DESCRIPTION

[0008] As a result of intense study to achieve the foregoing object, the present inventors devised the production process to suppress the surface oxidation of the raw material powder. As a result of discovering that a relatively large amount of Al and Si is contained in Co-B, Fe-B, and Co-Fe-B, found that it is possible to prevent these impurities from adsorbing to the raw material powder during the sintering process and reacting with oxygen to form oxides by reducing these impurities as much as possible, and thereby considerably reduce the generation of particles caused thereby. The present application provides the following invention based on the foregoing discovery.

[Solution to Problem]

1) A magnetic material sputtering target formed from a sintered body containing at least Co and/or Fe and B, and containing B in an amount of 10 to 50 at%, wherein a total content of Al and Si is 100 wtppm or less, and an oxygen content is 100 wtppm or less.

2) The magnetic material sputtering target according to 1) above, wherein a total content of Al, Ba, Hf, Li, Mg, Si, Sr, Ti and Zr is 100 wtppm or less.

3) A magnetic material sputtering target formed from a sintered body containing at least Co and/or Fe and B, and containing B in an amount of 10 to 50 at%, wherein a total content of Al, Ba, Hf, Li, Mg, Si, Sr, Ti and Zr is 100 wtppm or less, and an oxygen content is 100 wtppm or less.

4) A method of producing a magnetic material sputtering target, wherein a Co raw material and/or an Fe raw material and a B raw material are subject to melting and casting to prepare an alloy ingot, the alloy ingot is thereafter subject to gas atomization to prepare a raw material powder, and the raw material powder is thereafter sintered to obtain a target, and wherein the target is formed from a sintered body containing at least Co and/or Fe and B, and containing B in an amount of 10 to 50 at%, wherein a total content of Al and Si is 100 wtppm or less, and an oxygen content is 100 wtppm or less.

5) A method of producing a magnetic material sputtering target, wherein a Co raw material and/or an Fe raw material and a B raw material are subject to melting and casting to prepare an alloy ingot, the alloy ingot is thereafter subject to gas atomization to prepare a raw material powder, and the raw material powder is thereafter sintered to obtain a target, and wherein the target is formed from a sintered body containing at least Co and/or Fe and B, and containing B in an amount of 10 to

50 at%, wherein a total content of Al, Ba, Hf, Li, Mg, Si, Sr, Ti and Zr is 100 wtppm or less, and an oxygen content is 100 wtppm or less.

6) The method of producing a magnetic material sputtering target according to 4) or 5) above, wherein a final solidified part of the alloy ingot obtained via melting and casting is cut, and a remainder of the ingot is subject to gas atomization to prepare the raw material powder.

7) The method of producing a magnetic material sputtering target according to any one of 4) to 6) above, wherein a grain size of the raw material powder is 53 to 300 μm.

[Effects of Invention]

[0009] The magnetic material sputtering target of the present invention has a low content of oxygen as a gas impurity in the target, and a low content of metal impurities (in particular Al and Si) which tend to form oxides. Consequently, the present invention yields superior effects of being able to suppress the generation of particles caused by oxides, improve the yield upon producing thin films and the like, and stabilize the device characteristics of magnetic heads, MRAMs and other magnetic devices.

CLAIMS

[Claim 1] A magnetic material sputtering target formed from a sintered body containing at least Co and/or Fe and B, and containing B in an amount of 10 to 50 at%, wherein a total content of Al and Si is 100 wtppm or less, and an oxygen content is 100 wtppm or less.

[Claim 2] The magnetic material sputtering target according to claim 1, wherein a total content of Al, Ba, Hf, Li, Mg, Si, Sr, Ti and Zr is 100 wtppm or less.

[Claim 3] A magnetic material sputtering target formed from a sintered body containing at least Co and/or Fe and B, and containing B in an amount of 10 to 50 at%, wherein a total content of Al, Ba, Hf, Li, Mg, Si, Sr, Ti and Zr is 100 wtppm or less, and an oxygen content is 100 wtppm or less.

[Claim 4] A method of producing a magnetic material sputtering target, wherein a Co raw material and/or an Fe raw material and a B raw material are subject to melting and casting to prepare an alloy ingot, the alloy ingot is thereafter subject to gas atomization to prepare a raw material powder, and the raw material powder is thereafter sintered to obtain a target, and wherein the target is formed from a sintered body containing at least Co and/or Fe and B, and containing B in an amount of 10 to 50 at%, wherein a total content of Al and Si is 100 wtppm or less, and an oxygen content is 100 wtppm or less.

[Claim 5] A method of producing a magnetic material sputtering target, wherein a Co raw material and/or an Fe raw material and a B raw material are subject to melting and casting to prepare an alloy ingot, the alloy ingot is thereafter subject to gas atomization to prepare a raw material powder, and the raw material powder is thereafter sintered to obtain a target, and wherein the target is formed from a sintered body containing at least Co and/or Fe and B, and containing B in an amount of 10 to 50 at%, wherein a total content of Al, Ba, Hf, Li, Mg, Si, Sr, Ti and Zr is 100 wtppm or less, and an oxygen content is 100 wtppm or less.

[Claim 6] The method of producing a magnetic material sputtering target according to claim 4 or claim 5, wherein a final solidified part of the alloy ingot obtained via melting and casting is cut, and a remainder of the ingot is subject to gas atomization to prepare the raw material powder.

[Claim 7] The method of producing a magnetic material sputtering target according to any one of claims 4 to 6, wherein a grain size of the raw material powder is 53 to 300 μm.