DOUBLE SHEET ALUMINUM PANEL AND METHOD FOR MANUFACTURE THEREOF

Claims

1. A double sheet aluminum panel consisting of a first layer of a first aluminum material attached to a second layer of a second aluminum material, the first and second layers being attached to each other by means of an adhesive layer disposed between the first and second layers, wherein the mass distribution of the adhesive material is between 0.05 kg/m^2 and 0.08 kg/m^2, and preferably approximately 0.07 kg/m^2.

2. The double sheet aluminum panel according to claim 1, wherein the adhesive layer comprises polyethylene.

3. The double sheet aluminum panel according to claim 1 or 2, wherein the adhesive layer is composed of a first adhesive layer provided on an inner side of the first layer of aluminum material facing the second layer of aluminum material, and a second adhesive layer provided on an inner side of the second layer of aluminum material facing the first layer of aluminum material.

4. The double sheet aluminum panel according to claim 3, wherein the first adhesive layer is made of an adhesive material, which is different from the adhesive material of the second adhesive layer.

5. The double sheet aluminum panel according to one of the claims 1 to 4, wherein the adhesive layer has a total thickness of not more than 90 µm, preferably not more than 80 µm.

6. The double sheet aluminum panel according to one of the claims 1 to 5, wherein the adhesive layer consists of an adhesive material having a calorific value of less than 55 MJ/kg, preferably less than 50 MJ/kg, and more preferably less than 45 MJ/kg.

7. A double sheet aluminum panel comprising a first layer of a first aluminum material attached to a second layer of a second aluminum material, the first and second layers being attached to each other by means of an adhesive layer disposed between the first and second layers,
wherein the mass distribution of the adhesive material is between 0.02 kg/m^2 and 0.10 kg/m^2, preferably between 0.05 kg/m^2 and 0.08 kg/m^2, and more preferably approximately 0.07 kg/m^2,
wherein a protective layer is provided on the inner side of at least one of the first and second layers of aluminum material, said protective layer preferably comprises epoxy resin.

8. The double sheet aluminum panel according to claim 7,
wherein the thickness of the protective layer and the thickness of the adhesive layer are chosen such that the cumulated caloric value of both layers does not exceed a predetermined maximum value.

9. The double sheet aluminum panel according to claim 8,
wherein the predetermined maximum value of the cumulated caloric value is less than 6 MJ/m^2 and preferably 4 MJ/m^2.

10. The double sheet aluminum panel according to one of the claims 7 to 9, wherein the protective layer has a thickness of between 3 µm to 10 µm, preferably of between 5 µm to 7 µm.

11. The double sheet aluminum panel according to one of the claims 7 to 10, wherein the protective layer consists of an epoxy material having a calorific value of less than 40 MJ/kg, preferably less than 35 MJ/kg, and more preferably less than 30 MJ/kg.

12. The double sheet aluminum panel according to one of the claims 7 to 11, wherein the mass distribution of the epoxy material is between 5 g/m^2 and 9 g/m^2 preferably between 6 g/m^2 and 8 g/m^2 and more preferably approximately 7 g/m^2.

13. The double sheet aluminum panel according to one of the claims 7 to 12, wherein the total thickness of both, the adhesive layer and the protective layer on at least one of the first and second layers of aluminum material does not exceed 100 µm, preferably not 80 µm and most preferably not 70 µm.

14. The double sheet aluminum panel according to one of the claims 1 to 13, wherein an outer layer is provided on the outer side of at least one of the first and second layers of aluminum material, the outer layer being preferably a coating comprising polyester.

15. The double sheet aluminum panel according to claim 14, wherein the outer layer has a thickness of between 20 µm to 50 µm, and preferably a thickness of approximately 30 µm to 40 µm.

16. The double sheet aluminum panel according to claim 14 or 15, wherein the outer layer consists of a polyester material having a calorific value of less than 18 MJ/kg, preferably less than 16 MJ/kg, and more preferably less than 14 MJ/kg.

17. The double sheet aluminum panel according to one of the claims 14 to 16, wherein the mass distribution of the polyester material is between 35 g/m^2 and 75 g/m^2, preferably between 45 g/m^2 and 65 g/m^2, and more preferably approximately 55 g/m^2.

18. The double sheet aluminum panel according to one of the claims 1 to 17, wherein the first aluminum material is substantially the same as the second aluminum material.

19. The double sheet aluminum panel according to one of the claims 1 to 17, wherein the first aluminum material is different from the second aluminum material.

20. The double sheet aluminum panel according to claim 18 or 19, wherein the first aluminum material of the first layer is a 3000 or 5000 series aluminum alloy.

21. The double sheet aluminum panel according to one of the claims 18 to 20, wherein the second aluminum material of the second layer is a 3000 or 5000 series aluminum alloy.

22. The double sheet aluminum panel according to one of the claims 1 to 21, wherein the first and second layers comprise substantially the same thickness.

23. The double sheet aluminum panel according to one of the claims 1 to 22, wherein the first and second layers comprise a different thickness.

24. The double sheet aluminum panel according to one of the claims 1 to 23, wherein the first and/or second layer of aluminum material has a thickness of between 0.8 mm and 2.5 mm, preferably between 1.0 mm and 2.0 mm, and more preferably of approximately 1.5 mm.

25. The double sheet aluminum panel according to one of the claims 1 to 24, wherein the double sheet aluminum panel has a thickness of between 1 mm and 10 mm, preferably between 2 mm and 7 mm, and more preferably between 2.5 mm and 5 mm.

26. The double sheet aluminum panel according to one of the claims 1 to 25, wherein the double sheet aluminum panel comprises at least one opening penetrating at least the first and second layers of aluminum material.

27. The double sheet aluminum panel according to one of the claims 1 to 26, wherein the double sheet aluminum panel is perforated.

28. A method for manufacturing a double sheet aluminum panel according to one of the claims 1 to 27, the method comprising the following steps:

- providing a first sheet of a first aluminum material;
- providing a second sheet of a second aluminum material;
- applying an adhesive to inner surfaces of the first and/or second layers;
- roll bonding the first and second sheets together along their inner surfaces to form a laminate aluminum sheet consisting of two layers of aluminum material attached to each other by means of the adhesive;
- cutting the laminate aluminum sheet into double sheet aluminum panels,

  wherein the adhesive is applied to inner surfaces of the first and/or second layers such that the mass distribution of the adhesive material is between 0.02 kg/m^2 and 0.10 kg/m^2, preferably between 0.05 kg/m^2 and 0.08 kg/m^2, and more preferably approximately 0.07 kg/m^2.

29. The method according to claim 28,
wherein the adhesive is heated before roll bonding is performed.

30. The method according to claim 28 or 29,
wherein at least the inner surfaces of the first and second layers are smoothened by means of abrasion before the adhesive is applied.

31. The method according to one of the claims 28 to 30,
wherein at least the inner surfaces of the first and second layers are treated with conversion coating before the adhesive is applied.

32. The method according to one of the claims 28 to 31,
wherein at least the outer surfaces of the first and second layers are treated with paint before the adhesive is applied.

33. The method according to one of the claims 28 to 32,
wherein rolling is performed by means of pressure rollers in such a way that a double sheet aluminum panel having a thickness of 1 to 10 mm is produced.