

Article ID: 1003-7837(2005)02,03-0621-01

Anticorrosive properties of extracts from waste of rice processing

Kharchenko U. V. , Zemnukhova L. A. , Fedorishcheva G. A. , Gordienko P. S.

(Institute of Chemistry, Far-Eastern Branch Russian Academy of Science, Vladivostok 690022, Russia)

The application of corrosion inhibitors for metal protection is one of the most simple and accessible method. Different classes of organic substances are investigated as corrosion inhibitors, unfortunately, only a few organic substances possess a unique combination of the physical, chemical and toxicological properties, allowing to use them as effective and environmentally safe inhibitors for mild steel corrosion. In this connection search of new, cheap and ecologically safe corrosion inhibitors is an actual problem. The purpose of this work was study the ability of the rice peel and straw extracts to provide a protection against corrosion of mild steel in neutral, acidic and alkaline environments.

Using weight loss and electrochemical methods it is established that water, acidic and alkaline extracts of a rice peel, and also straw acidic extract effectively inhibit corrosion of mild steel. It was shown that inhibition efficiency of extract was 70%–93%. High inhibiting properties of extracts are caused the presence of polysaharides forming a protective film on the steel surface.

The effect of temperature on the inhibition efficiency of extracts was studied. It was found that the presence of extracts increases the activation energy of corrosion reaction.

Thus it was shown that rice peel and straw extracts provide a good protection to mild steel against corrosion. There is a necessity that the further researches directed on a determine of extracts optimum concentration for different metals and study of inhibition mechanism should be carried out.