ChemWhat®

Ultra-Pure Metal Products

- **Precursor Materials**

  Precursor materials are indispensable key materials in the processes of Chemical Vapor Deposition (CVD) and Atomic Layer Deposition (ALD). They are used in critical thin film deposition steps in semiconductor processes, such as high-K metal gate thin film deposition, barrier layer deposition, and metal interconnect layer deposition.

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- **High-k**

  High-K materials, also known as high dielectric constant (high-k) materials, are electronic materials with a high dielectric constant. Their dielectric constant is greater than the dielectric constant of silicon dioxide (SiO_2), which is 3.9.

TETRAKIS(DIMETHYLAMINO)ZIRCONIUM
CAS: 19756-04-8

TETRAKIS(DIETHYLAMINO)ZIRCONIUM
CAS: 13801-49-5

TETRAKIS(ETHYLMETHYLAMINO)ZIRCONIUM
CAS: 175923-04-3

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- Zirconium amine metal compounds are primarily used in CVD, ALD, and plasma-enhanced atomic layer deposition (PEALD) processes and serve as precursors for producing ZrO2.
- In the fabrication of 45nm transistors, ZrO2 replaces silicon dioxide, significantly reducing leakage current. It is also a high-k insulating material for CMOS and dynamic memory, making it one of the best materials currently available for addressing challenges in dynamic memory and high-definition display technologies.
- It can be used as a precursor for the dielectric layer in resistive random-access memory (ReRAM).
- It can be used as a precursor for coating the cathode in lithium-ion batteries

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Titanium tetrachloride
CAS: 7550-45-0

It can be used as a liquid titanium precursor material for Chemical Vapor Deposition (CVD) of TiN, TiO2, and Ti metal, applied in the production and manufacturing of semiconductor integrated memory.

TETRAKIS(DIMETHYLAMINO)TITANIUM
CAS: 3275-24-9

- TDMAT is a current research hotspot in the fields of ALD and CVD. It can be used as a precursor material for TiO2.
- TiO2 is a very important high-k and metal gate material in technologies below 32nm, and can be used as an electron transport layer material for n-type semiconductors. When doped with other compounds, it can produce dielectric materials with ultra-high dielectric constants and low dielectric losses, which can be used in the manufacturing of small devices for capacitors and random dynamic memory.

TiO2 layers can be prepared into mesoporous structures and dense composite structures, which can improve the film-forming properties of perovskite layers. Nano TiO2 can be used as a photocatalyst material to completely degrade organic pollutants in water.

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Hafnium(IV) choride CAS: 13499-05-3

- Used as a precursor in semiconductors, ultra-high temperature ceramics, high-power LEDs, atomic reactors and other fields
- It is an important raw material for tetrakis(dimethylamino)phenanthium.

Tungsten hexacarbonyl CAS: 14040-11-0

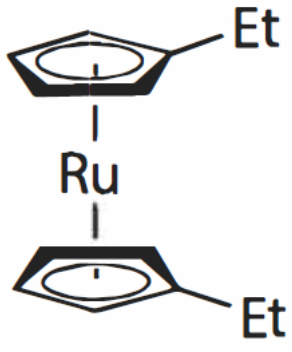
- Tungsten hexacarbonyl can replace WF6 and can be used to prepare films and metal tungsten through atomic layer deposition technology. It can solve the corrosion problems of substrates and equipment and has been applied in display industries such as LCD and OLED.

Molybdenum hexacarbonyl
CAS: 13939-06-5

- The composite deposited film of molybdenum hexacarbonyl and tungsten can be used as the contact material of photovoltaic cells;
- It can also be used as the connection material of integrated circuits;

BIS(ETHYLCYCLOPENTADIENYL)RUTHENIUM(II) CAS: 32992-96-4

- It is an important precursor material for depositing ruthenium metal;
- Ruthenium metal can replace copper interconnects in logic chips, has excellent resistance to thermal degradation, can improve electrical degradation - improve transistor life, has high melting point, low resistivity and other characteristics.



