

a DSM Product



VitroStealth®

A new durable non-biofouling surface technology

DSM has developed VitroStealth®, a new non-biofouling (NBF) coating technology which can be easily applied to a variety of different substrates. VitroStealth® coating has been specifically developed to combine state of the art non-biofouling properties with excellent durability and fast processing.

State of the art non-biofouling properties

Coatings and surface treatments which reduce the unwanted accumulation of biological species such as proteins, nucleic acids, cells and bacteria, have been available on the market for some time. Many of these are simple surfactant based approaches and thus suffer from high levels of extractables and leachables as well as poor mechanical durability (scratch resistance). In some cases these extractables have been shown to interfere with subsequent *in-vitro* assays and current non-biofouling coatings have therefore found only limited application success.

Key properties of VitroStealth® non-biofouling coatings

Property	Result
Protein adsorption	Reduction >97% (detection limit) Compared to uncoated silica surface
Bacterial adhesion Staph. Epi. & E.Coli (Glass, PET, PS, PP)	Reduction >99.7% (detection limit) Compared to uncoated substrate
Reduction in blood platelet adhesion (PET)	Very good
Hemocompatibility	Very good
Extractables	(ppm-ppb)
Surface characteristics	Hydrophilic surface dramatically Improves flow in micro-fluidic devices
Pencil hardness	F-H
Steel wool at 250g (5 double rubs)	No scratches
Application process	Solvent based + UV curing

In the past DSM has developed scratch resistant coatings for use in displays and other applications. Using this expertise in the area of hard coats, DSM has been able to develop VitroStealth® coatings, where the durability has been dramatically increased while maintaining state of the art non-biofouling properties. The coatings are solvent based and cured by exposure to UV light and can thus be easily applied and processed at high speeds. Due to the UV cross-linking the coating exhibits extremely low levels of extractables and leachables (ppm-ppb).

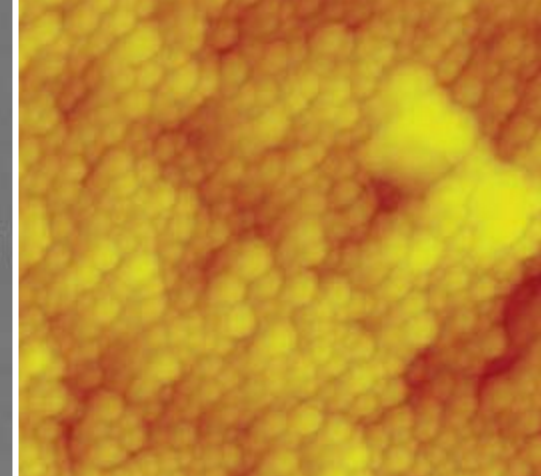
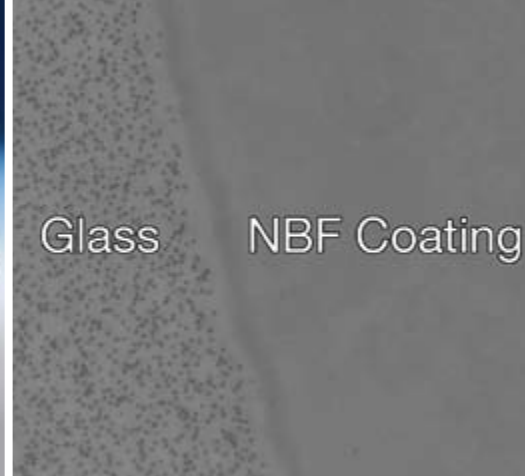
Applications: Reliable Diagnosis and Discovery

In principal VitroStealth® can be applied anywhere where the accumulation of proteins, nucleic acids, bacteria or other cells types is unwanted. At this stage, we are focusing on applications in life science consumables, pre-analytics as well as point of care diagnostics. Use of the VitroStealth® technology will lead to improved assay sensitivity, reproducibility and therefore reliability in these applications. Application of the technology in consumables used for handling of small amounts of rare or expensive proteins and cell lines is also highly suitable.

DSM is also investigating the scope of this technology for *in-vivo* medical applications and is constantly investigating other markets.

Fast application and processing

VitroStealth® coating formulations are solvent based (alcohol-water mixture) and can therefore be applied using a variety of liquid coating techniques such as dip-coating, spin coating, spray coating, roll-2-roll coating and the like. Furthermore, the processing is suitable for high throughput manufacturing of large numbers of coated parts. Thermal curing is also possible.



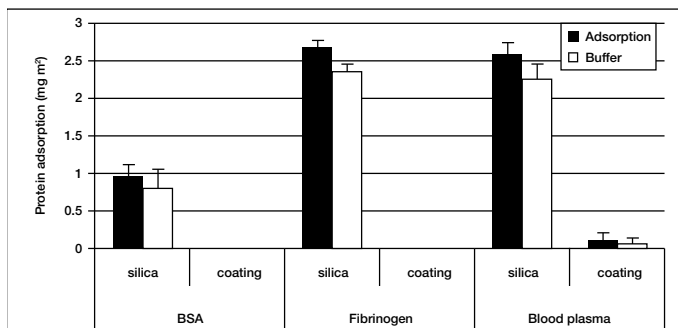
DSM

Royal DSM N.V. creates innovative products and services in Life Sciences and Materials Sciences that contribute to the quality of life. DSM's products and services are used globally in a wide range of markets and applications, supporting a healthier, more sustainable and more enjoyable way of life. End markets include human and animal nutrition and health, personal care, pharmaceuticals, automotive, coatings and paint, electrics and electronics, life protection and housing. DSM has annual sales of almost EUR 8.8 billion and employs some 23,000 people worldwide. The company is headquartered in the Netherlands, with locations on five continents. DSM is listed on Euronext Amsterdam.

Key characteristics of VitroStealth[®] non-biofouling coating

- Excellent non-biofouling properties (reduction in protein adsorption, nucleic acid adsorption, bacterial and cellular adhesion)
- Good mechanical durability
- Optically transparent & non auto- fluorescent
- Fast UV processing
- Crosslinking leads to extremely low levels of extractables and leachables (ppm-ppb).

Adsorption of various proteins on bare silica and VitroStealth[®] non-biofouling coating



VitroStealth[®] is a trademark of Royal DSM.

**North America
DSM Biomedical Inc.**
2810 Seventh Street
Berkeley, CA 94710
Phone: 510-841-8800
Fax: 510-841-7800

**Europe/Asia
DSM Biomedical B.V.**
P.O. Box 18, 6160 MD Geleen
The Netherlands

www.dsmbiomedical.com