

[DOCUMENT] Abstract

Provided is a mask blank in which a light shielding film which is a single layer film formed of a silicon nitride-based material has high light shielding performance against ArF exposure light and is capable of reducing EMF bias of a pattern of the light shielding film. The mask blank includes the light shielding film on a transparent substrate. The light shielding film has an optical density of 3.0 or greater to ArF exposure light. A refractive index n and an extinction coefficient k of the light shielding film to ArF exposure light simultaneously satisfy relationships defined by Formulas (1) and (2) below.

$$n \leq 0.0733 \times k^2 + 0.4069 \times k + 1.0083 \quad \text{Formula (1)}$$

$$n \geq 29.316 \times k^2 - 92.292 \times k + 72.671 \quad \text{Formula (2)}$$