

【化学分野】

※解答作成前に必ず下記の注意事項に目を通してください。

【解答にあたっての注意事項】

問題は3題あります。それぞれの問題の指示に従い、3題すべて解答してください。

問1. 次のクレーム (Claims) を日本語に翻訳してください。なお、翻訳にあたっては、クレームの後の明細書の記述 (抜粋) を参考にしてください。

1. A curable phosphate coating composition of improved uniform coating thickness and coverage, erosion resistance, impact resistance, bond strength and corrosion resistance, which coating composition comprises (a) an aqueous acid binder which comprises phosphate ions and ions selected from the group consisting of chromate and molybdate ions and binds (b) a mixture which contains powder of spherical particles, and flakes in a random distribution amongst the particles, wherein said flakes constitute at least about one percent by weight of the mixture, with the proviso that neither the powder nor the flake is zinc or magnesium and that the phosphate ions are present in major proportion and in excess of the ions selected from the group consisting of chromate and molybdate.

2. The curable phosphate coating composition of claim 1 wherein the powder of spherical particles and the flakes are metals or alloys thereof.

3. The curable phosphate coating composition of claim 2 wherein the powder spherical particles are metal particles which are selected from the group consisting of aluminum, nickel, silver, reduced iron, a refractory metal and the alloys thereof and wherein the flakes are metal flakes selected from the group consisting of aluminum, nickel, iron and the alloys thereof and copper-nickel.

【参考】明細書の記述 (抜粋)

The invention broadly described relates to aqueous compositions which comprise an aqueous acid binder which includes phosphate ions and chromate and/or molybdate ions and a powder mixture of flakes of a pigment and of a material which is not a flake, generally a metal which is three-dimensional in its primary dimension, or where the two-dimensional particle is in a smaller proportion.

It was expected that the addition of flake aluminum, particularly non-leafing flake aluminum, would have a detrimental effect on the coating composition by decreasing pigment packing density and consequently lower the corrosion resistance. However, in spite of the random distribution of the flakes amongst the three-dimensional (e.g. spheroidal) pigments, the coatings obtained in accordance with the invention were found to be more uniform in coating thickness and as a result show improved corrosion resistance because of elimination of bare areas.

In addition to phosphate ion, the binders include hexavalent chromium in solution. While describing this form of chromium as chromate, it is to be understood that under acid conditions the ion is probably better described as a dichromate.

Ratios of phosphate to chromate or molybdate in solution can be very wide. The addition of chromate especially produces a binder material that is amorphous when thermally cured and less brittle than a phosphate only binder. In general, molar ratios of PO_4 to CrO_4 will be between 1 and 4 to 1.

Use of zinc flake, zinc dust, or magnesium metal powder is not contemplated by this invention due to high reactivity of the powders with the binder material.

問2. 次の文を日本語に翻訳してください。なお、翻訳文にもパラグラフ番号をつけてください。

[0001] In recent years, a variety of approaches have been studied and used for drug delivery, DNA transfection, and other medical and biological applications. One such set of approaches involves vesicles or liposomes.

[0002] However, a need remains in the art for vesicles which possess properties suitable for drug delivery, namely low toxicity of the amphiphiles from which the vesicles are formed and ready vesicle formation and disaggregation, among others. Such properties are also of interest regarding non-vesicle-based drug delivery systems, as well.

[0003] Amphiphilic derivatized fullerenes have been reported by Hirsch et al. The derivatized fullerenes of Hirsch comprised one dendrimeric group comprising 18 carboxylic acid moieties and five hydrophobic moieties each comprising a pair of lipophilic C_{12} hydrocarbon chains. Freeze-fracture electron micrography of aqueous solutions of the amphiphilic derivatized fullerenes revealed that the amphiphilic derivatized fullerenes formed bilayer vesicles (by which is meant, a vesicle defined by a membrane comprising an external layer of amphiphilic derivatized fullerene molecules substantially all oriented with their hydrophilic groups to the exterior of the vesicle, and an internal layer of amphiphilic derivatized fullerene molecules substantially all oriented with their hydrophilic groups to the interior of the vesicle, wherein the hydrophobic groups of the molecules of the external layer are in close proximity to the hydrophobic groups of the molecules of the internal layer) with diameters from about 100 nm to

about 400 nm.

問3. 次の文を日本語に翻訳してください。なお、翻訳文にもパラグラフ番号をつけてください。

[0101] The dehydrogenation reaction of ethylbenzene to styrene is highly endothermic. Therefore, passing the reactants through a dehydrogenation catalyst bed results in a decrease in the reactant temperature. The endothermicity of the reaction is such that the temperature decrease removes the reactants from the desired temperature range. The reactants are actually cooled to such an extent that the desired reaction does not progress any further at a commercially feasible rate. The desired or commercially necessary per-pass conversion therefore cannot be achieved by simply passing the reactants into contact with a single bed of dehydrogenation catalyst. For this reason, it has become standard commercial practice to in some manner perform interstage reheating.

[0102] Interstage reheating can be performed by direct heat exchange, by indirect heat exchange, and by the oxidative reheat method. These methods of interstage reheating are described in U.S. Pat. No. 5,043,500, the teachings of which are incorporated herein by reference. Indirect heat exchange using steam is most common, but the arrangement of the dehydrogenation reactor is not critical to the success of the process disclosed herein.