

REFLECTIVE PHOTOMASK BLANK, AND METHOD FOR MANUFACTURING REFLECTIVE PHOTOMASK

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ABSTRACT

A reflective photomask blank including a substrate, a multilayer reflection film on the substrate that reflects exposure light being light in extreme ultraviolet range, a protection film on the multilayer reflection film, a light absorbing film in contact with the protection film that absorbs the exposure light, and a hard mask film in contact with the light absorbing film is provided. The protection film consists of a first layer provided at the substrate-side, and a second layer provided at the side remote from the substrate, the second layer is composed of a material resistant to dry etching capable of etching of the light absorbing film, the light absorbing film has a phase shift function and is formed of a single layer or multiple layers, and the single layer and each layer constituting the multiple layers are composed of a material containing ruthenium as a main component.

[FIG. 1]