surface layer formed of a particle-containing fluororesin and laminated to the face which is placed during the curing on the side of the thermosetting resin among the two faces of the base layer,

the fluororesin is a cured product of a fluororesin composition containing a reactive functional group-containing fluoropolymer and a curing agent,

and the mold has an irregularity formed on the face that is to be brought into contact with the release film during the curing.

The average particle size of the particle determined by laser diffraction particle size analysis may be 1 μm to 10 μm.

The surface roughness Ra of the face of the mold brought into contact with the release film during the curing may be 1 μm to 4 μm.

The fluororesin of the surface layer may comprise a tetrafluoroethylene resin.

The fluororesin of the surface layer may further contain an isocyanate curing agent.

The particle may be silicon dioxide.

The thermoplastic resin of the base layer may be a polyethylene terephthalate resin.

The thermosetting resin may be an epoxy resin.

The combination may be used for forming irregularity on a surface of a cured product of the thermosetting resin.

The irregularity formed on the surface of a cured product of the thermosetting resin may be different from the irregularity on the mold.

The combination may be used for transfer molding or compression molding.

[0009]

There is ~~present invention also~~ provided a release film employed in combination with a mold for curing a thermosetting resin, wherein:

the release film comprises a base layer formed of a thermoplastic resin and a

surface layer formed of a particle-containing fluororesin and laminated to the face which is placed during the curing on the side of the thermosetting resin among the two faces of the base layer, and,

the mold has an irregularity formed on the face brought into contact with the release film during the curing.

[0010]

The present invention also provides a mold for use in curing a thermosetting resin, wherein in the curing the mold is used in combination with a release film ~~employed in combination with a release film for curing a thermosetting resin~~, wherein:

the mold has an irregularity formed on the face brought into contact with the release film during the curing, ~~and,~~

the surface roughness Ra of the face of the mold is 1 μm to 4 μm,

the irregularity is an irregularity formed by electrical discharge machining or shot blast,

in the curing, the irregularity is reflected on the surface of the thermosetting resin via the release film, and

the mold is used for forming a surface whose glossiness at an incidence angle of 60 degrees is 3 to 50, on a molded article obtained by curing the thermoplastic resin.

~~the release film comprises a base layer formed of a thermoplastic resin and, a surface layer formed of a particle-containing fluororesin and laminated to the face which is placed during the curing on the side of the thermosetting resin among the two faces of the base layer.~~

[0011]

The present invention also provides a method of manufacturing a molded article

comprising a placing step in which a release film is placed in a mold used for curing a thermosetting resin, a curing step after the placing step, in which the thermosetting resin is cured, while being in contact with the release film, in the mold, and, a releasing step after the curing step, in which the cured thermosetting resin is released from the mold thereby obtaining a molded article,

wherein:

the release film comprises a base layer formed of a thermoplastic resin and a surface layer formed of a particle-containing fluororesin and laminated to the face which is placed during the curing on the side of the thermosetting resin among the two faces of

the base layer,

the fluororesin is a cured product of a fluororesin composition containing a reactive functional group-containing fluoropolymer and a curing agent, and,

the mold has an irregularity formed on the face brought into contact with the release film during the curing.

Advantageous Effects of Invention

[0012]

According to the present invention, it becomes possible to condition the surface of a molded article. For example, according to the present invention, it is possible to improve the visibility and the readability of an engraved mark formed by a laser marker.

The effect of the invention is not necessarily limited to that described in this paragraph and may be any of the effect described in the present specification.

Brief Description of Drawings

[0013]

Figs.1 are views illustrating an example of a method for using a combination of the present invention in transfer molding.

Fig.2 is a schematic view of an example of the laminate structure of a release film constituting the combination of the present invention.

Figs.3 are views illustrating an example of a method for using a combination of the present invention in compression molding.

Figs.4 are views illustrating the formation of a molded article-side surface layer.

Figs.5 are views illustrating the observation results by a laser marker.

Description of Embodiments

[0014]

Embodiments for carrying out the present invention will now be described in detail. Embodiments described below are merely examples of typical embodiments of the present invention, and the present invention is not limited to these embodiments.

