooth	

## RÉSUMÉ

Walls and ceilings which are treated with *TOP-Coat 700* fulfil the most stringent hygienic demands and all components are solvent free and do not give off any emissions.

No unusual effort is needed to apply *TOP-Coat 700* on virtually any surface. The resulting extremely low-tension surfaces are ideal for covering cracks.

The surfaces are smooth, non-porous, easily cleanable, disinfectant resistant and can be decontaminated.

Years of experience and development work lead to the creation of *TOP-Coat 700*. It provides the user with the security and safety to make the correct selection.