THE CORROSION RESISTANCE OF PROTECTIVE COATINGS IN DICHLOROBUTADIENE PRODUCTION MEDIA

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Dichlorobutadiene is used as a copolymer in the production of synthetic rubbers and latexes on which are imposed special requirements in relation to the content of impurities of iron and other metals accelerating aging of these products. For the purpose of selection of protective coatings for dichlorobutadiene equipment, the corrosion resistance of UÉS-300 acid- and alkaline-resistant enamel and the polymer materials F-30P and A=2 pentaplast with 3% chromium oxide and also with 10% F-30P fluoroplastic were investigated in various dichlorobutadiene experimental production media (Table 1).

The tests were made on cylindrical specimens with a diameter of 20 mm and a height of 35 mm with a 1.1-1.5-mm-thick UÉS-300 enamel coating on 70 × 30 × 3 mm rectangular plates with 0.5-0.6-mm-thick polymer coatings. Four specimens of each coating were tested in each media by suspending them in the test bath on a fluoroplastic strip. The length of the tests was 1000-1300 h. The continuity of the coatings was determined with the use of a test unit with a voltage of 12,000 V for the enamel coatings and up to 3,000 V for the polymer coatings and the surface condition was evaluated visually.

The test results showed that the UÉS-300 acid- and alkaline-resistant glass enamel coating possesses high corrosion resistance in all of the investigated media and preserves its initial luster. The polymer coatings were resistant only in a single medium, dichlorobutadiene, trichlorobutene, dichlorobutene, NaCl, NaOH, and H_2O.

Consequently UÉS-300 glass enamel coating may be used for protection of equipment operating in all media for the production of dichlorobutadiene and the polymer coatings only for protection of equipment operating in the one medium mentioned above.

In cases when the media and operating conditions of the production equipment differ significantly from the media and conditions for experimental production of dichlorobutadiene, additional corrosion tests must be made.

TABLE 1

Medium	Temperature, °C	Pressure, MPa
Dichlorobutadiene, trichlorobutene, dichlorobutene, NaOH, NaCl, H_2O	40–120	0.2–0.3
1, 3-dichlorobutene-2, trichlorobutene, α-chloroprene, β-chloroprene, methyl vinyl ketone, HCl, H_2O	20–120	0.18
Solution of HCl, Cl_2, and N_2, traces of dichlorobutadiene and trichlorobutene	15–25	Atmospheric
Dichlorobutadiene, trichlorobutene	80–120	
Pure dichlorobutadiene, trichlorobutene, H_2O	30–85	0.007–0.017
Dichlorobutene, trichlorobutene, chloroprene, HCl, H_2O	25–30	0.11–0.15
Cl_2, HCl, H_2O, NH_4Cl, chloroprene	25	0.01
Chloroprene, phenothiazine	5–10	Atmospheric
Trichlorobutene, dichlorobutadiene, dichlorobutene	20–110	

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