CLAIMS

1. A gold alloy composition comprising Magnesium and one or more metals selected from a group consisting of zirconium and Titanium for jewellery manufacture, the gold alloy composition comprising:
    - 75 to 99.5% by weight of Gold,
    - 0.01 to 1.5 % by weight of Magnesium,
    - 0.01 to 1.5 % by weight of Zirconium, and/or
    - 0.01 to 1.5 % by weight of Titanium, and/or
    - 0 to 24.98% by weight of Copper,
    - 0 to 24.98% by weight of Zinc,
    - 0 to 24.98% by weight of Silver.

2. The Gold alloy composition as claimed in claim 1, wherein the gold alloy composition is an 18-carat Gold alloy comprising:
    - 75 to75.5% by weight of Gold,
    - 0.01 to 1.5 % by weight of Magnesium,
    - 0.01 to 1.5 % by weight of Titanium,
    - 0.01 to 1.5 % by weight of Zirconium,
    - 0 to 24.97% by weight of Copper,
    - 0 to 24.97% by weight of Zinc, and
    - 0 to 24.97% by weight of Silver.

3. The Gold alloy composition as claimed in claim 1, wherein the gold alloy composition is a 21-carat Gold alloy comprising:
    - 87.5 to 88% by weight of Gold,
    - 0.01 to 1.5 % by weight of Magnesium,
    - 0.01 to 1.5 % by weight of Titanium,
    - 0.01 to 1.5 % by weight of Zirconium,
    - 0 to 12.47 % by weight of Copper,
    - 0 to 12.47 % by weight of Zinc, and
    - 0 to 12.47 % by weight of Silver.

4. The Gold alloy composition as claimed in claim 1, wherein the gold alloy is a 22-carat Gold alloy composition comprising:
    - 91.6 to 92% by weight of Gold,

- 0.01 to 1.5 % by weight of Magnesium,
- 0.01 to 1.5 % by weight of Titanium,
- 0.01 to 1.5 % by weight of Zirconium
- 0 to 8.37% by weight of Copper,
- 0 to 8.37% by weight of Zinc, and
- 0 to 8.37% by weight of Silver.

5. The Gold alloy composition as claimed in claim 1, wherein the gold alloy is a 23-carat Gold alloy composition comprising:
    - 95.8 to 97% by weight of Gold,
    - 0.01 to 1.4 % by weight of Magnesium,
    - 0.01 to 1.4 % by weight of Titanium,
    - 0.01 to 1.4 % by weight of Zirconium
    - 0 to 4.17% by weight of Copper,
    - 0 to 4.17%by weight of Zinc, and
    - 0 to 4.17% by weight of Silver.

6. The Gold alloy composition as claimed in claim 1, wherein the gold alloy is a 24-carat Gold alloy composition comprising:
    - 97 to 99.5 % by weight of Gold,
    - 0.2 to 1.45 % by weight of Magnesium,
    - 0.15 to 1.4 % by weight of Titanium,
    - 0.15 to 1.4% by weight of Zirconium.

7. The Gold alloy composition as claimed in anyone of the claims 1 to 6, wherein the gold alloy composition has a specific gravity in the range of 14 to 19.5 g/cc; preferably 14.67g/cc, 16.502g/cc, 17.057g/cc, 17.88 g/cc and 18.771 g/cc for 18, 21, 22, 23 and 24-carat gold alloy respectively; the hardness in the range or 75 to 260 Vickers HV-0.05 ASM F 384-11; preferably 240-260, 200-225, 170-195, 125-155 and 75-100 Vickers HV-0.05 ASM F 384-11 for 18, 21, 22, 23 and 24-carat gold alloy respectively.

