

Standard Recipe						P-ALD	
Material	Process	cycle	N2 Purge	cycle	N2 Purge	Cycles	Thickness (nm)
Al <sub>2</sub> O <sub>3</sub>	Thermal	Al 0.1s	4s	H <sub>2</sub> O 0.1s	4s	200	21.68
Al <sub>2</sub> O <sub>3</sub>	Plasma	Al 0.1s	4s	O <sub>2</sub> 15.5s	10s	200	24.8
TiO <sub>2</sub>	Thermal	Ti 0.1s	4s	H <sub>2</sub> O 0.1s	4s	200	9.31
TiO <sub>2</sub>	Plasma	Ti 0.1s	4s	O <sub>2</sub> 15.5s	10s	220	21.2
HfO <sub>2</sub>	Plasma	Hf 1.6s	4s	O <sub>2</sub> 15.5s	10s	200	21
HfO <sub>2</sub>	Thermal	Hf 1.6s	4s	H <sub>2</sub> O 0.1s	4s	200	11.04
ZnO	Plasma	Al 0.1s	4s	O <sub>2</sub> 15.5s	10s	200	21.5
ZnO	Thermal	Al 0.1s	4s	H <sub>2</sub> O 0.1s	4s	390	68.39
TaO	Thermal	Ta 1.6s	4s	H <sub>2</sub> O 0.1s	4s	200	6.96

Thickness/cycle (A/cycle)	Comments
1.084	
1.24	O2 Plasma - 0.5/14.5
0.4655	
0.963636364	O2 Plasma - 0.5/14.5
1.05	O2 Plasma - 0.5/14.5
0.552	
1.075	
1.753589744	
0.348	