[Claims]

[Claim 1]

A method of manufacturing a work product, comprising:

a first modified layer forming process of forming a modified layer in the inside of a workpiece by irradiating the workpiece with laser beams in an infrared region such that the laser beams are focused on a focal point set in the inside of the workpiece;

a first protective film forming film laminating process of laminating a protective film forming film on a surface of the workpiece on which a modified layer is formed,

wherein a product of a breaking stress (MPa) measured at a measurement temperature of 0°C and a breaking strain (unit: %) measured at a measurement temperature of 0°C in at least one of the protective film forming film and a protective film formed from the protective film forming film is in a range of 1 MPa·% to 250 MPa·%;

a dividing process of dividing the workpiece by applying a force to the workpiece on which the modified layer is formed to obtain a divided product; and

a protective film forming process of forming a protective film from the protective film forming film,

wherein a work product formed by laminating the protective film on one surface of the divided product is obtained.

[Claim 2]

A method of manufacturing a work product, comprising:

a third modified layer forming process of forming a modified layer in the inside of a workpiece by irradiating the workpiece of a laminated structure, which includes the workpiece, the protective film forming film laminated on one surface of the workpiece, the protective film forming film having a light transmittance at a wavelength of 1064 nm which is 30% or greater and the product of a breaking stress (MPa) measured at a measurement temperature of 0°C and the breaking strain (unit: %) measured at a measurement temperature of 0°C in at least one of the protective film forming film and a protective film formed from the protective film forming film which is in a range of 1 MPa·% to 250 MPa·%; and a dicing sheet laminated on a surface side opposite to a side of the protective film forming film facing the workpiece, with laser beams in the infrared region from the dicing sheet side such that the laser beams are focused on a focal point set in the inside of the workpiece;

a dividing process of dividing the workpiece by applying a force to the workpiece on which the modified layer is formed to obtain a divided product; and

a protective film forming process of forming a protective film from the protective film forming film,

wherein a work product formed by laminating the protective film on one surface of the divided product is obtained.

[Claim 3]

A method of manufacturing a work product, comprising:

a second protective film forming film laminating process of laminating the protective film forming film in which the light transmittance at a wavelength of 1064 nm is 30% or greater and the product of the breaking stress (MPa) measured at a measurement temperature of 0°C and the breaking strain (unit: %) measured at a measurement temperature of 0°C in at least one of the protective film forming film and a protective film formed from the protective film forming film is in a range of 1 MPa·% to 250 MPa·%, on one surface of a workpiece;

a second modified layer forming process of forming a modified layer in the inside of the workpiece by irradiating the workpiece through the protective film forming film with laser beams in the infrared region such that the laser beams are focused on a focal point set in the inside of the workpiece on which the protective film forming film is laminated;

a dividing process of dividing the workpiece by applying a force to the workpiece on which the modified layer is formed to obtain a divided product; and

a protective film forming process of forming a protective film from the protective film forming film,

wherein a work product formed by laminating the protective film on one surface of the divided product is obtained.

[Claim 4]

The method of manufacturing a work product according to any one of Claims 1 to 3, wherein a first dicing sheet laminating process of laminating the dicing sheet on the protective film forming film laminated on the workpiece is performed before the dividing process.

[Claim 5]

The method of manufacturing a work product according to Claim 1 or 2, wherein the protective film forming film laminated on the workpiece is in a state in which the dicing sheet is laminated on one surface thereof.

[Claim 6]

The method of manufacturing a work product according to any one of Claims 1 to 5,

wherein the protective film forming process is performed after the dividing process.

[Claim 7]

The method of manufacturing a work product according to any one of Claims 1 to 5, wherein the dividing process is performed after the protective film forming process.

[Claim 8]

A method of manufacturing a work product, comprising:

a second protective film forming film laminating process of laminating the protective film forming film in which the light transmittance at a wavelength of 1064 nm is 30% or greater and the product of the breaking stress (MPa) measured at a measurement temperature of 0°C and the breaking strain (unit: %) measured at a measurement temperature of 0°C in at least one of the protective film forming film and a protective film formed from the protective film forming film is in a range of 1 MPa·% to 250 MPa·%, on one surface of a workpiece;

a protective film forming process of forming a protective film from the protective film forming film;

a fourth modified layer forming process of forming a modified layer in the inside of the workpiece by irradiating the workpiece through the protective film with laser beams in the infrared region such that the laser beams are focused on a focal point set in the inside of the workpiece on which the protective film is laminated; and

a dividing process of dividing the workpiece by applying a force to the workpiece on which the modified layer is formed to obtain a divided product,

wherein a work product formed by laminating the protective film on one surface of the divided product is obtained as a resultant of the dividing process.

[Claim 9]

A method of manufacturing a work product, comprising:

a second protective film forming film laminating process of laminating the protective film forming film in which the light transmittance at a wavelength of 1064 nm is 30% or greater and the product of the breaking stress (MPa) measured at a measurement temperature of 0°C and the breaking strain (unit: %) measured at a measurement temperature of 0°C in at least one of the protective film forming film and a protective film formed from the protective film forming film is in a range of 1 MPa·% to 250 MPa·%, on one surface of a workpiece;

a protective film forming process of forming a protective film from the protective film forming film;

a second dicing sheet laminating process of laminating a dicing sheet on the

protective film laminated on the workpiece;

a fifth modified layer forming process of forming a modified layer in the inside of the workpiece by irradiating the workpiece through the protective film and the dicing sheet with laser beams in the infrared region such that the laser beams are focused on a focal point set in the inside of the workpiece on which the protective film is laminated; and

a dividing process of dividing the workpiece by applying a force to the workpiece on which the modified layer is formed to obtain a divided product,

wherein a work product formed by laminating the protective film on one surface of the divided product is obtained as a resultant of the dividing process.

[Claim 10]

A method of manufacturing a work product, comprising:

a third protective film forming film laminating process of laminating the protective film forming film in a state in which a dicing sheet is laminated thereon, in which the light transmittance at a wavelength of 1064 nm is 30% or greater and the product of the breaking stress (MPa) measured at a measurement temperature of 0°C and the breaking strain (unit: %) measured at a measurement temperature of 0°C in at least one of the protective film forming film and a protective film formed from the protective film forming film is in a range of 1 MPa·% to 250 MPa·%, on one surface of a workpiece;

a protective film forming process of forming a protective film from the protective film forming film;

a fifth modified layer forming process of forming a modified layer in the inside of the workpiece by irradiating the workpiece through the protective film and the dicing sheet with laser beams in the infrared region such that the laser beams are focused on a focal point set in the inside of the workpiece on which the protective film is laminated; and

a dividing process of dividing the workpiece by applying a force to the workpiece on which the modified layer is formed to obtain a divided product,

wherein a work product formed by laminating the protective film on one surface of the divided product is obtained as a resultant of the dividing process.