

NEWSLETTER

MOLPLUS Cataphoretic Lacquer
for Jewellery



The use of cathodic

lacquers as a way of protecting metallic substrates with a thin, clear, hard coating continues to be widely used across the globe and in countless applications. During the last 30 years, the use of this technology has grown compared to older style anodic lacquers. There are a number of reasons for this and explaining them is the primary purpose of this article. We typically associate lacquers on car components as an underlay before paint. However, this technology is very different from MOLPLUS, which is primarily used for household goods such as lamps, furniture, door fittings and fashion accessories.



- **OLDER** anodic lacquers were unstable and developed high levels of impurities. Moreover, they were soft and not very durable.
- **MOLPLUS** has excellent durability due to the ratio of polyurethane, acrylic and epoxy. This ratio delivers an excellent mixture of hardness, low temperature curing and adhesion properties. UV resistance is also very good and colour systems are available which have >600 hrs QUV resistance.

Furthermore, it is possible to adjust the polymer and crosslinking ratios, which has the added benefit of producing a film that meets specific criteria. For example, one could increase resistance to acid or produce a harder finish without reducing any of the other properties.

For instance, increasing the hardness or chemical resistance of the lacquer often leads to a loss of adhesion. This is due to the extra crosslinking required to harden the deposit or to make it more chemically resistant. On the other hand, **MOLPLUS** offers a proper balance, which is explained later in this article, via experience with real world fashion items.

Although **MOLPLUS** is ideally cured at a metal temperature of 160°C for > 30 minutes, it is not always possible to do that due to the substrate condition, especially if zinc die cast parts are to be coated. One advantage of **MOLPLUS** is that film curing begins at 125°C. The benefit of this is that although the performance of the parts is not quite as good as if the part were fully cured, it provides a level of protection which was not always possible previously. This is very important, especially for low cost zinc die cast parts used in the fashion industry.

MOLPLUS

has successfully replaced competitive systems, because of several factors:

1. IT IS PRE EMULSIFIED, MAKING MAINTENANCE AND CONTROL OF THE LACQUER SIMPLER THAN STANDARD SYSTEMS.

2. IT OPERATES AT LOW SOLVENT CONCENTRATIONS, PROVIDING THE FOLLOWING ADVANTAGES:

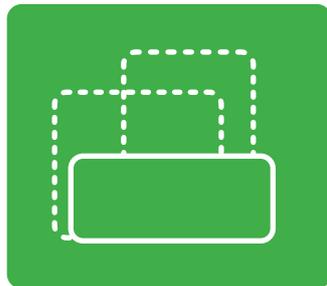
- A** - Solvent control is possible by the use of permeate RI analysis rather than complex and often inaccurate GLC;
- B** - The throwing power (uniformity of the coating) is very good, offering very consistent thicknesses even on complex parts;
- C** - Both integral pigments and post lacquer dyes may be used to produce excellent metal-looking transparent colours;
- D** - The colours are very consistent when using both post dyes and pigments due to the consistency of the thicknesses formed;
- E** - The lacquer surface is quite dry when rinsed, thus reducing the risk of drip marks and roughness caused by a sticky coating.



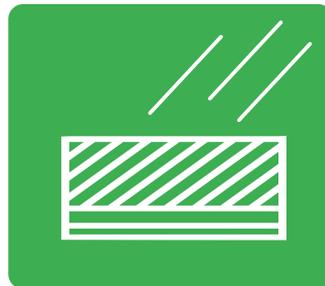
In the past, cataphoretic lacquers were not been widely accepted by the fashion industry due to the poor tactile feel, stickiness, iridescence and warmth of the polymeric deposit. However, due to its low solid content, the recently developed **MOLPLUS** technologies overcome these shortcomings and the fashion industry is taking notice. **MOLPLUS** technologies provide a soft deposit that aesthetically meets the expectations of luxury brands. It also provides:



- Metal touch and feel of the final item: components remain metal cold, with an invisible and imperceptible **MOLPLUS** finish.



