CLAIMS

1. A reflective mask blank comprising a multilayer reflective film and a phase shift film for shifting a phase of EUV light on a substrate in this order,

wherein the phase shift film comprises a first layer and a second layer, the first layer comprises a material containing at least one or more elements of tantalum (Ta) and chromium (Cr), and the second layer comprises a material comprising a metal containing ruthenium (Ru) and at least one or more elements of chromium (Cr), nickel (Ni), ~~cobalt (Co),~~ vanadium (V), ~~niobium (Nb), molybdenum (Mo),~~ and tungsten (W)~~, and rhenium (Re)~~.

2. The reflective mask blank according to claim 1, wherein the second layer comprises a material comprising a metal containing ruthenium (Ru) and at least one or more elements of chromium (Cr), and nickel (Ni)~~, and cobalt (Co)~~.

3. The reflective mask blank according to claim 1 or 2, further comprising a protective film between the multilayer reflective film and the phase shift film, wherein the protective film is made of a material containing ruthenium (Ru), and the first layer and the second layer are layered in this order on the protective film.

4. The reflective mask blank according to claim 1 or 2, further comprising a protective film between the multilayer reflective film and the phase shift film, wherein the protective film is made of a material containing silicon (Si) and oxygen (O), and the second layer and the first layer are layered in this order on the protective film.

5. A reflective mask comprising a phase shift pattern obtained by patterning the phase shift film in the reflective mask blank according to any one of claims 1 to 4.

6. A method of manufacturing a reflective mask,

wherein the first layer in the reflective mask blank according to any one of claims 1 to 4 comprises a material containing tantalum (Ta), and a phase shift pattern is formed by patterning the second layer by a dry etching gas comprising a chlorine-based gas and an oxygen gas and then by patterning the first layer by a dry etching gas comprising a halogen-based gas comprising no oxygen gas.

7. A method of manufacturing a reflective mask,

wherein the first layer in the reflective mask blank according to any one of claims 1 to 4 comprises a material containing chromium (Cr), and a phase shift pattern is formed by patterning the second layer by a dry etching gas comprising an oxygen gas and then by patterning the first layer with a dry etching gas comprising a chlorine-based gas comprising no oxygen gas.

8. A method of manufacturing a reflective mask,

wherein the first layer in the reflective mask blank according to any one of claims 1 to 4 comprises a material containing chromium (Cr), and a phase shift pattern is formed by patterning the second layer and the first layer by a dry etching gas comprising a chlorine-based gas and an oxygen gas.

9. A method of manufacturing a semiconductor device, the method comprising the reflective mask according to claim 5 in an exposure apparatus comprising an exposure light source that emits EUV light, and transferring a transfer pattern to a resist film formed on a transferred substrate.