Claims:

1. A wire ~~(1)~~ comprising:
   a. a copper core ~~(2)~~ with a surface ~~(15)~~; and
   b. a coating layer ~~(3)~~ superimposed over the surface ~~(15)~~ of the copper core ~~(2)~~, wherein the coating layer ~~(3)~~ comprises aluminium,

   wherein in a cross-sectional view of the wire ~~(1)~~ the area share of the coating layer ~~(3)~~ is in the range of from 10 to 60 %, based on the total area of the cross-section of the wire ~~(1)~~, and

   wherein the aspect ratio between the longest path ~~(5)~~ and the shortest path ~~(6)~~ through the wire ~~(1)~~ in a cross-sectional view is in the range of from larger than 0.8 to 1.0,

   wherein the wire has a diameter in the range of from 100 µm to 600 µm.

~~The wire (1) according to claim 1,~~

~~2.~~ wherein an intermediate layer ~~(7)~~ is arranged between the core ~~(2)~~ and the coating layer ~~(3)~~, wherein the intermediate layer ~~(7)~~ comprises at least one intermetallic phase comprising material of the core and material of the coating layer.

~~3.~~2. The wire ~~(1)~~ according to claim 1~~2~~, wherein the area share of the intermediate layer ~~(7)~~ in a cross-sectional view of the wire ~~(1)~~ is in the range of from 0.4 to 15 %, based on the total area of the cross-section of the wire ~~(1)~~.

~~4.~~3. The wire ~~(1)~~ according to any of claims 1~~2~~ or ~~3~~2, wherein the thickness of the intermediate layer ~~(7)~~ is in the range of from 0.1 µm to 5 µm.

~~5.~~4. The wire ~~(1)~~ according to any of claims 1 to ~~4~~3, wherein the diameter of the copper core ~~(2)~~ is in the range of from 70 to 500 µm, determined in a cross-sectional view of the wire ~~(1)~~.

6.5. The wire (1) according to any of claims 1 to 54, wherein the thickness of the coating layer (3) is in the range of from 10 to 60 µm, determined in a cross-sectional view of the wire (1).

7.6. The wire (1) according to any of claims 1 to 65, wherein the copper core comprises at least 95 % by weight, based on the total weight of the copper core, of copper of a purity of at least 99.9 %.

8.7. The wire (1) according to any of claims 1 to 76, wherein the coating layer comprises at least 80 % by weight, based on the total weight of the coating layer, of aluminium of a purity of 99.9 %.

9.8. The wire (1) according to any of claims 1 to 87, wherein the dissipated work is at least 2 times as high for the wire (1) than the dissipated work for a reference wire made from pure Al.

10.9. The wire (1) according to any of claims 1 to 98, wherein the maximum strain in a uniaxial cyclic test is at least 1.5 times as high for the wire (1) than the maximum strain for a reference wire made from pure Al.

11.10. The wire (1) according to any of claims 1 to 109, wherein the number of cycles under same conditions in the power cycling test is at least 3 times as high for the wire (1) than for a reference wire made from pure Al.

12.11. The wire (1) according to any of claims 1 to 1110, wherein the wire pull of the wire (1) is at least 10 % higher for the wire (1) than for a reference wire made from pure Al.

13.12. A process for manufacturing a wire (1) comprising at least the following steps:

a. providing a wire precursor (9) comprising a copper core (2) with a surface (15) and a coating layer (3), which coating layer is superimposed over the sur-

face ~~(15)~~ of the copper core ~~(2)~~, wherein the coating layer ~~(3)~~ comprises aluminium,

wherein in a cross-sectional view of the wire precursor ~~(9)~~ the area share of the coating layer ~~(3)~~ is in the range of from 20 to 50 %, based on the total area of the cross-section of the wire precursor ~~(9)~~, and

wherein the aspect ratio between the longest path ~~(5)~~ and the shortest path ~~(6)~~ through the wire precursor ~~(9)~~ in a cross-sectional view is in the range of from larger than 0.8 to 1.0,

wherein the wire precursor ~~(9)~~ has a diameter in the range of from 0.5 to 5 mm.

b. shaping the wire precursor ~~(9)~~,

c. annealing the shaped wire precursor ~~(9)~~,

whereby the wire ~~(1)~~ is obtained, wherein the wire ~~(1)~~ has a diameter in the range of from 100 µm to 600 µm.

~~14.~~13. The process according to claim ~~13~~12, wherein an intermediate layer ~~(7)~~ is formed in step c.

~~15.~~14. The process according to claim ~~13~~ 12 or ~~14~~13, wherein the annealing is performed at a temperature in the range of from 140 °C to 400 °C, preferably over a period of from 30 minutes to 5 hours.

~~16. A wire (1) obtainable by a process according to any of claims 13 to 15.~~

~~17.~~15. The ~~wire (1)~~process according to any of claims 12 to ~~14~~16, whereby a wire is obtained, wherein the wire ~~(1)~~ is characterized by at least one of the following features:

a. the dissipated work is at least 2 times as high for the wire ~~(1)~~ than the dissipated work for a reference wire made from pure Al;

b. the maximum strain in a uniaxial cyclic test is at least 1.5 times as high for the wire ~~(1)~~ than the maximum strain for a reference wire made from pure Al;

c. the number of cycles under same conditions in the power cycling test is at least 3 times as high for the wire than for a reference wire made from pure Al;

d. the wire pull of the wire ~~(1)~~ is at least 10 % higher for the wire ~~(1)~~ than for a reference wire made from pure Al.

e. the electrical conductivity of the wire ~~(1)~~ is in the range of from 20 % to 55 % as high than the electrical conductivity of a reference wire made from pure Al.

~~18.~~16. An electric device ~~(10)~~ comprising at least two elements ~~(11)~~ and at least a wire ~~(1)~~ according to any of claims 1 through ~~12~~ 11 or claims ~~16 and 17~~ 15 or at least a wire manufactured according to a process according to any of claims ~~13~~ 12 to ~~15~~14, wherein the wire ~~(1)~~ electrically connects the two elements ~~(11)~~.

~~19.~~17. The electric device ~~(10)~~ of claim ~~18~~16, wherein the electrical connection is obtainable by wedge bonding.

~~20.~~18. The electric device ~~(10)~~ of any of claims ~~18~~ 16 or ~~19~~17, wherein at least one of the elements ~~(11)~~ is selected from the group consisting of a substrate, an IGBT, an integrated circuit, a transistor, a diode, such as a light emitting diode or a photo diode.

~~21.~~19. A propelled device comprising at least one electric device ~~(10)~~ according to any of claims ~~18~~ 16 to ~~20~~18.

~~22.~~20. A process for making an electric device ~~(10)~~ comprising the steps of

a. providing at least two elements ~~(11)~~;

b. connecting the two elements ~~(11)~~ through a wire ~~(1)~~ according to any of claims 1 through ~~12~~ 11 or claims ~~16 and 17~~15 or at least a wire ~~(1)~~ manufactured according to a process according to any of claims ~~13~~ 12 to ~~15~~14, wherein at least one of said connections is performed by wedge bonding.