Research and Application of Highly Durable, Eco-friendly, Surface-tolerant and Heavy-duty anticorrosive Coating

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Abstract In order to satisfy the increasingly requirement for environmentally friendly heavy-duty anti-corrosion coatings for hydraulic metal structures, researchers have developed the HS30 environmentally friendly surface-tolerant coating. HS30 is developed by screening materials such as epoxy resin, curing agent, adhesion promoter, dispersant, filler, and solvent on the basis of the formula research of HS20 benzene-free, non-toxic, and surface-tolerant epoxy thick paste coating. The performance test results of the coating show that HS30 has excellent properties such as adhesion, bending resistance, neutral salt spray resistance, acid resistance, alkali resistance, salt water immersion resistance, and artificial climate aging resistance, meeting the requirements of HG/T 4564-2013 and GB/T 35602-2017 for green coatings and surface-tolerant epoxy coatings, and the highly durability standards for C4, C5, and Im2 environments as outlined in GB/T 30790.6-2014. The three-year field test at the Yangkou outer sluice, located at the junction of sea and freshwater, demonstrated that under surface-tolerant conditions, HS30 outperformed traditional zinc spraying plus heavy-duty anti-corrosion coatings in terms of corrosion resistance, indicating its potential to replace the zinc spraying plus heavy-duty anti-corrosion coatings.

Keywords Environmental protection; Surface-tolerant; Heavy-duty anticorrosive coating