CLAIMS

1. A photomask blank, ~~wherein~~comprising

a light-shielding film having a monolayer structure or a multilayer structure is provided on a transparent substrate, and a hard mask film on the light-shielding film, wherein

the light-shielding film has an optical density of 2 or higher and 4 or lower and has a reflection-preventing function,

the light-shielding film includes at least one of layers made of a chromium-containing material, ~~and~~

the at least one of the layers made of a chromium-containing material is made of a chromium-containing material including tin~~.~~, and

the hard mask film has etching resistance to chlorine-containing dry etching including oxygen.

2. The photomask blank according to claim 1, wherein

the chromium-containing material including tin has a content of tin of not under 0.01 times and not over 2 times than the content of chromium in atomic ratio.

3. The photomask blank according to claim 1 or 2, wherein

all the layers of the light-shielding film are made of a chromium-containing material.

4. The photomask blank according to claim 3, wherein

all the layers of the light-shielding film are made of a chromium-containing material containing the tin.

5. The photomask blank according to any one of claims 1 to 4, wherein

the chromium-containing material is any one of a chromium metal, chromium oxide, chromium nitride, chromium carbide, chromium oxynitride, chromium oxide carbide, chromium nitride carbide, and chromium oxide nitride

carbide, the chromium-containing material including tin is any one of a tin-chromium metal, tin-chromium oxide, tin-chromium nitride, tin-chromium carbide, tin-chromium oxynitride, tin-chromium oxide carbide, tin-chromium nitride carbide, and tin-chromium oxide nitride carbide.

~~6. The photomask blank according to any one of claims 1 to 5, wherein~~

~~a hard mask film on the light-shielding film, where the hard mask film has etching resistance to chlorine-containing dry etching including oxygen.~~

~~7.~~6. The photomask blank according to any one of claims ~~6~~1 to 5, wherein

the hard mask film contains silicon, and further contains at least one of nitrogen and oxygen as a light element.

~~8.~~7. A method for manufacturing a photomask using a blank described in any one of claims 1 to ~~7~~6, the method comprising a step of:

subjecting the layer made of the chromium-containing material including tin to chlorine-containing dry etching including oxygen to form a light-shielding film pattern.

~~9.~~8. A~~The~~ method ~~for manufacturing a phase shift mask using a blank described in any one of~~ according to claim~~s 1 to~~ 7~~, the method comprising a step of:~~

~~subjecting the layer made of the chromium-containing material including tin to chlorine-containing dry etching including oxygen to form a light-shielding film pattern,~~ wherein the photomask is a phase shift mask,

using the light-shielding film pattern obtained ~~by this step~~ as an etching mask, and a phase shift film or a transparent substrate provided under the light-shielding film is subjected to fluorine-containing dry etching to carry out pattern transfer on the transparent substrate.