

ABSTRACT

Provided is a substrate with a multilayer reflective film, the substrate being used for manufacturing a reflective mask blank and a reflective mask each having a multilayer reflective film having a high reflectance to exposure light and a low background level during defect inspection.

A substrate with a multilayer reflective film 110 comprises a substrate 1 and a multilayer reflective film 5. The multilayer reflective film 5 is formed of a multilayer film in which a low refractive index layer and a high refractive index layer are alternately layered on the substrate 1. The multilayer reflective film 5 comprises at least one additive element selected from hydrogen (H), deuterium (D), and helium (He). The additive element in the multilayer reflective film 5 has an atomic number density of 0.006 atom/nm³ or more and 0.50 atom/nm³ or less.