NEW DIMENSIONS IN NANOTECHNOLOGY FOR COATING MATERIALS: A CONCERN

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Abstract:-

Different types of pigments material, colour unit have been taken to the formation and formulation of unique dye. The volatile Component has also been taken to control the viscosity of the paint formation. There would also taken into consideration that the application of nano- materials to coating could improve the Properties of conventional coating and produces new look and give them multifunctional coating having the tiny particle size.

Key words:-, ***Nano- materials, coating of organic materials, Paint formulation, Paint like materials***.

Introduetion:-

The organic coating is important pigment deposited in a solution of a binding medium. The binding medium changes the overall physical and chemical properties of the coating but thire will be altered or modified by the nature and proportion of pigments. The emergence and application of Nanoparticles opened the light of new hope to the coating industries. So, the application of enriched Nan particles enhances the properties of conventional coatings and produces new multifunctional coating due to their extra short sizes.

Nanostructured alloy and composite coatings for high- temperature applications

Nanostructures form protective oxidation scales with superior adhesion to the subatrate, The high density of graing boundaries provides fast diffusion paths, promoting selective oxidation of protective oxide scales. The fine-grained coatings and/or the fine- grained oxide scales creep rate at high temperatures, which can release the stresses accumulated in the scales, therefore reducing the scale spallation tendency. The oxides formed on nanocrystalline coatings are micro pegged onto the grain boundaries to form a complex interface that results in better scale adhesion to the metal substrate. Nanocrystalline alloy coatings, oxide-dispersive alloy coatings and metal-oxide composite coatings show superior high-temperature corrosion resistance. Engineering alloys rely on the formation of protective oxide films such as Al,0; and CrO3 to resist high temperature and corrosive enviroments. Unfortunately, relatively large concetrations of Al or Cr are needed to form a complete Al,0, scale. With nc-alloy coatings, the Al content that is required to form a complete protective oxide scale. In the Ni-20 Cr-Al alloy system, for instance, greater than 6 wt% Al is required to form a complete protective oxide scale can be

substantially reduced. Experimental results indicate that when the grain size of Ni-20Cr-Al coatings was-60nm, alloys containing -2wt% AI could form a complete Al_2O_3 scale at 100c in size. Ti alloys and Ti-Al intermetallics having advantages of high strength, lightweight and high melting point have lower oxidation resistance at elevated temperatures. They have potential applications 1in the aerospace and automotive industry due to their excellent mechanical properties at high temperatures and corrosion resistance. Nano-or sub micro-alloy coatings produced by electro-spark deposition provide a powerful tool for Ti-Al intermetallics to be used as high temperature structural materials!361. In recent years, there has been an overwhelming interest in the production and widespread utilization of multifunctional, nanostructure, and composite coatings by various industries7-401. Specifically, increasing demands for greater power density, more compact design, better, reliability, lower fuel and material consumption in numerous advanced tribological systems have

(a) ***Coating through pigments***

Paints have been considered as the best anti corrosive materials, used on the variety of surfaces. To improve the quality and duration of paints pigment are added in different concentration. It is pigment particle size which determine the corrosion inhitive or protective covering to the film of paints. The enriched film poses a degree of permeability to mixture and other liquid materials including water. Inhibitive pigments in the form of colour are relatively more effective in low cementation of salt.

(b) ***Pant pigments with Zn***

Paint pigments are very useful if zinc is added in definite cementation. The zinc acts as a prime coats and it protects steel in the same manner galvanized coatings. The zinc materials may be used as partly galvanized materials to adhere the surface of materials. The minimum zinc content of such zinc rich paint is generally of the order of 90-95% of the dry weight of film. Zinc corrosion product fills the small pores in the paint film and produces non-porous, compact and adherent layer.

It is also observed that high zinc content in the dry paint film is essential if the first part of the reaction is to succeed in blocking the pores and once the film is sealed is not so important. It was also thought that due to the oxidation of zinc particle that interrupts the electrical flow between adjacent zinc particles and between the zinc and steel subtrate.

(c) Zinc phosphate

The phosphate of zinc acts a non toxic, alternative to zinc chromate and has been used to paint formulation. Recently, modified zinc phosphate has been introduced with inorganic aluminum phosphate and molybdenum oxide. The zinc phosphate has been used to non ferrous metals such as aluminum. Environmental have led to the formation of new anticorrosive pigment based on development of new anticorrosive pigments based on calcium phosphate.

Formulation based on zinc and aluminium is now at large use in Maine locations.

(d) Aluminum in flame form

Aluminum in flame form is often used protective pigment and protective action arises by extentions and blockage of permeability pathways within the binder. Aluminum additions by weight are common.

(e) Stainless Steel powder

The stainless steel powder have been used as protective pigments and in various purposes. The mode of action of stain less is very similar to that of aluminium. The proterson mechanism appears to be akin a reaction with substrate or the binder as with zinc.

Conclusion

Zinc phosphate pigment as anticorrosive pigment in epoxy paints for metal protection i.e. steel.

The main variable considered were polyvenyl chloride and the anticorrosive pigment content. Zinc pigment in water born paint resin, the epoxy ester resin losses its corrosion inhibiting properties after film formation. Anticorrosive protection given by an anticorrosive (pigment with red lead) and a top coat (red iron oxide pigment) painting are more lasting and more effective. The effective adhesion provided by the chemical bonding between the steel surface and the epoxy paint groups and the constant high barrier effect afforded by this type of top.

The application of nanotechnology against corrosion of metal has got its large value as non scale materials have unique, physical, chemical and physico-chemical properties. The future of these coating have fascinated well mastered expansion of different industry such as building construction defense, Medicine and agriculture e.t.c.

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