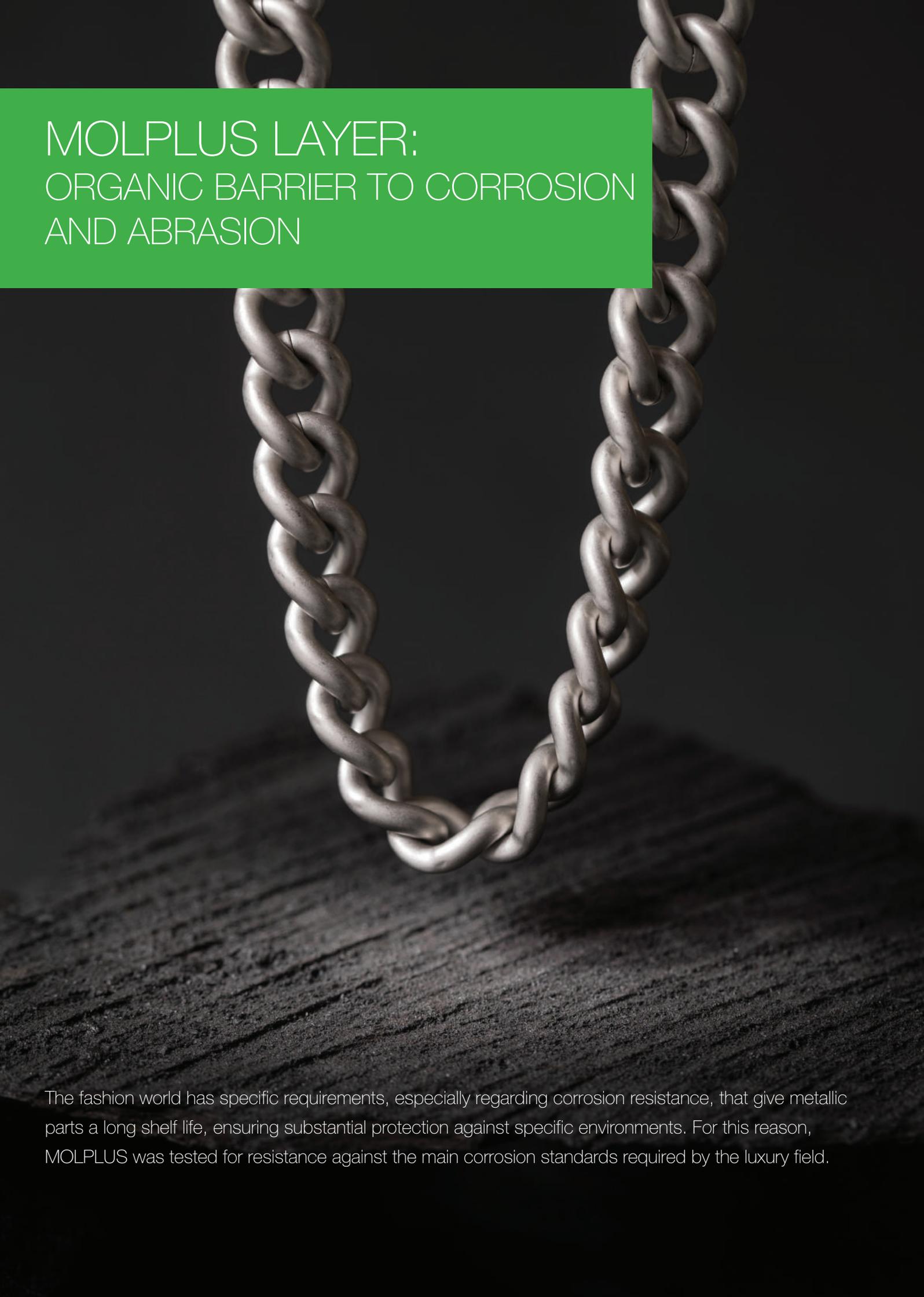
- No alteration of the final colour, allowing the final finish to be adjusted solely on the under-layer.



- Excellent corrosion barrier to standard luxury application corrosion tests such as synthetic sweat, abrasion or leather interaction.



- Low thicknesses are able to maintain performance and avoid magnifying effect.



MOLPLUS LAYER: ORGANIC BARRIER TO CORROSION AND ABRASION

The fashion world has specific requirements, especially regarding corrosion resistance, that give metallic parts a long shelf life, ensuring substantial protection against specific environments. For this reason, MOLPLUS was tested for resistance against the main corrosion standards required by the luxury field.

Synthetic sweat resistance (NFS 80722 – 24 hours)

Items have been in contact with synthetic sweat for 24 hours. With previous technologies, corrosion areas and lacquer dissolution were noted, whereas the items protected with **MOLPLUS** remained unchanged.



Previous technologies



MOLPLUS protected

Abrasion resistance (ISO 23160)

Thanks to its low friction coefficient, the organic coating from **MOLPLUS** significantly reduces colour changes that often occur from abrasion during use.



