Claims

1. Device for stripping a product substrate (4) from a carrier substrate (2) connected to the product substrate (4) by an interconnect layer (6) by means of a flexible film (3) that is mounted on a film frame (1) and that comprises an adhesive layer (3s) for holding the product substrate (4) in a bonding surface section (3k) of the film (3),

– the film (3) being mounted on the film frame (1) in an attachment section (3b) of the film (3) that surrounds the bonding surface section (3k), and

– the film (3) comprising a stripping section (3a) that is located between the bonding surface section (3k) and the attachment section (3b),

– wherein a holding means (7, 20) for holding the carrier substrate (2) and for applying a force Fs acting on the carrier substrate (2) is provided,

– wherein connection release means comprising fluid means for at least partial detachment of the interconnect layer (6) are made to act exclusively in the region of a periphery (4u) of the product substrate (4) in a position of the carrier substrate (2) applied with the force Fs, and

– wherein the device has stripping means with a film frame holder holding and applying a force to the film frame (1) for effecting a stripping of the product substrate (4) from the carrier substrate (2) from the periphery (4u), wherein the stripping means is made to strip the product substrate (4) by deforming the flexible film (3) by the force Fs and a force Ff that is directed against the force Fs and acts on the film frame (1).

2. Device according to claim 1, wherein said fluid means comprises a solvent (22) that selectively dissolves the interconnect layer.

3. Device according to claim 1 or 2, wherein the connection release means additionally comprise mechanical separating means, especially a blade for cutting through the interconnect layer (6), for at least partial detachment of the interconnect layer (6).

4. Device according to one of the claims 1 to 3, wherein the connection release means additionally comprise a UV light source for at least partial detachment of the interconnect layer (6).

5. Device according to one of the preceding claims, wherein the stripping section (3a) is located outside of the outer contour of the product substrate (4) and/or adjoins the bonding surface section (3k).

6. Device according to claim 1 or 2, wherein to expose the interconnect layer (6) to the fluid means for holding the fluid means there is a solvent reservoir (20) that is attachable, especially sealed, to the carrier substrate or a carrier substrate holder (7), the top edge of the reservoir extending at least as far as the plane formed by the product substrate (4).

7. Device according to one of the preceding claims, wherein the film (3) can be stretched by the force Fs and the force Ff in the stripping section (3a).

8. Device according to one of the preceding claims, wherein the force Fs and the force Ff can cause displacement of the film frame (1) relative to the carrier substrate (2), in this way within the film frame (1) a trough (9) being formed that has acoustic wave generating means, especially formed from a fluid (11) that can be held in the trough (9) and an acoustic transmitter (10) immersed into the fluid (11), for transmission of acoustic waves to the product substrate and/or the solvent (22).

9. Device according to one of the preceding claims, wherein said stripping means are made such that stripping of the product substrate (4) takes place concentrically from the periphery (4u) of the product substrate (4) to the centre (4z) of the product substrate (4).

10. Device according to one of the preceding claims, wherein the product substrate (4) is made to adhere to the film (3) during the stripping process.

11. Method for stripping a product substrate (4) from a carrier substrate (2) connected to the product substrate (4) by an interconnect layer (6) by means of a flexible film (3) that is mounted on a film frame (1) and that comprises an adhesive layer (3s) for holding the product substrate (4) in a bonding surface section (3k) of the film (3),

– the film (3) being mounted on the film frame (1) in an attachment section (3b) of the film (3) that surrounds the bonding surface section (3k), and

– the film (3) comprising a stripping section (3a) that is located between the bonding surface section (3k) and the attachment section (3b), wherein the carrier substrate (2) is held by a holding means (7, 20),

– wherein connection release means comprising fluid means for at least partial detachment of the interconnect layer (6) exclusively act in the region of a periphery (4u) of the product substrate (4) in a position of the carrier substrate (2) applied with force Fs by the holding means (7, 20), and

– wherein stripping means effect a stripping of the product substrate (4) from the carrier substrate (2) from the periphery (4u), wherein the product substrate (4) is stripped by deforming the flexible film (3) by a force Ff that is directed against the force Fs and acts on the film frame (1).

