CLAIMS

1. A titanium sputtering target, comprising a recrystallized structure having an average crystal grain diameter of 1 μm or less, wherein the titanium sputtering target has a purity of 4N (99.99% by mass) or more.

2. The titanium sputtering target according to claim 1, wherein the titanium sputtering target has a Vickers hardness of 140 Hv or more.

3. A method of producing the titanium sputtering target as defined in claims 1 or 2, the method comprising the steps of:

subjecting a cut titanium ingot having a purity of 4N (99.99% by mass) or more to strain processing to provide a processed sheet having a total strain amount of 2 or more;

subjecting the processed sheet to cold rolling at a rolling ratio of 30% or more to provide a rolled sheet; and

subjecting the rolled sheet to a heat treatment at a temperature of 320 °C or less.

4. The method for producing the titanium sputtering target according to claim 3, wherein a processing temperature in the strain processing is 500 °C or less.

5. The method for producing the titanium sputtering target according to claim 3 or 4, wherein the strain processing is multidirectional forging.

6. The method for producing the titanium sputtering target according to any one of claims 3 to 5, wherein a rolling ratio in the cold rolling is more than 70%.

7. The method for producing the titanium sputtering target according to any one of claims 3 to 6, wherein a total strain amount of the processed sheet is more than 3.

8. A method for producing a titanium-containing thin film, the method comprising using the titanium sputtering target according to claim 1 or 2 as a sputtering source.