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Tungsten hexacarbonyl
CAS: 14040-11-0
Chromium hexacarbonyl
CAS: 13007-92-6
Molybdenum hexacarbonyl
CAS: 13939-06-5

- Chromium hexacarbonyl, tungsten hexacarbonyl, and molybdenum hexacarbonyl can be used to prepare thin films through laser chemical vapor deposition (LCVD) or chemical vapor deposition (CVD).
- Chromium hexacarbonyl and tungsten hexacarbonyl can be used for defect repair of large-scale integrated circuit photomasks and TFT-LCD panels, respectively.

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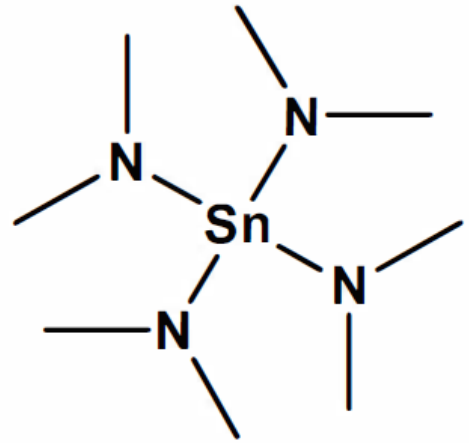
TETRAKIS(DIMETHYLAMINO)TIN
CAS: 1066-77-9

- It can be used as a dosage catalyst and olefin polymerization catalyst for organic synthesis reactions.
- It can be used to manufacture transparent conductive SnO2 thin films by atomic layer deposition (ALD);
- SnO2 has a relatively wide band gap and low hygroscopicity and acid resistance. It can be used as an electron transport layer. It has good surface morphology and high device stability, which is conducive to achieving higher battery performance.



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Product List

CAS	NAME	GRADE
13499-05-3	Hafnium(IV) chloride	3N
19782-68-4	Tetrakis (dimethylamino) hafnium (IV)	6N
19824-55-6	Tetrakis (diethylamino) hafnium (IV)	6N
352535-01-4	Tetrakis (ethylmethyla mi no) hafnium (IV)	6N
19756-04-8	Tetrakis(dimethylamino) Zirconium(IV)	6N
13801-49-5	Tetrakis (diethylamido) Zirconium(IV)	6N
175923-04-3	Tetrakis(ethylmethyla mi no) Zirconium(IV)	6N
7550-45-0	Titanium tetrachloride	3.5N
3275-24-9	Tetrakis (dimethylamino) titanium (IV)	6N
1189047-28-6	B-[2-(9H-Carbazol-9-yl)phenyl]boronic acid	99%min
329210-71-1	2-Chloro-4,5,7-trimethylquinoline	99%min

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CAS	NAME	GRADE
13007-92-6	Chromium hexacarbonyl	4N
19824-59-0	Pentakis (dimethylamino) tantalum(V)	6N
10210-68-1	Cobalt carbonyl	
12078-25-0	Dicarbonylcyclopen-tadienyl cobalt	6N
55940-05-1	BIS(ETHYLCYCLOPENTADIENYL)COBALT(II)	
17786-31-1	Tetracobalt dodecacarbonyl	
14096-82-3	COBALT TRICARBONYL NITROSYL	
177099-51-3	Bis(1,4-di-t-butyl-1,3-diazabutadienyl)cobalt(II) Co(DAD)2	
635680-58-9	BIS(N,N'-DI-IPROPYLACETAMIDINATO) COBALT(II)	
32614-15-6	Cobalt, dicarbonyl[(1,2,3,4,5-η)-1-(trimethylsilyl)-2,4-cyclopentadien-1-yl]-	
56792-69-9	(3,3-dimethyl-1-butyne)dicobalt hexacarbonyl	6N
1066-77-9	TETRAKIS(DIMETHYLAMINO)TIN	6N
15243-33-1	triruthenium dodecacarbonyl	

