Sol-gel coating as an alternative for enamel at Prince Belgium

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Based in Bruges, Prince Belgium – part of Prince International Corporation – is a leading global manufacturer of high-quality base materials for enamel coatings, also known as frit. Each type of frit is custom-made to meet the customer's requirements in terms of process chemistry complexity and end usage of the frit. Enamel coatings are applied in various contexts, including household appliances, bathroom fittings and cookware, as well as in industrial applications such as tanks and silos for chemicals and heat exchangers. The Prince R&D centre in Bruges specialises in the development of frit and enamel coatings for all of the above applications.

An enamel coating on steel provides excellent, sustainable corrosion protection and is fire-proof and resistant to scratches and chemicals. However, the coating application procedure requires large amounts of energy for the high temperature (850 °C) required to melt the coating. Prince was therefore searching for a steel coating with the same properties as enamel but a lower processing temperature.

Vitreous temperature- and scratch-resistant coating

In conjunction with Sirris and Hasselt University, and with the support of VLAIO (the Flemish Agency for Innovations and Entrepreneurship), Prince embarked on an R&D project to develop coatings based on the sol-gel chemical procedure. Sirris researched vitreous sol-gel coatings resistant to temperatures up to 600 °C. These coatings are also scratch-resistant.

This resulted in the development of sol-gel coatings, to which specific glass frits are added. These coatings adhere well to steel after the steel undergoes a pre-treatment process.



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