



## Case Study

## Copper Bar



## The Coating:

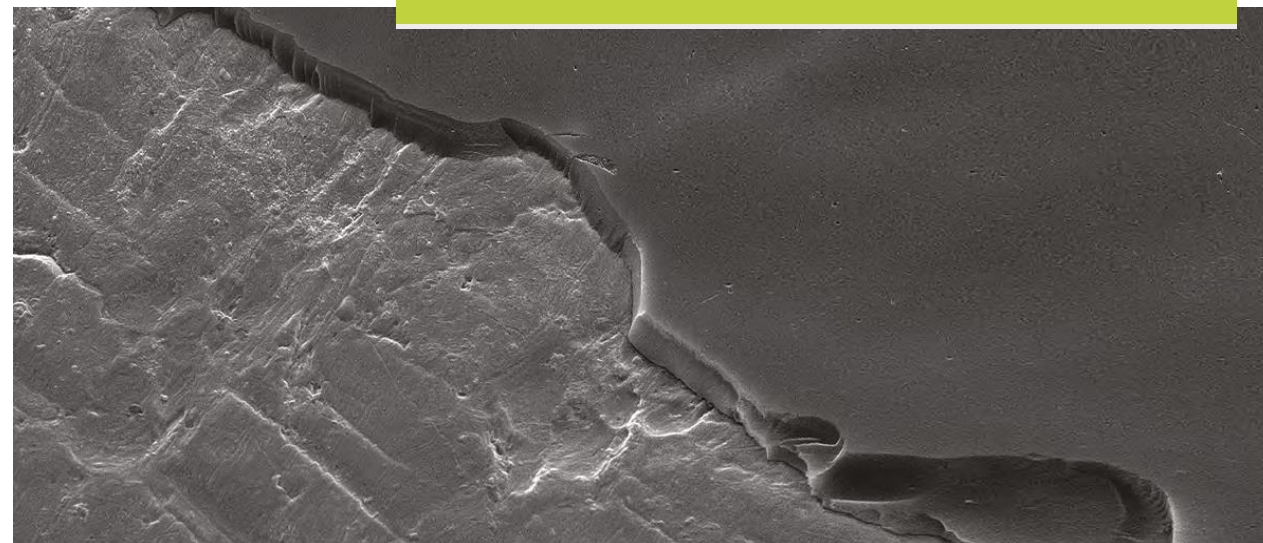
Touchpoint Shield consists of a ceramic base that utilises strong (Me<sub>2</sub>)Si-N- backbone that has a very high bond dissociation compared to other common polymers. The coating is able to adhere to a surface due to its low viscosity and surface tension in liquid form (prior to application). Whilst many surfaces seem smooth, they are in fact quite rough on a microscopic scale, even highly polished mirror finished surfaces. The Touchpoint Shield coating penetrates the microscopic pores of the substrate which allows the coating to form a very strong covalent bond\* to the surface. Due to the high dissociation energy of the bond, an even higher dissociation energy is required to break the bond between the coating and the substrate. In the case of the coating this is the likes of scratching or harsh abrasion.

\*A covalent bond is a chemical bond that involves the sharing of electron pairs between atoms. These electron pairs are known as shared pairs or bonding pairs, and the stable balance of attractive and repulsive forces between atoms, when they share electrons, is known as covalent bonding.

Biomaster® guarantees fast, effective antimicrobial protection for the effective lifetime of the product. The Biomaster® Silver Ion technology is incorporated within the coating formulation and does not interrupt the bond. The silver ion technology therefore is present in a coating that has an exceptionally strong covalent bond with the surface it is applied to and cannot simply be worn off or rubbed away unless the coating itself is removed from the surface that contains the silver ions.

### Touchpoint Shield™ Coating

The Touchpoint Shield™ coating magnified 1,400 times. Its smooth surface, resistant to microbes and grime, can clearly be seen.



## Durability:

Whilst each application of the coating is different and therefore durability can change we are able to look at field tests in numerous industries to establish an expected lifetime of the coating.

The base product that houses the silver ion technology has been used in extremely harsh conditions on superyacht exteriors subject to harsh Florida Sun and salt spray, to train exteriors and interiors on multiple carriages in different environments all over the world, to highly polished copper bars in central London.

Our experience of the coating in these different environments shows us the expected lifetime of the coating is a minimum of 2 years when properly maintained with the coating reaching 5 years in some cases



## Independent Testing:

Independent testing has also been carried out on the coating to help ascertain the coatings durability in an accelerated testing environment under lab conditions. These tests help to highlight the durability of the coating in relation to a standard test method. The following tests have been carried out:

- DIN EN ISO 11341 – Exposure to filtered and xenon-arc radiation (2000 hours) – Loss of gloss by only 8 gloss units (GU)
- ISO 7253:1996 – Determination of resistant to neutral salt spray (fog) – Coated aluminium displayed no corrosion even after 100 days (2400 hours) in the salt spray test and performed in accordance with ISO 7253.
- ISO 2409 – Adhesion by crosscut – (0 best to 5 worst) – Result of 0 – Pass
- ISO 15184 / ASTM D3363 – Pencil Hardness – Test carried out on glass substrate – Defeats 9H
- Independent Laboratory Test Analysis Vs SARS-CoV-II – 23/12/2020

	Time	Average Log TCID <sub>50</sub>	TCID <sub>50</sub> /1 ml	N (TCID <sub>50</sub> /cm <sup>2</sup> )	At	R  Ut-At	[% reduction versus T0]
Treated Sample	T2	3.08	10 <sup>3.08</sup>	7.57 x 10 <sup>3</sup>	3.88	0.58	97.86 %
	T6	3.00	10 <sup>3.00</sup>	6.25 x 10 <sup>3</sup>	3.80	0.16	98.22 %
	T24	2.33	10 <sup>2.33</sup>	1.35 x 10 <sup>3</sup>	3.13	0.42	99.62%



- ISO 21702: 2019** – Measurement of anti-viral (SARS-CoV-2) activity on plastics and other non-porous surfaces
- ISO 18184: 2019** – Determination of anti-viral (SARS-CoV-2) activity of textile products
- MOD ISO 20743** – Anti-bacterial activity on textiles
- MOD ISO 22199** – Anti-bacterial activity on non-porous surface
- Skin irritation protection** – reconstructed epidermis test method to OECD Test Guideline 439
- Fire retardancy test** in accordance with BS 5852: 1979 Part 1

### The Independent tests showed Touchpoint Shield™:

- **Reduced** SARS-CoV-2 on a non-porous surface by 99.6%
- **Reduced** SARS-CoV-2 on a sofa textile by 99.99%
- **Reduced** E coli bacteria on non-porous surfaces by 99.95%
- **Reduced** Staph bacteria on non-porous surfaces by 99.94%
- **Reduced** E coli on coated fabrics that had been washed 3 times by 99.99%
- **Is not a skin irritant**
- **Passed** furniture and furnishing fire safety regulations

## Durability Case Study:

To highlight the durability of the coating we have taken a London Copper Bar project where coating of the copper bar was carried out in April 2017. The same base technology utilised in the Aqueous Guard® PLUS+ coating was applied to a highly polished copper bar with regular use. Over a 3 year period from April 2017 to March 2020, the coating did not require re-application or topping up despite the continuous strain on the coating from customers touching it / sitting up at it, drinks, glasses and acidic juices.