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CAS	NAME	GRADE
12082-08-5	Benzene chromium tricarbonlyl	
12125-87-0	(methyl benzoate) Tricarbonyl chromium	
12125-72-3	Tricarbonyl (cycloheptatriene chromium	
16800-46-7	ris (Acetonitrile) chromium tricarbonyl	
32874-26-3	(Ethyl benzoate) tricarbonyl chromium	
10170-68-0	Chromium(III) chloride tetrahydrofuran complex (1:3)	
10025-73-7	Chromium trichloride	
14040-11-0	Tungsten hexacarbonyl	4N
13470-14-9	Tungsten pentachloride	
12129-69-0	Mesitylene tungsten tricarbonyl	
10210-68-1	Cobalt carbonyl	4N
16800-45-6	Bis (acetonitrile) tetracarbonyl tungsten(O)	
347145-09-9	Tungsten pentacarbonyl-N-pentylisonitrile	

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CAS	NAME	GRADE
13939-06-5	Molybdenum hexacarbonyl	4N
103933-26-2	Tricarbonyltris (propionitrile) molybdenum	
14126-87-5	Bis(acetonitrile) tetracarbonyl molybdenum(O)	
114460-02-5	Bis(ethylcyclopentadie nyl) magnesium	
556-67-2	Octamethylcyclotetrasiloxane	8.5N
13465-77-5	HEXACHLORODISILANE	6N
7550-45-0	Titanium tetrachloride	7N
27804-64-4	Bis(diethylamino)silane	6N
908831-34-5	Di-iso-propylaminosilane	8N
99-86-5	alpha-Terpinene	8.5N
150-46-9	Triethyl borate	8N
78-40-0	Triethyl phosphate	8N
860435-39-8	2-Bromo-4-tert-butyl-1-iodo-benzene	99%min

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CAS	NAME	GRADE
594-10-5	TRIMETHYLANTIMONY	5.5N
1445-79-0	Trimethylgallium	6N
75-24-1	Trimethylaluminium	6N
3385-78-2	Trimethylindium	6N
923-34-2	Triethylindium	
1115-99-7	Triethylga lii um	6N
102-54-5	Ferrocene	5N
627-54-3	TELLURIUM DIETHYL	6N
558-13-4	Carbon tetrabromide	5.8N
557-20-0	Diethylzinc	6N
78-10-4	Tetraethyl orthosilicate	9.5N
3275-24-9	TETRAKIS(DIMETHYLAMINO)TITANIUM	6N
75-76-3	Tetramethylsilane	8N
617-85-6	TRIETHYLANTIMONY	6N

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CAS	NAME	GRADE
33271-88-4	CpZr(NMe2)3 CpTDMAZ	6N
562-90-3	SILICON TETRAACETATE	8N
32992-96-4	Bis(ethylcyclopenta dienyl) ruthenium(ii)	6N
18177-91-8	Triamminemolybde-num(O) tricarbonyl	
12125-77-8	Cycloheptatriene molybdenum tricarbonyl	
2361613-60-5	2-(4-bromo-1-(5-(tert-butyl)-[1,1'-biphenyl]-2-yl)-1H-benzo[d]imidazol-2-yl)-4,6-di-tert-butylphenol	99%min
14898-67-0	Ruthenium(III) chloride hydrate	
941596-80-1	Cyclopentadienyl Tris(dimethylamino) Hafnium	6N
544-97-8	DIMETHYLZINC	6N
1314-56-3	Phosphorus pentoxide	6N
121-45-9	Trimethyl phosphite	9N
121-43-7	Trimethyl borate	8.5N
512-56-1	Trimethyl phosphate	8.5N

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If you would like to inquire about the prices of our existing products or need assistance with customizing other ultra-pure metal compounds, please contact us using the information below.

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