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Highlights

- After cathodic pretreatment, ASTM A416 steel shows porous electrode behavior.
- Approach to steady state conditions requires from one to three days.
- Electrochemical impedance spectra is interpreted by use of a model that accounted for porous electrode behavior and for the contributions of both anodic and cathodic reactions.
- Oxide film thickness, estimated from CPE parameters using the power-law model, depends strongly on elapsed time.

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