Claims

1. Profile for window, door, facade or cladding elements, comprising
a profile body (2) made from thermoplastic material and extending in a longitudinal direction (z) with an essentially constant cross-section (x-y) along the longitudinal direction (z) and having at least one outer surface (2a), and
a metal containing layer (4) deposited on at least part of the at least one outer surface (2a),
wherein the thermoplastic material comprises at least one thermoplastic selected from the group containing polyamide 66 with 5 to 60% glass fiber reinforcement, polyethylene, polypropylene, polybutylene terephthalate, acrylonitrile styrene acrylate,
wherein the metal containing layer is made of aluminium or alumina or tin or copper or blends thereof,
wherein the metal containing layer (4) is deposited directly on the profile body (2) using a cold spray technology, and
wherein the metal containing layer has a thickness in the range from 30 µm to 450 µm.

2. Profile according to claim 1, wherein the interface between the thermoplastic material and the metal containing material is formed by an impact eroded surface of the thermoplastic material and metal containing material entrapped in the impact eroded surface of the thermoplastic material.

3. Profile according to one of claims 1 to 2, wherein the thermoplastic material is polyamide 66 with 20 to 60% glass fibre reinforcement.

4. Profile according to one of claims 1 to 3, wherein the metal containing layer is made of aluminium or alumina or blends thereof.

5. Profile according to one of claims 1 to 3, wherein the metal containing layer is made of aluminium and tin.

6. Profile according to one of claims 1 to 3, wherein the metal containing layer is made of copper.

7. Profile according to one of claims 1 to 6, wherein the metal containing layer has a thickness in the range from 30 µm to 70 µm.

8. Profile according to one of claims 1 to 7, wherein the profile body (2) is made fully or partly from foamed thermoplastic material.

9. Profile according to claim 8, wherein the profile body comprises a foamed thermoplastic material with a low density of foam cells of less than 10% in volume or no foam cells in a layer of a thickness of 0.1 mm at the at least one surface (2a).

10. Method for manufacturing a profile for window, door, facade or cladding elements comprising a profile body (2) made from thermoplastic material and extending in a longitudinal direction (z) with an essentially constant cross-section (x-y) along the longitudinal direction (z) and having at least one outer surface (2a), and a metal containing layer (4) deposited on at least part of the at least one outer surface (2a), comprising the steps of:

- extruding the profile body from a thermoplastic material comprising at least one thermoplastic selected from the group containing polyamide 66 with 5 to 60% glass fiber reinforcement, polyethylene, polybutylene terephthalate, acrylonitrile styrene acrylate,
- generating a supersonic cold spray of metal containing particles made of aluminium or alumina or tin or copper or blends thereof, and
- directing the supersonic cold spray of the metal containing particles at a temperature in a range from 280 K to 690 K and at a pressure of 4 bar to 50 bar to the at least one outer surface (2a) of the profile body (2) moving at a substrate speed (vs) in the range of 20 to 50000 mm/s to deposit the metal containing layer (4) having a thickness in the range from 30 µm to 450 µm.

11. Method according to claim 10, wherein the supersonic cold spray of the metal containing particles is directed to the at least one outer surface (2a) of the profile body (2) at an angle α relative to the surface, which angle α is in the range from 60° to 120°.

12. Method according to claim 10 or 11, wherein the metal containing layer has a thickness in the range from 30 µm to 70 µm.

13. Metal plastic composite profile for window, door, facade or cladding elements, comprising

at least one metal profile (10, 20) and at least one profile according to one of claims 1 to 9 connected to the metal profile via adhesive applied between the metal containing layer (4) facing the metal profile (10) and the metal profile.

14. Window, door, facade or cladding element comprising

a glass pane or insulating pane (30a, 30b, 30c, 30d), a sealing element (40, 40a, 40b, 40c), and at least one profile according to one of claims 1 to 9, wherein the glass pane is connected to the at least one outer surface (2a) of the profile via the seal element (40, 40a, 40b, 40c) and an adhesive between the sealing element and the metal containing layer (4).

15. Window, door, facade or cladding element comprising

a glass pane or insulating pane (30a, 30b, 30c, 30d), a sealing element (40, 40a, 40b, 40c), and a metal plastic composite profile according to claim 13, wherein the metal containing layer (4) is also deposited at least on a part of the outer surface facing the sealing element and the glass pane is connected to the at least one outer surface (2a) of the profile via the seal element (40, 40a, 40b, 40c) and an adhesive between the sealing element and the metal containing layer (4).