containing Rh and at least one element selected from a group consisting of N, O, C, B, Ru, Nb, Mo, Ta, Ir, Pd, Zr, and Ti, the rhodium-based material containing 50 at% to 100 at% of Rh; and a lower layer containing at least one element selected from a group consisting of Ru, Nb, Mo, Zr, Y, C, and B, and satisfying a condition $k < -0.15n + 0.16$ in an EUV region [in the formula, n represents a refractive index and k represents an extinction coefficient].

EFFECT OF THE INVENTION

[0010]

According to an aspect of the present disclosure, it is possible to provide a configuration including a protection film which has excellent etching resistance and in which mixing with a multilayer reflective film is suppressed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011]

[Figure 1] FIG. 1 is a cross-sectional view showing a reflective mask blank according to an embodiment.

[Figure 2] FIG. 2 is a cross-sectional view showing a reflective mask according to the embodiment.

[Figure 3] FIG. 3 is a cross-sectional view of the reflective mask for illustrating an example of EUV light reflected by the reflective mask of FIG. 2.

[Figure 4] FIG. 4 is a diagram showing an example of a refractive index and an extinction coefficient of each substance.

[Figure 5] FIG. 5 is a flowchart showing a method of manufacturing a reflective mask blank according to the embodiment.