**Paper No: PU-SOE-CHE-02**

**Effect of Sodium Lauryl Sulphate on Microstructure, Corrosion Resistance and Microhardness of Electrodeposition of Ni−Co3O4 Composite Coatings.**

[K.O.Nayanaa](https://www.sciencedirect.com/science/article/abs/pii/S1003632619651435?via%3Dihub#!)[,](https://www.sciencedirect.com/science/article/abs/pii/S1003632619651435?via%3Dihub" \l "!) **[Ranganatha](https://www.sciencedirect.com/science/article/abs/pii/S1003632619651435?via%3Dihub" \l "!)**[b](https://www.sciencedirect.com/science/article/abs/pii/S1003632619651435?via%3Dihub" \l "!)[, H.N.Shubha](https://www.sciencedirect.com/science/article/abs/pii/S1003632619651435?via%3Dihub" \l "!)[c](https://www.sciencedirect.com/science/article/abs/pii/S1003632619651435?via%3Dihub" \l "!)[. M.Pandurangappa](https://www.sciencedirect.com/science/article/abs/pii/S1003632619651435?via%3Dihub" \l "!)[a](https://www.sciencedirect.com/science/article/abs/pii/S1003632619651435?via%3Dihub" \l "!)

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**Abstract**

Ni–Co3O4 composite coatings were electrodeposited on mild steel surface from a Watts-type bath in the presence of sodium lauryl sulfate (SLS). The dispersed Co3O4 particles in the presence of SLS have a greater tendency to move towards cathode and get incorporated in the coating. SLS modifies chemical composition, surface morphology and microstructure of the Ni–Co3O4 composite coating. The developed composite coating exhibits higher corrosion resistance and microhardness than the pure nickel coating. The loadings of bath solution with different concentrations of Co3O4 particles in the presence of SLS provide hydrophobic nature to the coating surface, which is much effective in enhancing the corrosion resistance of Ni–Co3O4 composite coating. The agglomeration of Co3O4 particles (>3 g/L) under high bath load condition develops defects and dislocation on the coating surface, which results in lower corrosion resistance of the deposit. The mechanical properties of the hydrophobic coatings were assessed by the linear abrasion test.

**Keywords:**

Nickel electrodeposition, Cobalt oxide, Composite coating, Microstructure, Corrosion resistance microhardness

**Publication Details:**

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| --- | --- | --- | --- | --- | --- |
| **Journal Name** | **Vol.** | **Month & Year** | **Page No.** | **Publisher** | **Scimago Ranking** |
| Transactions of Nonferrous Metals Society of China | 29 (11) | Nov. 2019 | 2371-2383 | Elsevier | Q1 |