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[問 1]

Claims

1. A reactive hot-melt adhesive composition comprising:  
100 parts by weight of a polyurethane prepolymer with an isocyanate end group; and  
0.3 to 5 parts by weight of zeolite powder,  
wherein the prepolymer is obtained by effecting reaction between polyol and polyisocyanate, which polyol contains 5% to 35% by weight of polyester polyol that has a molecular weight of 3,000 or more and that includes a monomer of diol having an alkylene group with 8 or more carbon atoms or dicarboxylic acid having an alkylene group with 8 or more carbon atoms.
2. The reactive hot-melt adhesive composition according to claim 1, wherein the zeolite powder has an average particle diameter of 10 to 100  $\mu\text{m}$ .

Examples

[0013]

Hereinafter, the present invention is described further in detail in reference to examples and comparative examples, and results of the examples are shown in Table 1. However, the invention is not limited to the examples.

[0014]

(Comparative Example 1)

Polyester polyol (the number of functional group: 2.0, molecular weight: 5,000) mainly composed of sebacic acid and 1,6-hexanediol; polyester polyol (the number of functional group: 2.0, molecular weight: 2,000) mainly composed of adipic acid and 1,6-hexanediol; and diphenylmethane diisocyanate were dehydrated with a vacuum dryer. Then 15% by weight of the former polyester polyol, 55% by weight of the latter polyester polyol, and 30% by weight of the diphenylmethane diisocyanate were charged in a reaction vessel capable of defoaming and stirring; stirred in a nitrogen gas atmosphere to effect reaction at 110°C for 2 hours; and further stirred with defoaming under a reduced pressure at 110°C for 2 hours to obtain a polyurethane prepolymer (viscosity: 7 Pa · S/120°C) with NCO/OH=2.0.

[0015]

(Example 1)

Then 100 parts by weight of the polyurethane prepolymer obtained in Comparative Example 1 were mixed with 0.3 parts by weight of zeolite powder (molecular sieve 4A manufactured by UNION SHOWA K.K.; pore size: 4 angstroms; average particle diameter: 50  $\mu\text{m}$ ); and stirred with defoaming under a reduced pressure at 110°C for 30 minutes to obtain a reactive hot-melt adhesive.

[0016]

(Example 2)

Then 100 parts by weight of the polyurethane prepolymer obtained in Comparative Example 1 were mixed with 5 parts by weight of zeolite powder (molecular sieve 4A manufactured by UNION SHOWA K.K.; pore size: 4 angstroms); and stirred with defoaming under a reduced pressure at 110°C for 30 minutes to obtain a reactive hot-melt adhesive composition.

[0017]

(Comparative Example 2)

Then 100 parts by weight of the polyurethane prepolymer obtained in Comparative Example 1 were mixed with 10 parts by weight of zeolite powder (molecular sieve 4A manufactured by UNION SHOWA K.K.; pore size: 4 angstroms); and stirred with defoaming under a reduced pressure at 110°C for 30 minutes to obtain a reactive hot-melt adhesive composition.

[0018]

(Example 3)

Polyester polyol (the number of functional group: 2.0, molecular weight: 5,000) mainly composed of sebacic acid and 1,6-hexanediol; polycarbonate polyol (the number of functional group: 2.0, molecular weight: 1,000) mainly composed of 1,6-hexanediol; and diphenylmethane diisocyanate were dehydrated with a vacuum dryer. Then 32% by weight of the polyester polyol, 44% by weight of the polycarbonate polyol, and 24% by weight of the diphenylmethane diisocyanate were charged in a reaction vessel capable of defoaming and stirring; stirred in a nitrogen gas atmosphere to effect reaction at 110°C for 2 hours; and further stirred with defoaming under a reduced pressure at 110°C for 2 hours to obtain a polyurethane prepolymer (viscosity: 7 Pa · S/120°C) with NCO/OH=2.0. Then 100 parts by weight of the polyurethane prepolymer were mixed with 1 part by weight of zeolite powder (molecular sieve 4A manufactured by UNION SHOWA K.K.; pore size: 4 angstroms); and stirred with defoaming under a reduced pressure at 110°C for 30 minutes to obtain a reactive hot-melt adhesive composition.

