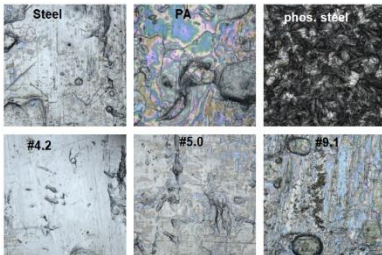


Hydrophobic Phytic Acid

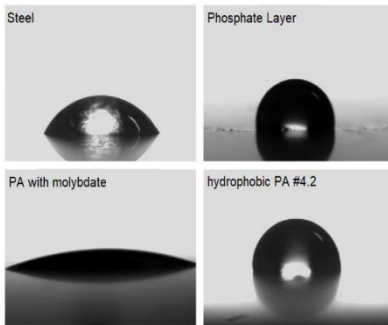
Derivatization of phytic acid with fatty alcohols

Invention

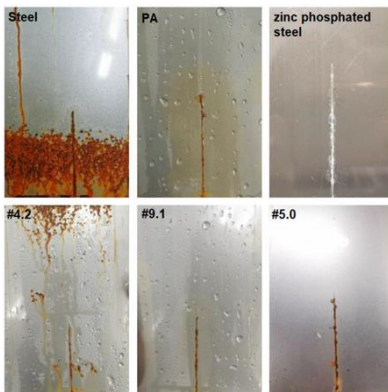
The innovation presented here concerns the production and use of hydrophobic phytic acid derivatives as an environmentally friendly alternative to conventional phosphate corrosion protection pre-treatments for steel. By partially esterification of the phosphoric acid groups of the phytic acid with fatty alcohols or alkyl aryl alcohols, the contact angle of a corresponding conversion layer is reduced and the barrier properties of the coating are improved.



Microscope images of different conversion coatings PA: phytic acid, 4.2/5.0 and 9.1: modified PA coatings.



Substrate contact angle



Salt spray test, sample comparison of the layer with epoxy clear coat

Commercial Opportunities

Currently, metal substrates with conversion layers (phosphating) are used to improve corrosion protection, which are subsequently coated. All conversion layers available on the market do not use sustainable resources. The phytic acid as a waste product of biodiesel is sustainable but produces very hydrophilic layers. Due to the novel modification of the phytic acid, hydrophobic and more sustainable coatings can now be produced, which lead to a significant increase in corrosion protection behaviors.

Current Status

Corrosion tests are available for some derivatives. A German patent application was filed for the invention. International intellectual property rights are still possible.

Relevant Publications

In preparation.

An invention of Hochschule Niederrhein.

Competitive Advantages

- Simple synthesis
- Sustainable chemistry
- Eco- friendly products
- Adjustable properties
- High corrosion protection

Technology Readiness Level

123456789

Technology validated in relevant environment

Industries

- Chemistry
- Corrosion protection agents
- Environment

Ref. No.

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