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I/We claim:

1. A copper alloy for electronic/electric device comprising: in mass %, more than 2.0% and 36.5% or less of Zn; 0.1% or more and 0.9% or less of Sn; 0.05% or more and less than 1.0% of Ni; 0.001% or more and less than 0.10% of Fe; 0.005% or more and 0.10% or less of P; and the balance Cu and inevitable impurities, wherein

a content ratio of Fe to Ni, Fe/Ni, in atomic ratio satisfies $0.002 \leq Fe/Ni < 1.5$,

a content ratio of a sum of Ni and Fe, (Ni+Fe), to P, in atomic ratio satisfies $3 < (Ni+Fe)/P < 15$,

a content ratio of Sn to a sum of Ni and Fe, (Ni+Fe), in atomic ratios satisfies $0.3 < Sn/(Ni+Fe) < 5$,

an average crystal grain diameter of α phase containing Cu, Zn, and Sn is in a range of 0.1 to 50 μm, and

the copper alloy includes a precipitate containing P and one or more elements selected from Fe and Ni.

2. The copper alloy for electronic/electric device as claimed in Claim 1, wherein an average grain diameter of the precipitate containing P and one or more elements selected from Fe and Ni is 100 nm or less.

3. The copper alloy for electronic/electric device as claimed in Claim 2, wherein a precipitation density of the precipitate containing P and one or more elements selected from Fe and Ni and having the average grain diameter of 100 nm or less is in a range of 0.001 to 1.0% in volume ratio.

4. The copper alloy for electronic/electric device as claimed in any one of Claims 1 to 3, wherein the precipitate containing P and one or more elements selected from Fe and Ni has a crystal structure of Fe_2P-based crystal or Ni_2P-based crystal structure.

5. A copper alloy for electronic/electric device comprising: in mass %, more than

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2% and 36.5% or less of Zn; 0.1% or more and 0.9% or less of Sn; 0.05% or more and less than 1.0% of Ni; 0.001% or more and less than 0.10% of Fe; 0.001% or more and less than 0.10% of Co; 0.005% or more and 0.10% or less of P; and the balance Cu and inevitable impurities, wherein

a content ratio of a sum of Fe and Co, (Fe+Co), to Ni, (Fe+Co)/Ni, in atomic ratio satisfies $0.002 \leq (Fe+Co)/Ni < 1.5$,

a content ratio of a sum of Ni, Fe, and Co, (Ni+Fe+Co), to P, in atomic ratio satisfies $3 < (Ni+Fe+Co)/P < 15$,

a content ratio of Sn to a sum of Ni, Fe, and Co, (Ni+Fe+Co), in atomic ratios satisfies $0.3 < Sn/(Ni+Fe+Co) < 5$,

an average crystal grain diameter of α phase containing Cu, Zn, and Sn is in a range of 0.1 to 50 μm, and

the copper alloy includes a precipitate containing P and one or more elements selected from Fe, Ni, and Co.

6. The copper alloy for electronic/electric device as claimed in Claim 5, wherein an average grain diameter of the precipitate containing P and one or more elements selected from Fe, Ni, and Co is 100 nm or less.

7. The copper alloy for electronic/electric device as claimed in Claim 6, wherein a precipitation density of the precipitate containing P and one or more elements selected from Fe, Ni, and Co, and having the average grain diameter of 100 nm or less is in a range of 0.001 to 1.0% in volume ratio.

8. The copper alloy for electronic/electric device as claimed in any one of Claims 5 to 7, wherein the precipitate containing P and one or more elements selected from Fe, Ni, and Co has a crystal structure of Fe_2P-based crystal or Ni_2P-based crystal structure.

9. The copper alloy for electronic/electric device as claimed in any one of Claims 1

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to 5, wherein the copper alloy for electronic/electric device has a mechanical property such that 0.2% offset yield strength is 300MPa or more.

10. A copper alloy thin plate for electronic/electric device, the copper alloy thin plate being made of a rolled material of the copper alloy as claimed in any one of Claims 1 to 5, wherein a thickness of the copper alloy thin plate is in a range of 0.05 to 1.0 mm.

11. The copper alloy thin plate for electronic/electric device as claimed in Claim 10, wherein a surface of the thin plate is plated with Sn.

12. A method of producing a copper alloy for electronic/electric device, the method comprising the steps of:

preparing a material of an alloy containing, in mass %, more than 2.0% and 36.5% or less of Zn, 0.1% or more and 0.9% or less of Sn, 0.05% or more and less than 1.0% of Ni, 0.001% or more and less than 0.10% of Fe, 0.005% or more and 0.10% or less of P, and the balance consisting of Cu and inevitable impurities, a content ratio of Fe to Ni, Fe/Ni, in an atomic ratio satisfying $0.002 \leq Fe/Ni < 1.5$, a content ratio of a sum of Ni and Fe, (Ni+Fe), to P, (Ni+Fe)/P, in an atomic ratio satisfying $3 < (Ni+Fe)/P < 15$, and a content ratio of Sn to a sum of Ni and Fe, (Ni+Fe), Sn/(Ni+Fe), in an atomic ratio satisfying $0.3 < Sn/(Ni+Fe) < 5$;

performing a process to the material, the process including at least one plastic working and a heat treatment for recrystallization and precipitation to transform the material to a recrystallized plate with a recrystallization structure and a predetermined plate thickness; and

performing finishing plastic working to the recrystallized plate with a working ratio of 1 to 70%,

whereby a copper alloy, in which an average crystal grain diameter of an α phase containing Cu, Zn, and Sn is in a range of 0.1 to 50 μm, a ratio of sampling points having

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a CI value of 0.1 or less is 70% or less, and a precipitate containing P and one or more selected from Fe and Ni is included, is obtained, the CI value being acquired measuring an area of not smaller than 1000 μm^2 by EBSD method with 0.1 μm step intervals and analyzing the measurement data with an OIM data analysis software.