[0019]

(Comparative Example 3)

Polyester polyol (the number of functional group: 2.0, molecular weight: 5,000) mainly composed of adipic acid and 1,6-hexanediol; polyester polyol (the number of functional group: 2.0, molecular weight: 2,000) mainly composed of adipic acid and 1,6-hexanediol; and diphenylmethane diisocyanate were dehydrated with a vacuum dryer. Then 15% by weight of the former polyester polyol, 55% by weight of the latter polyester polyol, and 30% by weight of the diphenylmethane diisocyanate were charged in a reaction vessel capable of defoaming and stirring; stirred in a nitrogen gas atmosphere to effect reaction at 110°C for 2 hours; and further stirred with defoaming under a reduced pressure at 110°C for 2 hours to obtain a polyurethane prepolymer (viscosity: 7 Pa · S/120°C) with NCO/OH=2.0.

[問 2]

Examples 1 to 5 and Comparative Examples 1 and 2

Dry spaghetti was boiled until the yield reached 230%, and immersed into an aqueous solution containing 0.8% by weight of fermented lactic acid and 0.8% by weight of gluconic acid to obtain boiled spaghetti with low pH. To 100 g of thus-obtained low-pH boiled spaghetti, 5 g of olive oil was added and mixed fully which oil contained 1 g of an alkali agent with an average particle diameter shown in Table 2. After that, 10 panelists evaluated the spaghetti about [acid taste and acid odor] and [foreign taste and foreign odor] in accordance with evaluation standards shown in Table 1. The results of the sensory evaluation are shown in Table 2. In the evaluation, the content of the alkali agent in the olive oil was equal to the acid equivalent of the low-pH boiled spaghetti.

[Table 1]

評価項目 Evaluation Items

酸味・酸臭 Acid Taste and Acid Odor

異味・異臭 Foreign Taste and Foreign Odor

評点 Evaluation Scores

評価基準 Evaluation Standards

酸味・酸臭をまったく感じない no acid taste or acid odor

酸味・酸臭をごくわずかしか感じない slight acid taste and acid odor

酸味・酸臭をやや感じない a little acid taste and acid odor

酸味・酸臭をはっきり感じない some acid taste and acid odor

酸味・酸臭を強く感じる strong acid taste and acid odor

酸味・硫黄様臭をまったく感じない no acid taste or sulfur-like odor

酸味・硫黄様臭をごくわずかしか感じない slight acid taste and sulfur-like odor

酸味・硫黄様臭をやや感じない a little acid taste and sulfur-like odor

酸味・硫黄様臭をはっきり感じない some acid taste and sulfur-like odor

酸味・硫黄様臭を強く感じる strong acid taste and sulfur-like odor

[問 3]

[0001]

The back plate of an organic EL has been conventionally produced by the following procedures: for the purpose of obtaining a desired projected profile on soda glass, which is a main material, a photosensitive resist film is fixed on the glass; the resist film is exposed to UV light (ultraviolet light) via a glass mask; the resist film is developed with an organic solvent and an alkaline developer such as sodium carbonate decahydrate to form a desired pattern; after that, inorganic powder and high-pressure air are blasted against the resist film with a sand blasting apparatus, where the resist film is a negative photosensitive film, and the area of the film exposed to UV light is cured and not removed by the inorganic powder blasted with the sand blasting apparatus to allow selective grinding of the glass between the resist-covered glass surface and glass surface where the resist film is removed in the developing procedure. These procedures are disclosed, for example, in Patent Document 1.

[0003]

Because inorganic powder is projected through the thin nozzle of a sand blasting apparatus in the sand blasting process, grinding large area with the sand blasting process can result in varieties in ground depths and a ground surface with rough surface roughness depending on the particle diameter of the inorganic powder.

Therefore, by using the sand blasting process, it is difficult to achieve precise ground depths and fine surface roughness of a ground surface.

[0004]

To overcome the problem, the ground surface is conventionally planarized by etching treatment. This requires additional procedures to increase processing costs.