

## Innovative metals coating

### Freudenberg company SurTec protects the environment

**Weinheim, September 8, 2014. Metal screws are an indispensable part of everyday life for craftspeople. As well as being routinely handled, screws are often briefly held in the mouth. The surface of metal screws is frequently coated to protect them against external influences, such as corrosion. To this end, coating substances containing Chromium(VI) have been used since the 1930s. In the light of current knowledge, however, these coatings have been classified as a health and environmental hazard. Based in Bensheim, Germany, the Freudenberg company SurTec has succeeded in finding an innovative replacement that achieves the same protective effect without the health risks.**

SurTec's research capability has already been recognized with several industry awards. In addition, the Freudenberg Group itself has now presented the company with the Group's annual "We all take care" Award. The prize rewards ideas and projects that contribute in areas such as occupational safety, health and environmental protection, social responsibility and site safety improvements. Dr. Mohsen Sohi, CEO of the Freudenberg Group, said at the ceremony: "This development will not just significantly help the environment. It is also an example of how responsible action is lived at Freudenberg."

The research team's challenge was to develop a chromium(VI)-free layer that would offer the same high level of corrosion protection as previous alternatives. As early as 1994, SurTec experts began the development of a chromium(III) coating for zinc and zinc alloys.

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Two years later came the breakthrough: SurTec applied for a patent for the environmental- and health-friendly coating of surfaces using chromium(III). Since then, the patent has been recognized not only in the EU but also in the USA, Brazil and Japan. Since 2004, to continuously improve the state of the art, technicians at all SurTec sites have been searching for an equivalent coating for aluminum.

SurTec was able to achieve and demonstrate the high corrosion resistance of chromium(III)-containing coatings in a technically optimized chromating process. “This development represents a quantum leap. In nature – for example in ores – chromium is present in its most stable oxidation state: the trivalent. Chromium(III) oxide, which is contained in the coating, is one of the most soluble-resistant compounds on earth and is therefore particularly non-toxic. This makes the complexed chromium(III) compounds an ideal replacement for chromium(VI)”, explained Patricia Preikschat, Global Product Manager Electroplating at SurTec. Customers and consumers benefit immensely because hexavalent chromium is harmful in the highest degree. “That is why we continue to work to replace chromium(VI) in other applications as well”, Preikschat observed.

During manufacturing – of screws, for example – the recent strict health controls and employee safeguards are no longer necessary. In addition, processing results in the creation of fewer critical waste materials than for hexavalent chromium. This facilitates disposal and protects the environment.

SurTec’s customers have become pioneers in the use of chromium(III) protective layers that are harmless to human health. Many current national and international standards are based on the positive results of the project. SurTec is one of the few companies in the European electroplating industry that aims to achieve a complete, equivalent and fully aligned replacement



of chromium(VI)-containing preparations (including REACH compliance). The European Chemicals Regulation REACH is intended to ensure a high level of protection for man and the environment.

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