CLAIMS

[Claim 1]

A combination of a mold used for curing a thermosetting resin and a release film placed between the thermosetting resin and the mold during the curing, wherein:

the release film comprises:

a base layer formed of a thermoplastic resin and,

a surface layer formed of a particle-containing fluororesin and laminated to the face which is placed during the curing on the side of the thermosetting resin among the two faces of the base layer,

the fluororesin is a cured product of a fluororesin composition containing a reactive functional group-containing fluoropolymer and a curing agent, and,

the mold has an irregularity formed on the face that is to be brought into contact with the release film during the curing.

[Claim 2]

The combination according to claim 1, wherein an average particle size of the particle determined by laser diffraction particle size analysis is 1μm to 10 μm.

[Claim 3]

The combination according to claim 1 or 2, wherein the surface roughness Ra of the face of the mold brought into contact with the release film during the curing is 1 μm to 4 μm.

[Claim 4]

The combination according to any one of claims 1 to 3 wherein the fluororesin of the surface layer comprises a tetrafluoroethylene resin.

[Claim 5]

The combination according to any one of claims 1 to 4 wherein the fluororesin

of the surface layer further contains an isocyanate curing agent.

[Claim 6]

The combination according to any one of claims 1 to 5 wherein the particle is silicon dioxide.

[Claim 7]

The combination according to any one of claims 1 to 6 wherein the thermoplastic resin of the base layer is a polyethylene terephthalate resin.

[Claim 8]

The combination according to any one of claims 1 to 7 wherein the thermosetting resin is an epoxy resin.

[Claim 9]

The combination according to any one of claims 1 to 8 which is used for forming irregularity on a surface of a cured product of the thermosetting resin.

[Claim 10]

The combination according to claim 9 wherein the irregularity formed on the surface of a cured product of the thermosetting resin is different from the irregularity of the mold.

[Claim 11]

The combination according to any one of claims 1 to 10 wherein the combination is used for transfer molding or compression molding.

~~[Claim 12]~~

~~A release film employed in combination with a mold for curing a thermosetting resin, wherein:~~

~~the release film comprises:~~

~~a base layer formed of a thermoplastic resin and,~~

~~a surface layer formed of a particle-containing fluororesin and laminated to the face which is placed during the curing on the side of the thermosetting resin among the two faces of the base layer, and,~~

~~the mold has an irregularity formed on the face brought into contact with the release film during the curing.~~

[Claim ~~13~~12]

A mold for use in curing a thermosetting resin, wherein in the curing the mold is used in combination with a release film~~employed in combination with a release film for curing a thermoplastic resin~~, wherein:

the mold has an irregularity formed on the face brought into contact with the release film during the curing, ~~and,~~

the surface roughness Ra of the face of the mold is 1 μm to 4 μm,

the irregularity is an irregularity formed by electrical discharge machining or shot blast,

in the curing, the irregularity is reflected on the surface of the thermosetting resin via the release film, and

the mold is used for forming a surface whose glossiness at an incidence angle of 60 degrees is 3 to 50, on a molded article obtained by curing the thermoplastic resin.

~~the release film comprises:~~

~~a base layer formed of a thermoplastic resin and,~~

~~a surface layer formed of a particle-containing fluororesin and laminated to the face which is placed during the curing on the side of the thermosetting resin among the two faces of the base layer.~~

[Claim ~~14~~13]

A method of manufacturing a molded article comprising:

a placing step in which a release film is placed in a mold used for curing a thermosetting resin,

a curing step after the placing step, in which the thermosetting resin is cured, while being in contact with the release film, in the mold, and,

a releasing step after the curing step, in which the cured thermosetting resin is released from the mold thereby obtaining a molded article,

wherein:

the release film comprises:

a base layer formed of a thermoplastic resin and,

a surface layer formed of a particle-containing fluororesin and laminated to the face which is placed during the curing on the side of the thermosetting resin among the two faces of the base layer,

the fluororesin is a cured product of a fluororesin composition containing a reactive functional group-containing fluoropolymer and a curing agent, and,

the mold has an irregularity formed on the face brought into contact with the release film during the curing.