aging the nickel-base alloy workpiece at a temperature of 1300°F to 1400°F for at least 3.0 hours time-at-temperature; and

air cooling the workpiece.

9. A product produced by the process of claim 1, the product selected from the group consisting of a rod and a round bar.

10. The product of claim 9, wherein the product comprises equiaxed grains with a grain size of ASTM No. 3.0 to 9.0, a uniform grain size distribution, intergranular $M_{23}C_6$ carbide precipitates uniformly distributed on metallographically observable grain boundaries, and substantially no metallographically observable intragranular $M_{23}C_6$ carbide precipitates.

11. A process comprising:

a first heating step comprising heating a nickel-base alloy workpiece to a temperature greater than a $M_{23}C_6$ carbide solvus temperature of the nickel-base alloy;

a first working step comprising working the heated nickel-base alloy workpiece to a reduction in area of 20% to 70%, wherein the nickel-base alloy workpiece is at a temperature greater than a $M_{23}C_6$ carbide solvus temperature when the first working step begins;

a second heating step comprising heating the worked nickel-base alloy workpiece to a temperature greater than 1700°F and less than the $M_{23}C_6$ carbide solvus temperature of the nickel-base alloy, wherein the as-worked nickel-base alloy workpiece is maintained at elevated temperature and not permitted to cool to ambient temperature between completion of the first working step and beginning of the second heating step; and

a second working step comprising working the heated nickel-base alloy workpiece to a second reduction in area of 20% to 70%, wherein the nickel-base alloy workpiece is at a temperature greater than 1700°F and less than the $M_{23}C_6$ carbide solvus temperature of the nickel-base alloy when the second working step begins.

12. The process of claim 11, wherein the nickel-base alloy workpiece comprises, by weight, up to 0.05% carbon; 27.0% to 31.0% chromium; up to 0.5% copper; 7.0% to 11.0% iron; up to 0.5% manganese; up to 0.015% sulfur; up to 0.5% silicon; at least 58% nickel; and incidental impurities.

13. The process of claim 11, wherein the nickel-base alloy workpiece comprises, by weight, up to 0.05% carbon; 28.0% to 30.0% chromium; up to 0.25% copper; 8.0% to 10.0% iron; up to 0.25% manganese; up to 0.010% sulfur; up to 0.25% silicon; at least 58% nickel; and incidental impurities.

14. The process of claim 11, wherein the first working step and the second working step independently comprise at least one operation selected from the group consisting of flat rolling, ring rolling, roll forming, press forging, extruding, and rotary forging.

15. The process of claim 11, wherein the first working step and the second working step comprise rotary forging.

16. The process of claim 11, wherein the first heating step comprises heating the nickel-base alloy workpiece in a furnace operating at 2000°F to 2125°F for at least 3.0 hours time-at-temperature.

17. The process of claim 11, wherein second heating step comprises heating the nickel-base alloy workpiece in a furnace operating at 1750°F to 1925°F for greater than 2.0 hours furnace time.

18. The process of claim 11, wherein the second heating step comprises heating the nickel-base alloy workpiece in a furnace operating at 1750°F to 1925°F for 3.0 hours to 10.0 hours furnace time.

19. The process of claim 11, wherein the second heating step comprises heating the rotary-forged nickel-base alloy workpiece in a furnace operating at 1750°F to 1925°F for 4.0 hours to 8.0 hours furnace time.

20. The process of claim 11, further comprising:

vacuum induction melting feed materials to form a nickel-base alloy ingot;

remelting the nickel-base alloy ingot to form a refined nickel-base alloy ingot, wherein the remelting comprises at least one remelting operation selected from the group consisting of vacuum arc remelting and electroslag remelting; and

press forging the refined nickel-base alloy ingot to form the nickel-base alloy workpiece.

21. The process of claim 11, further comprising, after the two heating steps and the two working steps:

heating the nickel-base alloy workpiece at a temperature of at least 1800°F, but no greater than a $M_{23}C_6$ carbide solvus temperature of the nickel-base alloy, for at least 3.0 hours time-at-temperature; and

water quenching the workpiece.

22. The process of claim 11, further comprising, after the two heating steps and the two forging steps:

aging the nickel-base alloy workpiece at a temperature of 1300°F to 1400°F for at least 3.0 hours time-at-temperature; and

air cooling the workpiece to ambient temperature.

23. A product produced by the process of claim 11.

24. The product of claim 23, wherein the product comprises a long product selected from the group consisting of a rod, a round bar, and a rectangular bar.

25. The product of claim 23, wherein the product comprises equiaxed grains with a grain size of ASTM No. 3.0 to 9.0, a uniform grain size distribution, intergranular $M_{23}C_6$ carbide precipitates uniformly distributed on metallographically observable grain boundaries, and substantially no metallographically observable intragranular $M_{23}C_6$ carbide precipitates.