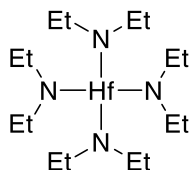


Catalog # 72-7750 Tetrakis(diethylamino)hafnium, 99% (99.99+%-Hf, <0.2% Zr) PURATREM



Thermal Behavior:

- Melting Point: -68°C [1]
- Vapor pressure: 0.2 Torr/90°C [1], 0.1 Torr/96°C, 1 Torr/126°C [2]
- Decomposition: 150°C [2]

Technical Notes:

1. ALD/CVD precursor for hafnium containing film deposition.

| Target Deposit | Deposition Technique | Delivery Temperature | Pressure | Co-reactants | Deposition Temperature | Ref. |
|--------------------|----------------------|----------------------|---------------|--|------------------------|------|
| HfO _x | ALD | 130°C | - | H ₂ O | 50-450°C | 2-4 |
| | PEALD | - | - | ^{PL} O ₂ | 250°C | 5-6 |
| | PEALD | 90°C | 0.5 Torr | ^{PL} O ₂ , ^{PL} N ₂ O | 340°C | 7 |
| | ALD | - | - | O ₃ | 250°C | 8 |
| | ALD | 65°C | - | O ₂ | 250-285°C | 9 |
| HfN _x | ALD | 130°C | 0.2-0.35 Torr | NH ₃ | 150-250°C | 10 |
| HfAlO _x | ALD | 75°C | 1 Torr | TMA, H ₂ O | 225°C | 11 |
| HfSiO _x | ALD | 85°C | 0.6 Torr | Si(O ⁿ Bu) ₄ | 300°C | 12 |
| | ALD | - | - | SiH ₂ (NEt ₂) ₂ , O ₃ | 225°C | 13 |
| | ALD | Octanol/140°C | - | R ⁿ RSiOH H ₂ O or O ₃ | 350°C | 14 |

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