14、Functional Coatings

Comparative study on corrosion resistance of graphene modified silicon titanium nano heavy anticorrosion materials and conventional coatings

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Abstract Graphene modified silicon titanium nano heavy anticorrosive materials have excellent corrosion resistance of acid, alkali, salt and other media, Using the super dense antipermeability of graphene and titanium nanopolymer polymer network structures, Greatly delay the penetration rate of the corrosion medium in the coating, While the coating itself has a very strong corrosion resistance, Inert to all kinds of corrosion media, Graphene modified silicon titanium nano heavy anticorrosive material can withstand medium and low concentration of inorganic acids and alkali; organic acids and alkali; medium and low polarity solvents, all kinds of oil, seawater, industrial media soaked, has been widely used in petroleum, chemical and metallurgical industries, which is due to the excellent corrosion resistance of graphene and titanium metal itself, graphene has strong permeability resistance to all kinds of gases and liquids, the shielding of composite titanium nano polymer dense network, making the whole coating system has excellent performance to the penetration of all kinds of corrosion mediaTo compare the corrosion resistance of conventional coatings in acidic and high salt and high temperature corrosion environment, Performed a series of destructive experiments, Through a series of comparative experiments, such as 10%H_2SO_4 solution (80℃), 30% potassium hydroxide (80℃), salt spray, electrolytic zinc wastewater (80℃) immersion in pool, immersion in artificial seawater (80℃), Confirmed that graphene-modified silicon titanium nano-heavy anticorrosive materials have better corrosion resistance than conventional coatings in strong acid-alkaline and high salt spray environment, It provides a new idea and a new scheme for guiding the anticorrosion of acid and alkaline steam fog, immersion and high salt solution, high temperature and high humidity environment equipment in the future.