CLAIMS

1. A method of inspecting defects in a mask blank or a mask blank substrate, wherein

the mask blank or the mask blank substrate has two opposing main surfaces and a side surface perpendicular to the two opposing main surfaces,

one of the main surfaces has an inside region and a peripheral region,

the boundary between the inside region and the peripheral region is located at a distance d from a plane containing the side surface,

the distance d is such that $d \geq 1$ mm, and,

the method of inspecting defects comprises:

carrying out a defect inspection to the inside region by an optical measurement method in which a working distance (WD) is such that $WD \leq 0.5$ mm, and

carrying out a defect inspection to the peripheral region by an optical measurement method in which the working distance (WD) is such that $WD > 0.5$ mm,

the optical measurement method for the defect inspection to the peripheral region uses a dark field optical system, and

the optical measurement method for the defect inspection to the inside region uses a bright field optical system.

~~2. The method of inspecting defects according to claim 1, wherein the optical measurement method for the defect inspection to the peripheral region uses a dark field optical system.~~

~~3. The method of inspecting defects according to claim 1 or 2, wherein the optical measurement method for the defect inspection to the inside region uses a bright field optical system.~~

~~4~~2. The method of inspecting defects according to ~~any of~~ claim~~s~~ 1 ~~to 3~~, wherein the defect inspection to the inside region inspects the inside region with an optical system having an optical magnification factor of not less than 10X.

~~5~~3. The method of inspecting defects according to ~~any of~~ claim~~s~~ 1 ~~to 4~~ or 2, wherein the defect inspection to the peripheral region inspects the peripheral region with an optical system having an optical magnification factor of not more than 5X.

~~6~~4. The method of inspecting defects according to any of claims 1 to ~~5~~ 3, wherein the mask blank or the mask blank substrate further has a chamfered surface between the main surface and the side surface, and a height difference h between a ridgeline of the side surface and the chamfered surface and a ridgeline of the main surface and the chamfered surface in a direction perpendicular to the main surfaces is such that $h \leq 0.5$ mm.

~~7~~5. The method of inspecting defects according to any of claims 1 to ~~6~~ 4, wherein the method of inspecting defects further includes carrying out a defect inspection to at least one of the side surface and the other main surface by an optical measurement method in which the working distance (WD) is such that WD > 0.5 mm.

~~8~~6. The method of inspecting defects according to any of claims 1 to ~~7~~ 5, wherein carrying out the defect inspection by the optical measurement method in which the working distance (WD) is such that WD > 0.5 mm is a final inspection.

~~9~~7. A method of manufacturing a mask blank, comprising:

preparing a mask blank substrate having two opposing main surfaces and a side surface perpendicular to the two opposing main surfaces,

forming a thin film for forming a pattern on one of the main surfaces of the mask blank substrate, and

carrying out a defect inspection to a surface of the substrate with the thin film having the thin film formed thereon and selecting a mask blank from the substrate with the thin film using the results of the defect inspection; wherein,

one of the main surfaces of the substrate with the thin film has an inside region and a peripheral region,

the boundary between the inside region and the peripheral region is located at a distance d from a plane containing the side surface,

the distance d is such that d ≥ 1 mm, and

carrying out the defect inspection to the surface of the substrate with the thin film comprises:

carrying out a defect inspection to the inside region by an optical measurement method in which working distance (WD) is such that WD ≤ 0.5 mm, and

carrying out a defect inspection to the peripheral region by an optical measurement method in which working distance (WD) is such that WD > 0.5 mm,

the optical measurement method for the defect inspection to the peripheral region uses a dark field optical system, and

the optical measurement method for the defect inspection to the inside region uses a bright field optical system.

~~10. The method of manufacturing a mask blank according to claim 9, wherein the optical measurement method for the defect inspection to the peripheral region uses a dark field optical system.~~

~~11. The method of manufacturing a mask blank according to claim 9 or 10, wherein the optical measurement method for the defect inspection to the inside region uses a bright field optical system.~~

~~12~~8. The method of manufacturing a mask blank according to ~~any of~~ claim~~s 9~~

~~to 11~~ 7, wherein the defect inspection to the inside region inspects the inside region with an optical system having an optical magnification factor of not less than 10X.

~~13~~9. The method of manufacturing a mask blank according to ~~any of~~ claim~~s 9 to 12~~ 7 or 8, wherein the defect inspection to the peripheral region inspects the peripheral region with an optical measurement system having a magnification factor of not more than 5X.

~~14~~10. The method of manufacturing a mask blank according to any of claims ~~9~~ 7 to ~~13~~ 9, wherein the mask blank or the mask blank substrate further has a chamfered surface between the main surface and the side surface, and a height difference h between a ridgeline of the side surface and the chamfered surface and a ridgeline of the main surface and the chamfered surface in a direction perpendicular to the main surfaces is such that $h \leq 0.5$ mm.

~~15~~11. The method of manufacturing a mask blank according to any of claims ~~9~~ 7 to ~~14~~ 10, wherein the method of manufacturing mask blank further includes carrying out a defect inspection to at least one of the side surface and the other main surface by an optical measurement method in which the working distance (WD) is such that WD > 0.5 mm.

~~16~~12. The method of manufacturing a mask blank according to any of claims ~~9~~ 7 to ~~15~~ 11, wherein carrying out the defect inspection by the optical measurement method in which the working distance (WD) is such that WD > 0.5 mm is a final inspection.

~~17~~13. A method of manufacturing a transfer mask in which a transfer pattern is formed on the thin film of the mask blank using the mask blank that has been manufactured by the method of manufacturing a mask blank according to any of claims ~~9~~ 7 to ~~16~~ 12.

~~18~~14. A method of manufacturing a semiconductor device in which the transfer pattern is exposed and transferred to a resist film on a semiconductor substrate using the transfer mask manufactured by the method of manufacturing a transfer mask according to claim ~~17~~ 13.