



“Yerba mate” extract in anticorrosive paints to protect SAE 1010 steel

Yaco Silvestri^{1,5}, Soi Roselli^{2,3,6}, Roberto Romagnoli^{2,4,7}, Cecilia Deyá^{2,3,8}

- (1) Superior Technical School N°8;
(2) CIDEPINT (Research and Technological Development in Paints Center)
CONICET-CIPBA Av. 52 entre 121 y 122, (B1900AYB) La Plata – Argentina;
(3) CONICET and Engineering Faculty, UNLP; (4) CONICET and Exact
Sciences Faculty, UNLP
(5) estelectro@cidepint.gov.ar; (6) s.roselli@cidepint.gov.ar; (7)
romaroberto53@gmail.com; (8) c.deya@cidepint.gov.ar.

Keywords: corrosion, natural extracts, organic coatings

The aim of this work was to formulate, prepare and test epoxy water-borne paints with yerba mate (*Ilex paraguariensis*) extract. The extract was prepared by stirring yerba mate leaves in distilled water during 24 h. The supernatant was heated up to 75°C for 15 min in a rotavapor. The concentrated extract was dried in laboratory conditions overnight.

The anticorrosive paint was formulated with an epoxy polyamidoamine resin, and talc, titanium dioxide, barite and mica as complementary pigments. The solvent was water; no anticorrosive pigment was incorporated. Three paints were prepared: one, the control, without extract, the other with the diluted extract and the third one with the concentrated extract.

To assess the paint's performance, SAE 1010 steel panels were painted up to a dry film thickness of $70 \pm 10 \mu\text{m}$. After 15 days curing, the panels were evaluated by aging accelerated tests (salt spray chamber) and electrochemical techniques (corrosion potential and ionic resistance).

Good results were obtained with the dilute extract. However, the incorporation of the concentrated extract affected film formation; volcano structures with extract rests into the crater appeared.