Device and Method for Stripping a Product Substrate from a Carrier Substrate

amended Claims

1. Device for stripping a product substrate (4) from a carrier substrate (2) connected to the product substrate (4) by an interconnect layer (6) by means of a flexible film (3) that is mounted on a film frame (1) and that comprises an adhesive layer (3s) for holding the product substrate (4) in a bonding surface section (3k) of the film (3), the film (3) being mounted on the film frame (1) in an attachment section (3b) of the film (3) that surrounds the bonding surface section (3k), and the film (3) comprising a stripping section (3a) that is located between the bonding surface section (3k) and the attachment section (3b) and wherein the device has stripping means for effecting a stripping of the product substrate (4) from the carrier substrate (2) from a periphery (4u) of the product substrate (4), characterized in that connection release means comprising fluid means are made to act exclusively in the region of the periphery (4u).

2. Device according to Claim 1, wherein said fluid means comprise a solvent (22) that selectively dissolves the interconnect layer.

3. Device according to Claim 1, wherein the connection release means additionally comprise mechanical separating means, especially a blade for cutting through the interconnect layer (6), for at least partial detachment of the interconnect layer (6).

4. Device according to Claim 1, wherein the connection release means additionally comprise a UV light source for at least partial detachment of the interconnect layer (6).

5. Device according to claim 1, wherein the stripping means is made to strip the product substrate (4) by deforming the flexible film (3).

6. Device according to claim 1, wherein the stripping section (3a) is located outside of the outer contour of the product substrate (4) and/or adjoins the bonding surface section (3k).

7. Device according to Claim 2 or 3, wherein to expose the interconnect layer (6) to the fluid means, for holding the fluid means there is a solvent reservoir (20) that is attachable, especially sealed, to the carrier substrate or a carrier substrate holder (7), the top edge of the reservoir extending at least as far as the plane formed by the product substrate (4).

8. Device according to claim 1, wherein the stripping means are made that stripping results by a force Fs that acts on the carrier substrate (2) and a force Ff that acts on the film frame (1) and that is directed against the force Fs.

9. Device according to Claim 8, wherein the film (3) can be stretched by the force Fs and the force Ff in the stripping section (3a).

10. Device according to Claim 8 or 9, wherein the force Fs and the force Ff can cause displacement of the film frame (1) relative to the carrier substrate (2), in this way within the film frame (1) a trough (9) being formed that has acoustic wave generating means, especially formed from a fluid (11) that can be held in the trough (9) and an acoustic transmitter (10) immersed into the fluid (11), for transmission of acoustic waves to the product substrate and/or the solvent (22).

11. Device according to claim 1, wherein said stripping means are made such that stripping of the product substrate (4) takes place concentrically from the periphery (4u) of the product substrate (4) to the center (4z) of the product substrate (4).

12. Device according to claim 1, wherein the product substrate (4) is made to adhere to the film (3) during the stripping process.

13. Method for stripping a product substrate (4) from a carrier substrate (2) connected to the product substrate (4) by an interconnect layer (6) by means of a flexible film (3) that is mounted on a film frame (1) and that comprises an adhesive layer (3s) for holding the product substrate (4) in a bonding surface section (3k) of the film (3), the film (3) being mounted on the film frame (1) in an attachment section (3b) of the film (3) that surrounds the bonding surface section (3k), and the film (3) comprising a stripping section (3a) that is located between the bonding surface section (3k) and the attachment section (3b) and wherein a stripping of the product substrate (4) from the carrier substrate (2) from a periphery (4u) of the product substrate (4) is caused by the stripping means, characterized in that fluid means, which exclusively act in the region of periphery (4u), are exposed as connection release means for at least partial detachment of the interconnect layer (6).

14. Method according to Claim 13, wherein the stripping of the product substrate (4) takes place concentrically from the periphery (4u) of the product substrate (4) to the center (4z) of the product substrate (4).