8. The Gold alloy composition as claimed in claim 1,
    wherein the gold alloy is a greenish yellow 18-carat Gold alloy comprising;
    - 75 to 75.5% by weight of Gold,
    - 0.01 to 1.5 % by weight of Zirconium,
    - 0.01 to 1.5 % by weight of Magnesium,

- 0 to 24.98% by weight of Copper,
- 0 to 24.98% by weight of Zinc, and
- 0 to 24.98% by weight of Silver; Or

wherein the gold alloy is a pale yellow 18-carat Gold alloy comprising;

- 75 to 75.5% by weight of Gold,
- 0.01 to 1.5 % by weight of Magnesium,
- 0.01 to 1.5 % by weight of Titanium,
- 0 to 24.98% by weight of Copper,
- 0 to 24.98% by weight of Zinc, and
- 0 to 24.98% by weight of Silver.

9. The Gold alloy composition as claimed in claim 8, wherein the gold alloy has a specific gravity in the range of 14 to 15 g/cc; preferably 14.75-g/cc and 14.74 g/cc for Zr-Mg and Ti-Mg of the 18-carat gold alloy respectively; hardness in the range of 235 to 265 Vickers HV-0.05 ASM F 384-11; preferably 235-255 and 245-255 Vickers HV-0.05 ASM F 384-11 for Zr-Mg and Ti-Mg of the 18-carat gold alloy respectively.

10. The Gold alloy composition as claimed in claim 1,

wherein the gold alloy is a greenish yellow 21 carat Gold alloy comprising;

- 87.5 to 88% by weight of Gold,
- 0.01 to 1.5 % by weight of Zirconium,
- 0.01 to 1.5 % by weight of Magnesium,
- 0 to 12.48 % by weight of Copper,
- 0 to 12.48 % by weight of Zinc, and
- 0 to 12.48 % by weight of Silver; or

wherein the gold alloy is a pale yellow 21 carat Gold alloy comprising;

- 87.5 to 88% by weight of Gold,
- 0.01 to 1.5 % by weight of Magnesium,
- 0.01 to 1.5 % by weight of Titanium,
- 0 to 12.48 % by weight of Copper,
- 0 to 12.48 % by weight of Zinc, and
- 0 to 12.48 % by weight of Silver.

11. The Gold alloy composition as claimed in claim 10, wherein the gold alloy has a specific gravity in the range of 16 to 17 g/cc; preferably 16.55-g/cc, 16.51 g/cc for Zr-Mg and Ti-Mg of the 21-carat combinations respectively; hardness in the range or 200 to 230 Vickers HV-0.05 ASM F 384-11; preferably 200-210 and 200-225 Vickers HV-0.05 ASM F 384-11 for Zr-Mg and Ti-Mg of the 21-carat gold alloy respectively.

12. The Gold alloy composition as claimed in claim 1,

wherein the gold alloy is a greenish yellow 22 carat Gold alloy comprising;

- 91.6 to 92% by weight of Gold,
- 0.01 to 1.5 % by weight of Zirconium,
- 0.01 to 1.5 % by weight of Magnesium,
- 0 to 8.38% by weight of Copper,
- 0 to 8.38% by weight of Zinc, and
- 0 to 8.38% by weight of Silver; Or

wherein the gold alloy is a pale yellow 22 carat Gold alloy comprising

- 91.6 to 92% by weight of Gold,
- 0.01 to 1.5 % by weight of Magnesium,
- 0.01 to 1.5 % by weight of Titanium,
- 0 to 8.38% by weight of Copper,
- 0 to 8.38% by weight of Zinc, and
- 0 to 8.38% by weight of Silver.

13. The Gold alloy composition as claimed in claim 12, wherein the gold alloy has a specific gravity in the range of 17 to 18 g/cc; preferably 17.14-g/cc and 17.08 g/cc for Zr-Mg and Ti-Mg of the 22-carat gold alloy respectively; hardness in the range of 170 to 205 Vickers HV-0.05 ASM F 384-11; preferably 190- 205 and 170-195 Vickers HV-0.05 ASM F 384-11 for Zr-Mg and Ti-Mg of the 22-carat gold alloy respectively.

