CLAIMS

1. A reflective mask blank having a multilayer reflective film and an absorber film in this order on a substrate,

wherein the absorber film includes a material including a first material having a refractive index n of 0.99 or more for EUV light and a second material having an extinction coefficient k of 0.035 or more for EUV light,

wherein a phase difference of EUV light transmitted through the absorber film when compared with EUV light transmitted through a vacuum is 150 degrees or less.

2. The reflective mask blank according to claim 1, wherein a refractive index n of the absorber film for EUV light is 0.955 or more, and an extinction coefficient k of the absorber film for EUV light is 0.03 or more.

3. The reflective mask blank according to claim 1 or 2, wherein the first material is a material containing at least one selected from aluminum (Al), germanium (Ge), and magnesium (Mg).

4. The reflective mask blank according to any one of claims 1 to 3, wherein the second material is a material containing at least one selected from nickel (Ni) and cobalt (Co).

5. The reflective mask blank according to any one of claims 1 to 4, wherein the first material is aluminum (Al), and content of the aluminum (Al) in the absorber film is 10 to 90 atomic%.

6. A reflective mask having an absorber pattern in which the absorber film in the reflective mask blank according to any one of claims 1 to 5 is patterned.

7. A method of manufacturing a reflective mask, comprising: forming an absorber pattern by patterning the absorber film of the reflective mask blank according to any one of claims 1 to 5 by dry etching.

8. A method of manufacturing a semiconductor device, the method comprising a step of setting the reflective mask according to claim 6 in an exposure apparatus having an exposure light source that emits EUV light and transferring a transfer pattern to a resist film formed on a transfer-receiving substrate.