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 the ratio of the thickness of the coating layer ~~(3)~~ to the diameter of the copper core ~~(2)~~ is in the range of from 0.05 to 0.2,
   wherein the ratio of the standard deviation of the diameter of the copper core ~~(2)~~ to the diameter of the copper core ~~(2)~~ is in the range of from 0.005 to 0.05, and
   wherein the ratio of the standard deviation of the thickness of the coating layer ~~(3)~~ to the thickness of the coating layer ~~(3)~~ is in the range of from 0.05 to 0.4,
   wherein the wire has a diameter in the range of from 100 µm to 600 µm.

2. The bonding ~~(1)~~ wire according to claim 1, wherein a intermediate layer ~~(7)~~ is arranged between the copper 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. The wire ~~(1)~~ according to claim 2, wherein the intermediate layer ~~(7)~~ has a thickness in the range of from 0.1 to 5 µm.

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

5. The wire ~~(1)~~ according to claim 1 or 4, 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)~~.

6. The wire ~~(1)~~ according to any of claims 1 to 5, 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 %.

7. The wire ~~(1)~~ according to any of claims 1 to 6, 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 %.

8. The wire ~~(1)~~ according to any of claims 1 to 7, 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.

9. The wire ~~(1)~~ according to any of claims 1 to 8, 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.

10. The wire ~~(1)~~ according to any of claims 1 to 9, wherein the power cycling test is at least 3 times at high for the wire ~~(1)~~ than for a reference wire made from pure Al.

11. The wire ~~(1)~~ according to any of claims 1 to 10, 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.

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

wherein the ratio of the thickness of the coating layer ~~(3)~~ to the diameter of the copper core ~~(2)~~ is in the range of from 0.05 to 0.2,

wherein the ratio of the standard deviation of the diameter of the copper core ~~(2)~~ to the diameter of the copper core ~~(2)~~ is in the range of from 0.005 to 0.05, and

wherein the ratio of the standard deviation of the thickness of the coating layer ~~(3)~~ to the thickness of the coating layer ~~(3)~~ is in the range of from 0.05 to 0.4,

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 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.

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

14. The process according to claim 12 or 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.

~~15. A wire (1) obtainable by a process according to any of claims 12 to 14.~~

~~16.~~15. The ~~wire (1)~~process according to any of claims 12 to 14, whereby the wire ~~(1)~~ is obtained ~~according to claim 15~~, 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 2 times as high for the wire ~~(1)~~ than the maximum strain for a reference wire made from pure Al;

c. the power cycling test is at least 3 times as high for the wire ~~(1)~~ 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.

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

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

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

~~20.~~19. A propelled device ~~(12)~~ comprising at least one electric device ~~(10)~~ according to any of claims 16~~16~~17 to 18~~18~~19.

~~21.~~20. A process from making an electric device ~~(10)~~ comprising the steps of:

a. providing at least two elements ~~(10)~~;

b. connecting the two elements ~~(10)~~ through a wire ~~(1)~~ according to any of claims 1 to 11 ~~or claims 15 and 16~~ or at least a wire ~~(1)~~ manufactured according to a

process according to any of claims 12 to 1514, wherein at least one of said connections is performed by wedge bonding.