WHAT IS CLAIMED IS:

1. A target assembly for use in a physical vapor deposition chamber the target assembly comprising:

a target backing plate;

a target comprising peripheral edges and a front face defining a target surface extending between the peripheral edges, the target affixed to the target backing plate;

a target shield adjacent the target and surrounding the peripheral edges of the target, the target shield comprising an insulating material, an outer periphery defining a target shield outer diameter and an inner peripheral surface adjacent the peripheral edges of the target; and

a non-insulating outer peripheral fixture secured to the backing plate and comprising an inner diameter, the outer peripheral fixture inner diameter less than the target shield outer diameter and surrounding and adjacent the target shield outer periphery to secure the target shield so that the inner peripheral surface of the target shield is spaced apart from the peripheral edges of the target to provide a gap between the inner peripheral surface of the target shield and the peripheral edges of the target.

2. The target assembly of claim 1, wherein the insulating material comprises a ceramic material.

3. The target assembly of claim 2, wherein the ceramic material exhibits a volume resistivity greater than or equal to 10^{14} ohm-cm.

4. The target assembly of claim 3, wherein the ceramic material comprises aluminum oxide.

5. The target assembly of claim 1, further comprising an O-ring disposed between the outer peripheral fixture and the target shield.

6. The target assembly of claim 5, wherein the target comprises a non-insulating material, a metal or a metalloid.

7. The target assembly of claim 5, wherein the target comprises silicon or molybdenum.

8. The target assembly of claim 1, wherein the outer peripheral fixture inner diameter is dimensioned to provide a distance of at least 2.54 cm between the target peripheral edge and the outer peripheral fixture to prevent arcing between the outer peripheral fixture and the target peripheral edge, and the gap is in a range of 0.0254 cm to 0.1016 cm .

9. A physical vapor deposition apparatus comprising:

a chamber having a wall defining a process area including a substrate support; and

a target assembly including:

a target backing plate;

a target comprising peripheral edges and a front face defining a target surface extending between the peripheral edges, the target affixed to the target backing plate;

a power source coupled to the target to sputter material from the target;

a target shield adjacent the target and surrounding the peripheral edges of the target, the target shield comprising an insulating material, an inner peripheral surface adjacent the peripheral edges of the target and an outer periphery defining a target shield outer diameter; and

a non-insulating outer peripheral fixture secured to the backing plate and comprising an inner diameter, the outer peripheral fixture inner diameter less than the target shield outer diameter and surrounds and is adjacent to the target shield outer periphery to secure the target shield so that the inner peripheral surface of the target shield is spaced apart from the peripheral edges of the target to provide a gap between the inner peripheral surface of the target shield and the peripheral edges of the target.

10. The physical vapor deposition apparatus of claim 9, wherein the insulating material comprises a ceramic material.

11. The physical vapor deposition apparatus of claim 10, wherein the ceramic material exhibits a volume resistivity greater than or equal to 10^{14} ohm-cm.

12. The physical vapor deposition apparatus of claim 9, further comprising an O-ring disposed between the outer peripheral fixture and the target shield.

13. The physical vapor deposition apparatus of claim 10, wherein the target comprises a non-insulating material, a metal or a metalloid.

14. The physical vapor deposition apparatus of claim 12, wherein the outer peripheral fixture inner diameter is dimensioned to provide a distance between the target peripheral edge and the outer peripheral fixture of at least 2.54 cm to prevent arcing between the outer peripheral fixture and the target peripheral edge, and the gap is in a range of 0.0254 cm to 0.1016 cm.

15. A method of manufacturing an extreme ultraviolet mask blank comprising:

depositing alternating layers of a first material and a second material reflective of extreme ultraviolet light from a first target assembly and a second target assembly, each of the first target assembly and the second target assembly comprising:

a target backing plate;

a target comprising peripheral edges and a front face defining a target surface extending between the peripheral edges, the target affixed to the target backing plate;

a target shield adjacent the target and surrounding the peripheral edges of the target, the target shield comprising an insulating material and an outer periphery defining a target shield outer diameter; and

a non-insulating outer peripheral fixture secured to the backing plate and comprising an inner diameter, the outer peripheral fixture inner diameter is less than the target shield outer diameter and surrounds and is adjacent to the target shield outer periphery to secure the target shield so that the outer periphery of the target shield is spaced apart from the peripheral edges of the target to provide a gap between the outer periphery of the target shield and the peripheral edges of the target.