

Eco-friendly metal coating replacement for chromate

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The corrosion resistance of Quench Coat equals that of chromate coatings while maintaining the freshly galvanised appearance. (CSIRO)

(PhysOrg.com) -- CSIRO has developed a novel coating technology, "Quench Coat", to protect galvanised products from 'white rust' ? the form of zinc oxide that tarnishes freshly galvanised coatings, making them look dull.

Currently Australian galvanisers use a chromium-based treatment immediately after galvanising, to maintain a shiny appearance during the early life of the product.

Chromate is widely used as a conversion coating on metals such as zinc, aluminium and magnesium to help protect against short-term corrosion and as a base for additional protective coatings. However, although chromate is an excellent corrosion inhibitor, it is highly toxic.

CSIRO Materials Science and Engineering scientist, Dr Scott Furman, says although chromate is still widely used in Australia, the industry is keen to find an alternative.

"Quench Coat is a simple drop-in replacement for chromate in the galvanising industry," Dr Furman says.

"Some alternatives to chromate require the use of hazardous solvents, which have occupational health and safety issues. Because Quench Coat is water-based, it has none of these disadvantages."

In CSIRO's trials, Quench Coat matched the performance of chromate in accelerated and outdoor exposure tests. It is more readily paintable than chromate, with good adhesion characteristics, and is also well suited to applications where the metal product needs other protective coatings.

Because this technology eliminates the need to use a [toxic chemical](#) during manufacturing, products can be marketed with a 'green' label, which may help distinguish them from those that still use chromate coatings.

The cost and performance are similar to chromate, without the additional costs associated with the disposal of hazardous chromium wastes. Quench Coat will contribute to a safer working environment and reduce health risks to workers.

Quench Coat was specifically designed as a chromate replacement for hot-dip galvanising but the coating also works with other types of galvanising and forms on other metals, including aluminium and magnesium. It therefore has numerous applications beyond hot-dip galvanising and is capable of providing green solutions to a wide range of industries.

Quench Coat was developed in partnership with a galvanising company

to ensure it met industry requirements.

CSIRO has identified a number of potential end-users eager to move away from the use of chromate-based manufacturing methods. CSIRO is now seeking a coatings company to produce and distribute the technology commercially.

Provided by CSIRO ([news](#) : [web](#))

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