with a resin composition for the purpose of reinforcing the joint portion and improving reliability.

[0003]

As a method for sealing with a resin composition, a capillary underfill mode is generally adopted. This method is performed by applying a liquid seal resin composition to one side or a plurality of surfaces of a semiconductor element and allowing the resin composition to flow into a gap between a package substrate and a semiconductor element by utilizing the capillary phenomenon.

[0004]

In order to reduce assembly costs and the number of processes in recent years, a mold underfill mode (Molded Underfill; MUF) has been developed in which sealing is performed in a state where the release film and the semiconductor element are in direct contact with each other, in order to protect and mask the semiconductor element (Patent Literature 1), as the method for sealing with a resin composition.

Citation List

Patent Literature

[0005]

Patent Literature 1: Japanese Unexamined Patent Application Publication (JP-A) No. 2013-123063

Summary

Technical Problem

[0006]

However, the resin for sealing used in the mold underfill mode has extremely high viscosity in order to improve the filling property for a narrow gap, and it is required to frequently wash the mold, which lowers the production efficiency, and at the same time, it became necessary to purchase many devices.

[0007]

When a release film is subjected to a high temperature in a mold, components contained in the release film may move to the surface of the release film, and the components that move to the surface may contaminate the mold or a molded article of a sealing resin (hereinafter referred to as “molded article”). When such contamination occurs, the components are required to be removed from a mold or a molded article. In addition, the components are often difficult to remove. Hence, it is desirable that no contamination of a mold or a molded article with the components occurs.

[0008]

A release film not only usable in molding once but also repeatedly usable in molding multiple times can reduce molding costs. In order to repeatedly use a release film in molding multiple times, the release film is required to maintain its properties through multiple molding operations.

[0009]

In view of the above circumstances, the present disclosure is intended to provide a release film that does not contaminate a mold or a molded article. The present disclosure is also intended to provide a release film that does not contaminate a mold or a molded article and can be repeatedly used in multiple molding processes.

Solution to Problem

[0010]

The inventors of the present disclosure have found that a release film having a specific configuration has excellent mold release properties, for example, mold release properties from a sealing resin used in flip chip connection, and has low contamination properties. The inventors of the present disclosure have further found that the release film can be used in molding multiple times.

[0011]

In an aspect, the present disclosure provides a release film having a base layer formed of a thermoplastic resin and a surface layer formed of a resin composition laminated on at least one surface of the base layer, wherein the trouser tear strength in accordance with JIS K7128-1 is 5 N/mm or more, the peeling force of the resin composition is 15 mN/30 mm or less when measured at 175ºC according to JIS Z0237, and the breaking point elongation of the resin composition is 70% or more when measured at 175ºC according to JIS K7127.

The resin composition may be a fluororesin.

The resin composition may contain an isocyanate curing agent.

The resin composition may contain a tetrafluoroethylene resin.

The release film may be used in sealing of a semiconductor to be flip-chip connected.

The release film may be used for molding two or more times.

Advantageous Effects of the Disclosure

[0012]

The present disclosure provides a release film having excellent release properties and low contamination. Further, the release film of the present disclosure can be used repeatedly for multiple moldings.

The effect of the present disclosure is not necessarily limited to the effect described here, and may be any effect described in the present specification.

Brief Description of Drawings

[0013]

[Fig. 1] FIG .1 is a view showing an example structure of a release film of the present invention.

[Fig. 2] FIG.2 are views showing an example usage of a release film of the present invention in transfer molding.

Description of Embodiments

[0014]

Hereinafter, 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.

[0015]

1: Release film

[0016]

A release film of the present invention includes a base layer formed of a thermoplastic resin and includes a surface layer formed of a resin composition laminated on at least one surface of the base layer. The surface layer may be laminated on the two surfaces of the base layer. An example structure of the release film of the present invention is shown in Fig. 1. As shown in Fig. 1, a release film 100 of the present invention comprises a base layer 101 and surface layers 102 and 103 laminated