Claims

1. Multilayer structure manufacturing method comprising the following steps of bonding layers (4, 8, 5, 6) of its structure (1, 7) with thermosetting adhesive film(s) (2, 3), said thermosetting adhesive film(s) having recommended operating conditions of temperature and duration in its technical specification (TDS) to polymerize during thermal lamination (500, 600),
characterized in said thermosetting adhesive is laminated with said layers in order to present a partial polymerization rate less than polymerization rate resulting from said recommended operating conditions,
the corresponding operating conditions being configured to obtain a polymerization rate comprised between 20% and 28%.

2. Multilayer structure manufacturing method according to previous claim, comprising the following steps:
- assembly of a first thermosetting adhesive film (3) on a first side of a perforated core sheet (8) setting out perforation areas for component locations (4),
- fixing at least one or several component(s) (4) to the first adhesive (3) film in respective location(s) through insertion of said component(s) (4) into its location,
- providing a second thermosetting adhesive film (2) identical or similar to the first one on a second side opposite to a first side of said perforated core sheet (8),
- thermal lamination of said core sheet(4, 8) with first and second thermosetting adhesive films (2, 3) to form a composite inlay, said thermosetting adhesive films having recommended operating conditions of temperature and duration to polymerize during thermal lamination,
characterized in that said first thermal lamination operation is configured with temperature and duration conditions enabling first and second thermosetting adhesive films (2, 3)

to have a partial polymerization rate comprised between 10 and 18 %.

3. Method according to the preceding claims, characterized in that said structure or composite inlay (4, 8) structure is thermal laminated a second time or directly with a cover layer (5, 6) on each external face at conditions suitable to obtain a card structure (7) in which polymerization rate of thermosetting adhesive films after second thermal activation is comprised between 20% - 28%.

4. Method according to any one of previous claim, characterized in that that said thermosetting adhesive film(s) (2, 3) are activated at a temperature being lower or about 70% of its recommended activation temperature and during a duration being lower or about 30 % of a recommended duration.

5. Method according to claim 3, characterized in that that said thermosetting adhesive film(s) (2, 3) are activated at a temperature being lower or about 80% of their recommended activation temperature and during a duration being lower or about 40 % of a recommended duration.

6. Method according to claim 4, characterized in that said first thermal lamination is conducted between 110°C and 135 °C instead of 160 to 180 °C.

7. Method according to claim 5, characterized in that said second thermal lamination of the card structure is conducted between 135°C and 150 °C instead of 160 to 180 °C.

8. Method according to anyone of previous claims, characterized in that said thermosetting adhesive film is configured in order to have a pressure activated tack at room temperature.

9. Method according to anyone of the preceding claims, characterized in that said first and second adhesive films are selected among thermosetting acryl-epoxy adhesive films or tapes.

10. Method according to anyone of the preceding claims, characterized in that said first adhesive film is activated at said temperature during a duration less than 24 minutes.

11. Method according to anyone of the preceding claims, characterized in that that said first and second thermosetting adhesive films (2, 3) are provided with an external removable protective paper or film (12, 13).

12. Method according to anyone of the claims 2 to 11, characterized in that additional protective layer or covering sheet or film (5, 6) are thermal laminated on both opposite sides of the inlay structure (1) after removing external removable protective paper or film (12, 13).

13. Method according to anyone of claims 2 to 12, characterized in that said component (4) comprises metallic plate (4) or rigid material or metallic alloy or antenna.

14. Method according to anyone of the preceding claims, characterized in that individual cards with metal edge are obtained by cutting (10) each metal plate extending around a corresponding card surface (11) in said card structure (7).

15. Multilayer structure comprising the layers (4, 8, 5, 6) of its structure (1, 7) bonded with thermosetting adhesive film(s) (2, 3), said thermosetting adhesive film(s) having recommended operating conditions of temperature and duration in its technical specification (TDS) to polymerize during thermal lamination (500, 600) for bonding materials or layers,

characterized in said thermosetting adhesive present a partial polymerization rate less than polymerization rate resulting from said recommended operating conditions,
the corresponding operating conditions being configured to obtain a polymerization rate comprised between 20% and 28%.

16. Multilayer structure according to claim 15 comprising :
- an assembly of a first thermosetting adhesive film (3) on a first side of a perforated core sheet (8) setting out perforation areas for component locations (4),
- at least one or several component(s) (4) fixed to the first adhesive (3) film in respective location(s) through insertion of said component(s) (4) into its location,
- a second thermosetting adhesive film (2) identical or similar to the first one provided on a second side opposite to a first side of said perforated core sheet (8),
- said core sheet(4, 8) with first and second thermosetting adhesive films (2, 3) to form a composite thermo-laminated inlay, said thermosetting adhesive films being polymerized,
characterized in that said first and second thermosetting adhesive films (2, 3) have a partial polymerization rate comprised between 10 and 18 %.

17. Multilayer card structure (7) according to claim 15 comprising :
- an assembly of a first thermosetting adhesive film (3) on a first side of a perforated core sheet (8) setting out perforation areas for component locations (4),
- at least one or several component(s) (4) fixed to the first adhesive (3) film in respective location(s) through insertion of said component(s) (4) into its location,
- a second thermosetting adhesive film (2) identical or similar to the first one provided on a second side opposite to a first side of said perforated core sheet (8),

- said core sheet(4, 8) with first and second thermosetting adhesive films (2, 3) to form a composite thermo laminated inlay, said thermosetting adhesive films being polymerized,
- a cover layer (5, 6) on each external face of said composite thermo-laminated inlay,

characterized in that said first and second thermosetting adhesive films (2, 3) have a partial polymerization rate pcomprised between 20% - 28%.