

★★★ <第32回知的財産翻訳検定試験【第17回和文英訳】> ★★★  
《 1 級課題 -化学- 》

【問 1】

BACKGROUND ART

[0002]

Engineering plastics such as thermoplastic resins, particularly PBT, ABS, and nylon resins, are widely used for electric and electronic components, automobile components and the like. In electronics-related components and the like, blending metal fibers with various resins to produce electromagnetic shielding materials has recently been studied to prevent interference from electromagnetic waves and the like, and PBT resins and similar resins are also expected to be used, while taking advantage of advantageous thermal stability, for applications where electromagnetic shielding properties are required, such as automobile electric and electronic components that are exposed to high-temperature and low-temperature environments. As a result of evaluation by the present inventors of the conductivity of metal fiber-blended resins produced by blending various metal fibers with thermoplastic resins, however, it has been found that, although the metal fiber-blended resins have excellent conductivity in an early stage, exposure to repeated high-temperature and low-temperature thermal shock leads to a deterioration in electromagnetic shielding properties. The results show that, in view of the situation that these materials are exposed to high-temperature, low-temperature, or other environments under various practical conditions, difficulties are encountered in successfully using such materials in practical use. Accordingly, it has been desired to provide electromagnetic shielding materials that can solve this problem and utilize the excellent properties inherent in the thermoplastic resins.

【問 2】

[0014] Aluminum alloys, particularly alloys called heat-treatable alloys, are commonly subjected to heat treatment, such as solution treatment and aging treatment, typified by T6-treatment to improve properties such as strength. Precipitates produced by the aging treatment and crystallized products

produced during casting include substances such as those that are dissolved in a treatment liquid used in anodization treatment and substances that are insoluble in the treatment liquid, which emerge as intermetallic compounds and/or metallic elements having electrical conductivity. From the above, the following can be expected. Before anodization treatment, a material in which precipitates and/or crystallized products are sufficiently present is prepared by performing heat treatment, such as solution treatment and aging treatment, or by adjusting casting conditions. This material is then subjected to preliminary treatment, such as etching, so that precipitates and the like are present on a surface layer of the material. Then, when this material is subjected to the anodization treatment, the precipitates and/or crystallized products on the surface layer are dissolved or no anodized layer is formed on the precipitates or the crystallized products. Accordingly, an anodized layer having through-holes extending to a base metal can be formed.

### 【問 3】

The present invention will be described in more detail with reference to the following Examples.

Chemical compositions of various steel materials including comparative samples are illustrated in Table 1. Samples A, B, and C are steels of the present invention, and Samples D to F are comparative steels.

For the heat treatment of the samples, Samples A to D were held at 820°C for 22 hr and then cooled with water, followed by tempering at 600°C for 40 hr.

Samples E and F were tempered twice for complete transformation of the residual austenite at first tempering and the provision of good mechanical properties at second tempering, because, when the chromium content is not less than 1%, austenite is not completely transformed into a martensitic texture at 840°C.

That is, the Cr content should be brought to not more than 0.4% for a temperature rise of not more than 5°C in FATT. In particular, it has been

elucidated that embrittlement hardly occurs at a Cr content of not more than 0.25%.

Since it was found in the test that embrittlement hardly occurs, in particular, at a Cr content of not more than 0.25%, the degree of actual embrittlement over a long period of time was examined by a constant-temperature embrittlement test.

**【問 4】**

**Claim 1**

An immunochromatographic test kit comprising first and second reagents that immunologically react with an analyte and a membrane carrier, wherein the first reagent is pre-fixed at a predetermined position on the membrane carrier to form a capturing site that captures the analyte to be analyzed, and the second reagent is preliminarily labelled with a metal colloidal particle on which a platinum colloid is supported and is disposed on the membrane carrier so as to be spaced apart from the capturing site so that chromatographic development can be performed.

**Claim 2**

The immunochromatographic test kit according to claim 1, further comprising a copper ion containing a sensitizer solution to be brought into contact with the capturing site after the chromatographic development, thereby reducing the copper ion and precipitating copper on the metal colloidal particle.

**Claim 3**

The immunochromatographic test kit according to claim 2, further comprising a protective layer-forming liquid to be brought into contact with and to coat the precipitated copper portion.

**Claim 4**

The immunochromatographic test kit according to claim 2 or 3, wherein the sensitizer solution comprises copper sulfate and a reducing agent.

**Claim 5**

The immunochromatographic test kit according to claim 3 or 4, wherein the protective layer-forming liquid comprises glycerol or a derivative thereof.