13. A method of producing a copper alloy for electronic/electric device, the method comprising the steps of:

preparing a material of an alloy containing, in mass %, more than 2.0% and 36.5% or less of Zn, 0.1% or more and 0.9% or less of Sn, 0.05% or more and less than 1.0% of Ni, 0.001% or more and less than 0.10% of Fe, 0.001% or more and less than 0.1% of Co, 0.005% or more and 0.10% or less of P, and the balance consisting of Cu and inevitable impurities, a content ratio of a sum of Fe and Co, (Fe+Co), to Ni, (Fe+Co)/Ni, in an atomic ratio satisfying $0.002 \leq (Fe+Co)/Ni < 1.5$, a content ratio of a sum of Ni, Fe, and Co, (Ni+Fe+Co), to P, (Ni+Fe+Co)/P, in an atomic ratio satisfying $3 < (Ni+Fe+Co)/P < 15$, and a content ratio of Sn to a sum of Ni, Fe, and Co, (Ni+Fe+Co), Sn/(Ni+Fe+Co), in an atomic ratio satisfying $0.3 < Sn/(Ni+Fe+Co) < 5$;

performing a process to the material, the process including at least one plastic working and a heat treatment for recrystallization and precipitation to transform the material to a recrystallized plate with a recrystallization structure and a predetermined plate thickness; and

performing finishing plastic working to the recrystallized plate with a working ratio of 1 to 70%,

whereby a copper alloy, in which an average crystal grain diameter of an α phase containing Cu, Zn, and Sn is in a range of 0.1 to 50 μm, a ratio of sampling points having a CI value of 0.1 or less is 70% or less, and a precipitate containing P and one or more selected from Fe, Ni, and Co is included, is obtained, the CI value being acquired

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measuring an area of not smaller than 1000 μm^2 by EBSD method with 0.1 μm step intervals and analyzing the measurement data with an OIM data analysis software.

14. The method of producing a copper alloy for electronic/electric device as claimed in Claim 12 or 13, wherein the method further comprising the step of performing low temperature annealing at 50 to 800°C for 0.1 second to 24 hours after the step of performing finishing plastic working.

15. A conductive component for electronic/electric device comprising a bended part made of the copper alloy for electronic/electric device as claimed in Claim 1 or 5, wherein the bended part is pressed to a coupling conductive part by spring property of the bended part to secure an electric conductivity to the coupling conductive part.

16. A terminal made of the copper alloy for electronic/electric device as claimed in Claim 1 or 5.

17. A conductive component for electronic/electric device comprising a bended part made of the copper alloy thin plate for electronic/electric device as claimed in Claim 10, wherein the bended part is pressed to a coupling conductive part by spring property of the bended part to secure an electric conductivity to the coupling conductive part.

18. A conductive component for electronic/electric device comprising a bended part made of the copper alloy thin plate for electronic/electric device as claimed in Claim 11, wherein the bended part is pressed to a coupling conductive part by spring property of the bended part to secure an electric conductivity to the coupling conductive part.

19. The terminal made of the copper alloy thin plate for electronic/electric device as claimed in Claim 10.

20. The terminal made of the copper alloy thin plate for electronic/electric device as claimed in Claim 11.

21. The copper alloy for electronic/electric device as claimed in any one of Claims 1 to 3.

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wherein, in mass %, a content amount of Fe is 0.064% or less in a mass %.

22. The copper alloy for electronic/electric device as claimed in any one of Claims 5 to 7, wherein, in mass %, a content amount of Fe is 0.064% or less in a mass %.

23. The copper alloy for electronic/electric device as claimed in any one of Claims 1 to 3, wherein the content ratio (Ni+Fe) to P, in atomic ratio satisfies $5.1 \leq (Ni+Fe)/P < 15$.

24. The copper alloy for electronic/electric device as claimed in any one of Claims 5 to 7, wherein the content ratio (Ni+Fe+Co) to P, in atomic ratio satisfies $5.1 \leq (Ni+Fe+Co)/P < 15$.

25. The copper alloy for electronic/electric device as claimed in any one of Claims 1 to 3, wherein the content ratio Fe/Ni, in atomic ratio satisfies $0.002 \leq Fe/Ni < 0.5$.

26. The copper alloy for electronic/electric device as claimed in any one of Claims 5 to 7, wherein the content ratio (Fe+Co)/Ni, in atomic ratio satisfies $0.002 \leq Fe/Ni < 0.5$.

27. The copper alloy for electronic/electric device as claimed in any one of Claims 1 to 3, wherein the content amount of Zn is 32.5% or less in a mass %.

28. The copper alloy for electronic/electric device as claimed in any one of Claims 5 to 7, wherein the content amount of Zn is 32.5% or less in a mass %.

29. The copper alloy for electronic/electric device as claimed in any one of Claims 1 to 3, wherein the content amount of Zn is 8.0 to 32.0 % in a mass %.

30. The copper alloy for electronic/electric device as claimed in any one of Claims 5 to 7, wherein the content amount of Zn is 8.0 to 32.0 % in a mass %.

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To,
The Controller of Patents
The Patent Office at New Delhi