Reflective Photomask Blank, and Method for Manufacturing Reflective Photomask

ABSTRACT

A reflective photomask blank includes a substrate, a multilayer reflection film that reflects exposure light being light in extreme ultraviolet range, a protection film, a light-absorbing film that absorbs the exposure light, and a hard mask film that is formed in contact with the light-absorbing film. The hard mask film is constituted by a multilayer including a first layer disposed at the side remotest from the substrate, and is composed of a material that is resistant to chlorine-based dry etching, and removable by fluorine-based dry etching, and a second layer composed of a material that is resistant to fluorine-based dry etching, and removable by chlorine-based dry etching. An etching clear time of the light-absorbing film on fluorine-based dry etching under one condition is longer than an etching clear time of the first layer on the fluorine-based dry etching under the same condition.

[Figure 1]