Previous technologies



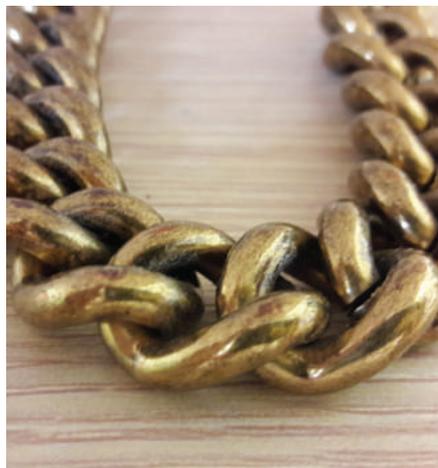
Original sample



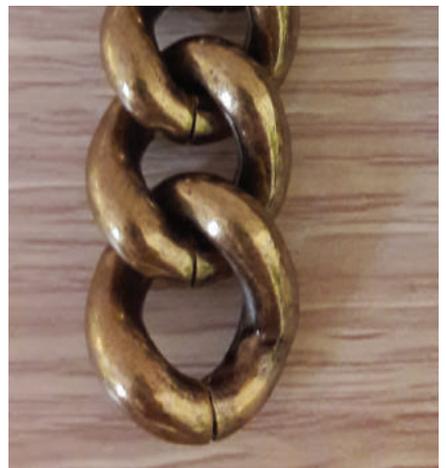
MOLPLUS protected

Leather interaction resistance

Compared to unprotected samples or chains treated with other technologies, the red colouring effect on links has been eliminated. **MOLPLUS** coatings provide superior resistance to leather interaction and fit perfectly with the corrosion requirements of the luxury market.



Previous technologies

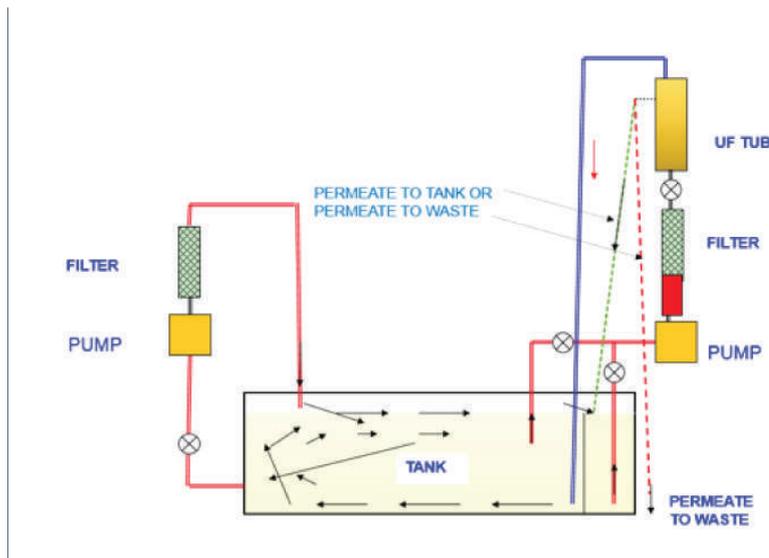


MOLPLUS protected

MOLPLUS EQUIPMENT

As mentioned earlier, the cataphoretic lacquer is a mix of polymers in emulsion, which by definition, would be thermodynamically unstable. Therefore, the components of the lacquer solution will be damaged over time and one would observe a loss of the performance highlighted above.

In order to provide a reliable industrial application, the optimum properties can be ensured overtime by certain equipment used to deposit the MOLPLUS layer. This is detailed below:



* The Ultra Filtration unit (UF TUBE) maintains the stability of the polymers in emulsion and the performance of the deposit.

* The UF TUBE acts like a filter to remove break-down products and maintains the process's durability.

A review of MOLPLUS main features

- MOLPLUS technology delivers an organic deposit with resistance to one of the most aggressive environments in the world. In other words, the world we live in. From sweat, leather and the ocean, MOLPLUS gives luxury brand owners the confidence to create tomorrow's fashion today.
- As if durability was not enough, MOLPLUS covers the full spectrum of the rainbow. With a wide selection of dyes and multiple coloured deposits, the final finish that meets the eye is bounded only by the imagination.
- A product perfectly adapted to the fashion industry.
- MOLPLUS is supported both locally and internationally by our helpful and knowledgeable product management team.

For more information on this exciting technology, please visit us at www.coventya.com or check with your local sales agent.