

**CORROSION INHIBITORS BASED ON MODIFIED SECOND-USE OILY
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It has been proposed to use products of chemical transformation of secondary fatty raw materials (phosphatidic concentrate of sunflower oil, waste cooking oil, etc.) to expand the range of domestic corrosion inhibitors [1–3]. Fatty acid aminoamides were synthesized by epoxidation of unsaturated fatty acids (oleic, linoleic, linolenic, erucic) or their mixtures, which are part of oils (rapeseed, sunflower, corn, soybean, linseed, etc.), followed by opening of the oxirane cycle and transamidation of acylglycerols with diethanolamine. The effectiveness of the synthesized emulsifier-inhibitor and preservative oils was tested in accordance with GOST 9.054. The essence of the method consists in exposing a steel plate (St.10) coated with the material under investigation to a salt mist atmosphere at a temperature of 35 ± 5 °C, or in a salt mist chamber, or 08KP steel plate in an electrolyte until the first signs of corrosion appear (hours), as well as plate made of St.3 in saturated solutions of hydrogen sulphide ($[H_2S] - 400$ mg/l) or carbon dioxide ($[CO_2] - 1200$ mg/l). The presence in phospholipid molecules of a voluminous hydrophilic part, formed by the polar residues of phosphoric acid and amines, contributes to their dispersion in water, while the hydrophobic aliphatic chains of higher carboxylic acids give them affinity for organic solvents. The combination of bulky bipolar fragments in a single molecule leads to the concentration of phosphatides at the phase boundary and their self-organisation into liquid crystal mesophases in the volume of solutions. It has been established that fatty acid aminoamides bind to the metal surface with polar groups, while hydrophobic hydrocarbon chains, displacing residual moisture, create a protective barrier both for the diffusion of iron ions from the metal surface and for the penetration of corrosive agents and water to its surface. At a concentration of fatty acid aminoamides as corrosion inhibitors of 18–24 %, the protective properties remain high and further increase is not advisable. The most common are primary, secondary, tertiary aliphatic, substituted compounds of pyridine, quinoline, imidazoline and quaternary ammonium compounds, in particular those that have various oxygen-containing groups in their structure. It has been established that, in salt fog and carbon dioxide environments over 30 days, the surface area of steel plates protected by known corrosion inhibitors corroded by 60–75 % and 32–69 %, respectively. When using the developed corrosion inhibitors, there was practically no corrosion. In a salt fog chamber and in CO_2 and H_2S solutions acidified with hydrochloric acid, the plates' surfaces remained clean after applying the developed corrosion inhibitors. In contrast, samples treated with known corrosion inhibitors experienced 60–75 % corrosion of the plate surface area.

References

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