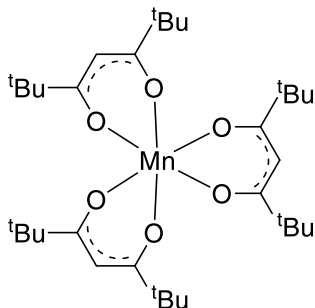


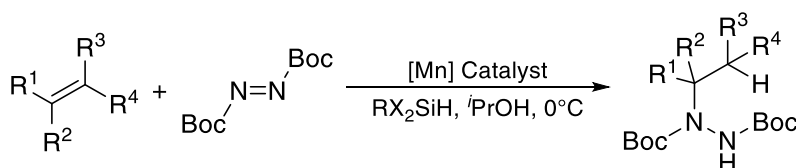
Catalog # 25-5000 Tris(2,2,6,6-tetramethyl-3,5-heptanedionato)manganese(III), 99% [Mn(TMHD)3]



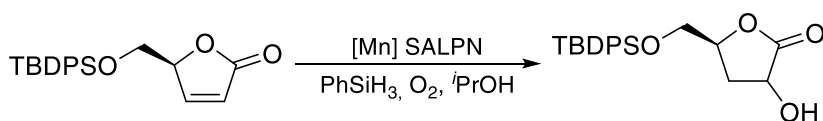
### Catalysis Applications

#### Technical Notes:

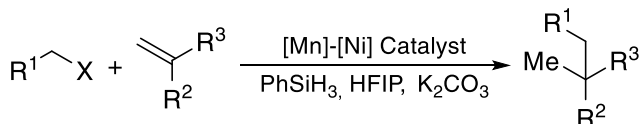
1. Catalyst used for hydrohydrazination of olefins.
2. Catalyst for the Mukaiyama-Isayama hydration of  $\alpha,\beta$ -unsaturated esters.
3. Catalyst used for the hydroalkylation of olefins to form quaternary carbons.
4. Used in Mn-catalyzed aminocyclizations of unsaturated hydrazones to generate broad range of functionalized pyrazolines.
5. Catalyst for the stereoselective synthesis of bicyclo[1.1.1]pentane benzylamine derivatives from [1.1.1]propellane and mesityl sulfinimines via metal hydride hydrogen atom transfer.



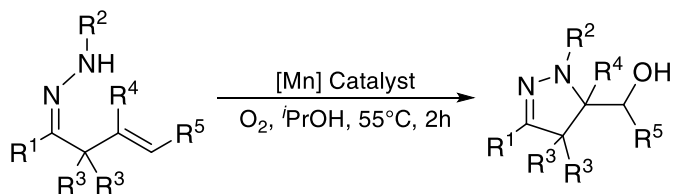
Tech Note (1)  
Ref. (1)



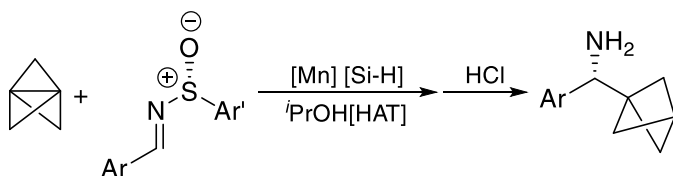
Tech Note (2)  
Ref. (2)



Tech Note (3)  
Ref. (3)



Tech Note (4)  
Ref. (4)



Tech Note (5)  
Ref. (5)

## References:

1. [J. Am. Chem. Soc. 2006, 128, 11693.](#)
2. [Chem. Commun. 2019, 55, 7699.](#)
3. [J. Am. Chem. Soc. 2019, 141, 7709.](#)
4. [JACS Au 2021, 1, 919.](#)
5. [Org. Lett. 2022, 24, 110.](#)

### CVD/ALD Applications

## Thermal Behavior:

- Melting point: 164-165°C [1]
- Sublimation: 124°C at 0.8 Torr [2]

## Technical Notes:

1. ALD/CVD precursor and dopant for manganese containing thin film deposition.

Target Deposit	Deposition Technique	Delivery Temperature	Pressure	Co-reactants	Deposition Temperature	Ref.
MnO <sub>x</sub>	ALD	133°C	1.35 Torr	O <sub>3</sub> <sup>PL</sup> H <sub>2</sub> , <sup>PL</sup> NH <sub>3</sub> , <sup>PL</sup> H <sub>2</sub> O	140-230°C	3
	PEALD	133°C	0.75 Torr		140-250°C	4
RMnO <sub>3</sub> R = Y, La, Sm, Tb, Yb, Lu	ALD	133°C	1.5-2.25 Torr	R(thd) <sub>3</sub> , O <sub>3</sub>	225-350°C	5
Li <sub>x</sub> Mn <sub>2</sub> O <sub>4</sub>	ALD	133°C	-	Li(thd), O <sub>3</sub>	225°C	6
	ALD	160°C	-	O <sub>3</sub> , LiO <sup>t</sup> Bu/H <sub>2</sub> O	225°C	7
	PEALD	130°C	-	<sup>PL</sup> O <sub>2</sub> , LiO <sup>t</sup> Bu/H <sub>2</sub> O	225°C	8
Na <sub>x</sub> Mn <sub>y</sub> O	ALD	130°C	1.4 Torr	O <sub>3</sub> , NaO <sup>t</sup> Bu/H <sub>2</sub> O	220°C	9

## References:

1. [Angew. Chem. Int. Ed. 2004, 43, 4099.](#)
2. [Thermochim. Acta, 2003, 404, 187.](#)
3. [Thin Solid Films 2003, 444, 44.](#)
4. [Chem. Mater. 2015, 27, 3628.](#)
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8. [J. Vac. Sci. Technol. A, 2021, 39, 012408.](#)
9. [Dalton Trans. 2021, 50, 18128.](#)