14. The Gold alloy composition as claimed in claim 1,

wherein the gold alloy is a greenish yellow 23-carat Gold alloy comprising:

- 95.8 to 97% by weight of Gold,
- 0.01 to 1.5 % by weight of Zirconium,
- 0.01 to 1.5 % by weight of Magnesium,
- 0 to 4.18% by weight of Copper,
- 0 to 4.18%by weight of Zinc, and

- 0 to 4.18% by weight of Silver; Or

wherein the gold alloy is a pale yellow 23-carat Gold alloy comprising:

- 95.8 to 97% by weight of Gold,
- 0.01 to 1.5 % by weight of Magnesium,
- 0.01 to 1.5 % by weight of Titanium,
- 0 to 4.18% by weight of Copper,
- 0 to 4.18%by weight of Zinc, and
- 0 to 4.18% by weight of Silver.

15. The Gold alloy composition as claimed in claim 14, wherein the gold alloy has a specific gravity in the range of 17.5 to 18.5 g/cc; preferably 17.97-g/cc and 17.92 g/cc for Zr-Mg and Ti-Mg of the 23-carat gold alloy respectively; a hardness in the range of 125 to 155 Vickers HV-0.05 ASM F 384-11; preferably 125- 135 and 135-150 Vickers HV-0.05 ASM F 384-11 for Zr-Mg and Ti-Mg of the 23-carat gold alloy respectively.

16. The Gold alloy as claimed in claim 1,

wherein the gold alloy is a greenish yellow 24-carat Gold alloy comprising:

- 97 to 99.5 % by weight of Gold,
- 0.01 to 1.5 % by weight of Zirconium, and
- 0.01 to 1.5 % by weight of Magnesium; Or

wherein the gold alloy is a pale yellow 24-carat Gold alloy comprising:

- 97 to 99.5 % by weight of Gold,
- 0.1 to 1.5 % by weight of Magnesium, and
- 0. 1 to 1.5 % by weight of Titanium.

17. The Gold alloy composition as claimed in claim 16, wherein the gold alloy has a specific gravity in the range of 18.5 to 19.5 g/cc; preferably 18.73g/cc, 18.67g/cc for Zr-Mg and Ti-Mg of the 24-carat gold alloy respectively; a hardness in the range of 75 to 105 Vickers HV-0.05 ASM F 384-11; preferably 80-95 and 75-100 Vickers HV-0.05 ASM F 384-11 for Zr-Mg and Ti-Mg of the 24-carat gold alloy respectively.

~~18. The Gold alloy composition as claimed in claim 1, wherein the gold alloy does not comprise Magnesium and wherein the gold alloy is a whitish yellow 21-carat Gold alloy comprising:~~

- ~~87.5 to 88% by weight of Gold,~~

- ~~0.01 to 1.5 % by weight of Zirconium,~~
- ~~0.01 to 1.5 % by weight of Titanium,~~
- ~~0 to 12.48 % by weight of Copper,~~
- ~~0 to 12.48 % by weight of Zinc, and~~
- ~~0 to 12.48 % by weight of Silver.~~

19. ~~The Gold alloy composition as claimed in claim 1, wherein the gold alloy does not comprise Magnesium and wherein the gold alloy is a whitish yellow 22 carat Gold alloy comprising:~~
    - ~~91.6 to 92% by weight of Gold,~~
    - ~~0.01 to 1.5 % by weight of Zirconium,~~
    - ~~0.01 to 1.5 % by weight of Titanium,~~
    - ~~0 to 8.38% by weight of Copper,~~
    - ~~0 to 8.38% by weight of Zinc, and~~
    - ~~0 to 8.38% by weight of Silver.~~

20. ~~The Gold alloy composition as claimed in claim 1, wherein the gold alloy does not comprise Magnesium and wherein the gold alloy is a whitish yellow 23 carat Gold alloy comprising:~~
    - ~~95.8 to 97% by weight of Gold,~~
    - ~~0.01 to 1.5 % by weight of Zirconium,~~
    - ~~0.01 to 1.5 % by weight of Titanium,~~
    - ~~0 to 4.18% by weight of Copper,~~
    - ~~0 to 4.18%by weight of Zinc, and~~
    - ~~0 to 4.18% by weight of Silver.~~