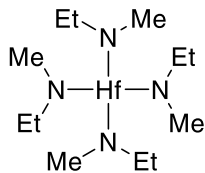


Catalog # 72-7720 Tetrakis(ethylmethylamino)hafnium, 99% (99.99+%-Hf, <0.15% Zr) TEMAH
PURATREM



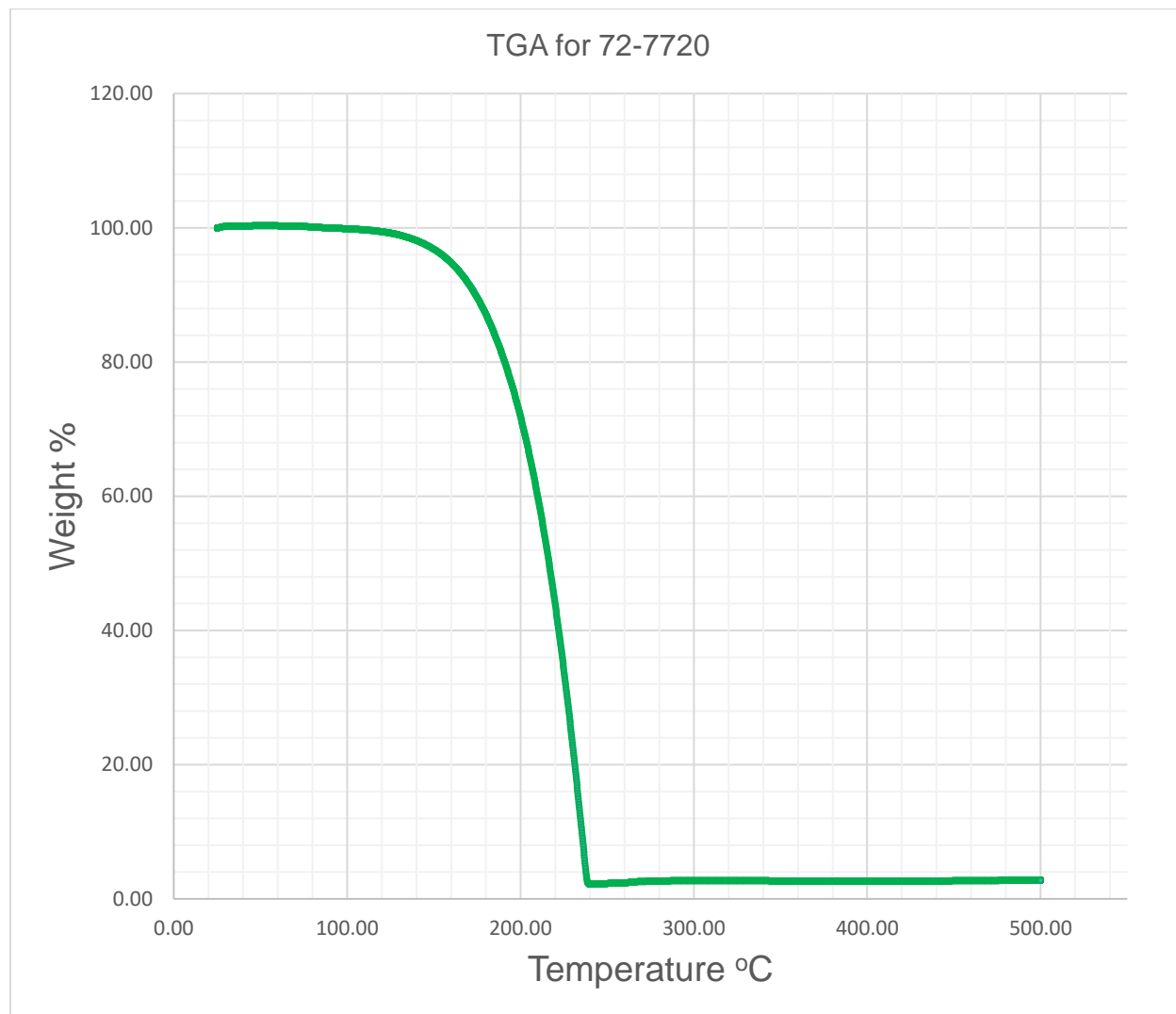
Thermal Behavior:

- Boiling point 79°C/0.1mm
- Decomposition temp.: 140°C [1]
- Vapor pressure: 0.1 Torr/83°C; 1 Torr/113°C [1]
- TGA, see below

Technical Notes:

1. ALD/CVD precursor for Hf thin film deposition.

Target Deposit	Deposition Technique	Delivery Temperature	Pressure	Co-reactants	Deposition Temperature	Ref.
HfO ₂	ALD	60°C	7.5 Torr	H ₂ O O ₃	150-325°C	2
	ALD	115°C	0.1-0.5 Torr		140-400°C	3
Hf ₃ N ₄	ALD	100°C	0.20-0.35 Torr	NH ₃	150-250°C	4
HfF ₄	ALD	67°C	1 Torr	HF·Py	150°C	5
HfS ₂	ALD	120°C	4.5 Torr	H ₂ S ^{Plasma}	150-500°C	6
Hf _x Al _{1-x} O _y	ALD	-	-	AlMe ₃ , H ₂ O	240°C	7
Hf _x Si _{1-x} O ₂	ALD	68°C	0.68 Torr	Si(OC ^t Bu) ₄	210-375°C	8
Hf:ZnO	ALD	80°C	0.1 Torr	Et ₂ Zn, H ₂ O	220°C	9
Hf _{0.5} Zr _{0.5} O ₂	ALD	-	-	Zr(NEtMe) ₄ , O ₂ ^{Plasma}	320°C, 280°C	10-11
PbHf _x Ti _{1-x} O ₃	ALD	82°C	1.8 Torr	Ti(NMe ₂) ₄ , Pb(DMAMP) ₂ , H ₂ O, O ₃	250°C	12



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